2025

台灣胸腔暨重症加護醫學會年會

暨 台灣胸腔外科醫學會、台灣胸腔及心臟血管外科學會聯合會議

暨 台灣胸腔暨重症加護醫學會第19屆第3次會員大會

2025 Annual Congress of Taiwan Society of Pulmonary and Critical Care Medicine and Taiwan Society of Thoracic Surgeons, Taiwan Association of Thoracic & Cardiovascular Surgery Joint Conference

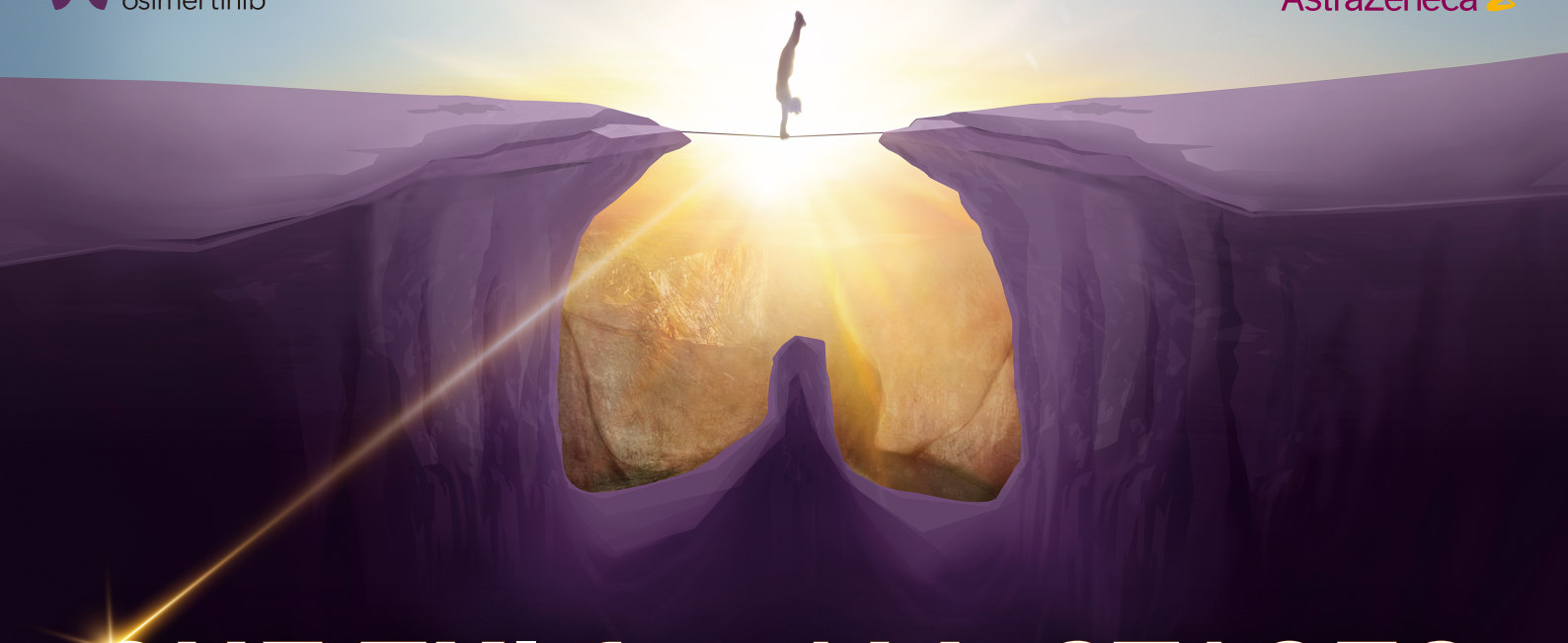
12.13/SAT → 12.14/SUN

桃園會展中心七樓・Messe Taoyuan 7F

桃園會展中心 MESSE TAOYUAN

TAGRISSO® osimertinib

AstraZeneca



ONE TKI for ALL STAGES

2024 台灣肺癌藥物治療共識 | NCCN* ASCO | JLCS | ESMO

* National Comprehensive Cancer Network® (NCCN®)

台灣治療共識與國際指引一致推薦[1-5]

早期到晚期帶有 EGFR 突變之 NSCLC 使用 TAGRISSO®

早期根治 打造防線 復發止步

- 可切除之第 IB-IIIA 期 NSCLC

晚期之選 健保一線 締造三贏

- 無法切除之第 III 期 NSCLC
- 局部晚期或轉移之第 IV 期 NSCLC

Abbreviation: TKI = Tyrosine Kinase Inhibitors; NSCLC = Non-Small Cell Lung Cancer; EGFR = Epidermal Growth Factor Receptor; NCCN=National Comprehensive Cancer Network®; ASCO=American Society of Clinical Oncology; ESMO=European Society for Medical Oncology; JLCS=Japanese Lung Cancer Society; CNS = Central Nervous System.

Reference: 1. 2024 台灣肺癌藥物治療共識。; 2. Referenced with permission from the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Non-Small Cell Lung Cancer Guideline V.4.2025. © National Comprehensive Cancer Network, Inc. 2025. All rights reserved. Accessed 06/04/2025. To view the most recent and complete version of the guideline, go online to NCCN.org. NCCN makes no warranties of any kind whatsoever regarding their content, use or application and disclaims any responsibility for their application or use in any way.; 3. Leighl NB, et al. J Clin Oncol. Published online February 27, 2025.; 4. Lee SH, et al. ESMO Open. 2024;9(12):103996.; 5. Ninomiya K, et al. JTO Clin Res Rep. 2020;2(1):100107.

泰格莎膜衣錠 80 毫克 TAGRISSO Film-coated Tablets 80 mg

【適應症】適用於腫瘤帶有表皮生長因子受體 (EGFR) 外顯子 19 缺失或外顯子 21 L858R 突變之非小細胞肺癌病人，作為腫瘤切除後的輔助治療。適用於腫瘤帶有表皮生長因子受體 (EGFR) 外顯子 19 缺失或外顯子 21 L858R 突變，且在含鉑化放療期間或之後疾病未惡化之局部晚期、無法手術切除（第三期）的非小細胞肺癌成人病人。適用於腫瘤帶有 EGFR 外顯子 19 缺失或外顯子 21 L858R 突變之局部侵犯性或轉移性非小細胞肺癌病人的第一線治療。併用 pemetrexed 和含鉑化療，適用於腫瘤帶有 EGFR 外顯子 19 缺失或外顯子 21 L858R 突變之局部晚期或轉移性非小細胞肺癌成人病人作為第一線治療。適用於治療具有 EGFR T790M 基因突變之局部侵犯性或轉移性非小細胞肺癌在 EGFR TKI 治療期間或之後疾病惡化的病人。【用法用量】TAGRISSO 單一療法：TAGRISSO 的建議劑量為每日一次 80 毫克，可空腹或與食物併用。TAGRISSO 合併療法：與 pemetrexed 和含鉑化療藥物併用，TAGRISSO 的建議劑量為每日一次 80 毫克，可空腹或與食物併用。TAGRISSO 使用於含鉑化放療後，TAGRISSO 的建議劑量為每日一次 80 毫克，可空腹或與食物併用。對於吞嚥困難的病人或透過鼻胃管給藥，可以將錠劑泡在水中崩散。若錯過一劑 TAGRISSO，請勿補服錯過的劑量，按照服藥時間表服用下一劑。進行輔助治療的肺癌病人應持續治療，直到疾病復發、無法耐受毒性或最多達 3 年時間為止。局部晚期、無法手術切除 (第三期) 或轉移性的肺癌病人應持續治療，直到疾病惡化或無法耐受毒性為止。【禁忌】無。【警語及注意事項】若病人未接受近期根治性含鉑化放療的病人，出現惡化的呼吸道症狀（如呼吸困難、咳嗽和發燒）且該症狀可能為 ILD 表徵，則應暫停 TAGRISSO 並立即檢查是否發生 ILD；若證實為 ILD/ 非感染性肺炎，應永久停用 TAGRISSO。若病人有接受近期根治性含鉑化放療的病人，出現惡化的呼吸道症狀（如呼吸困難、咳嗽和發燒）且該症狀可能為 ILD 表徵，則應暫停 TAGRISSO 並立即檢查是否發生 ILD；若檢查為第一級，則根據臨床情況決定暫停或繼續使用 TAGRISSO；若為第二級以上，應永久停用 TAGRISSO。發生 QTc 間期延長伴有危及生命之心律不整表徵 / 症狀的病人，須永久停用 TAGRISSO。對於有症狀的鬱血性心臟衰竭，應永久停用 TAGRISSO。病人若出現疑似角膜炎的表徵及症狀（如眼睛感染、流淚、對光敏感、視力模糊、眼睛疼痛、眼睛發紅等），應立即轉介至眼科就醫。若有出現疑似嚴重多形性紅斑、Stevens-Johnson 症候群或毒性表皮溶解症，則暫停服用 TAGRISSO；若確認是嚴重多形性紅斑、Stevens-Johnson 症候群或毒性表皮溶解症，則永久停用 TAGRISSO。若疑似皮膚血管炎則應暫停 TAGRISSO，評估全身性侵犯且考慮諮詢皮膚專科；若無法判定為其他原因，則依嚴重程度考慮永久停用 TAGRISSO。若疑似再生不良性貧血，則暫停 TAGRISSO 並進行血液科諮詢；若確認為再生不良性貧血，則永久停用 TAGRISSO。在開始 TAGRISSO 治療前，確認還有生產可能性之婦女其懷孕狀態。告知有生育能力的女性在 TAGRISSO 治療期間和服用末次劑量後 6 週內採取有效避孕措施。告知有生育能力女性伴侶的男性在服用末次劑量後 4 個月內採取有效避孕措施。上市後有接受 TAGRISSO 治療的病人發生 B 型肝炎病毒再活化之通報案例，但尚未確立 TAGRISSO 與 B 型肝炎病毒再活化之間的因果關係。【不良反應】接受 TAGRISSO 單一療法治療的病人：至少 20% 以上最常見的不良反應為腹瀉、皮疹、肌肉骨骼疼痛、指甲毒性、皮膚乾燥、口腔炎、疲勞；白血球減少症、淋巴球減少症、血小板減少症、貧血和嗜中性白血球減少症。ADAURA 試驗中，接受 TAGRISSO 治療的病人中有 16% 出現嚴重不良反應。FLAURA 試驗中，接受 TAGRISSO 治療的病人中有 4% 出現嚴重不良反應。AURA3 試驗中，接受 TAGRISSO 治療的病人中有 18% 出現嚴重不良反應。接受 TAGRISSO 合併療法治療的病人：FLAURA2 試驗中，接受 TAGRISSO 併用 pemetrexed 和含鉑化療的病人中有 38% 出現嚴重不良反應。含鉑化放療後接受 TAGRISSO 治療的病人：LAURA 試驗中，含鉑化放療後接受 TAGRISSO 的病人中有 38% 出現嚴重不良反應。【特殊族群使用】根據動物研究數據和其作用機轉，懷孕婦女使用 TAGRISSO 可能會導致胎兒傷害。告知懷孕婦女對胎兒的潛在風險。告知婦女在接受 TAGRISSO 治療期間和末次劑量後 2 週內應停止哺乳。對於依照 Cockcroft-Gault 公式估算肌酸酐清除率 (CLcr) 為 15-89 mL/min 之病人，無須調整 TAGRISSO 劑量。對於末期腎病病人 (CLcr < 15 mL/min)，沒有 TAGRISSO 建議劑量。輕度到中度肝功能不全的病人 (Child Pugh A 和 B，或總膽紅素≤ULN 且 AST>ULN，或總膽紅素介於 1 到 3 倍 ULN 且有任何 AST 數值)，不需調整劑量。對於重度肝功能不全病人 (總膽紅素介於 3 到 10 倍 ULN 且有任何 AST 數值)，沒有 TAGRISSO 建議劑量。

【使用前請詳閱說明書警語及注意事項，詳細仿單資料備索。】【僅限醫藥專業人員參考；處方藥物請參考衛生福利部核准仿單說明書。】

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2025

Annual Congress of Taiwan Society of Pulmonary and Critical Care Medicine
and Taiwan Society of Thoracic Surgeons, Taiwan Association of Thoracic & Cardiovascular Surgery Joint Conference

CONTENTS

理事長序

各位會員、先進及同道們，大家好:

歡迎大家參加 2025 年的年會，今年年會同時邀請台灣胸腔外科醫學會、台灣胸腔及心臟血管外科學會共同舉辦聯合會議，謹訂於 12 月 13 日、14 日 (星期六、日) 於 桃園會展中心辦理實體會議，會中邀請多位國內外知名醫學專家學者擔任講座或主持。

本次學術研討會邀請 APSR President Prof. Yoshinori Hasegawa 為大會進行特別演講，大會主題包含呼吸道疾病、肺部腫瘤醫學、肺感染及結核病、重症醫學、間質性肺病及罕見疾病、介入性支氣管鏡、呼吸治療、肺血管及肺高壓、肺部環境及職業醫學、胸腔外科手術治療、睡眠醫學等最新醫學進展，亦邀請多位國際知名教授學者進行演講。其中除了豐富的學術演講，也規劃「健保事務報告」，學會安排的多元精彩課程，能讓會員們掌握胸腔領域之最新知識、了解未來的發展、並促進相互交流。

感謝各委員會的精心規劃，受邀講者的用心準備，全體理監事的支持與協助，更歡迎大家熱烈參與!

會議晚宴訂於 12 月 13 日 (星期六) 晚上 6 點 30 分於桃園機場假日酒店千禧廳舉行。

敬請 撥冗參加，共襄盛舉。

敬祝 醫安

陳育民

台灣胸腔暨重症加護醫學會
理事長

歡迎詞

親愛的會員朋友們，您好!

在這片充滿歷史與人文的土地上，我們歡迎您參加本屆台灣胸腔暨重症加護醫學年會!

自清乾隆年間起，先民渡海來台，於今日的桃園地區廣植桃樹，花開時節美不勝收；在乾隆 29 年（1764 年）已有「桃仔園庄」的記載，而至光緒 14 年（1888 年）正式名為「桃園」。今年，我們選在「桃園會展中心」舉辦年會，這是一座全新的大型會議場館，坐落於交通便利的國際門戶地帶。其毗鄰活力四射的棒球場、亦鄰近機場國門與高鐵捷運樞紐，環境新穎。展場內外我們將以嶄新的氛圍布置會場，誠摯歡迎各位蒞臨現場，共同感受這不同以往的專業國際級會議風貌。

本次大會議程內容豐富，由各委員會精心籌劃，邀請國內外各領域的大師、專家、學者蒞臨分享最新的研究與學術成果。無論是基礎研究、臨床應用、還是重症胸腔治療的新趨勢，您都將獲得第一手的資訊。同時，會員們的發言與對話、交流與討論，能讓這兩天的學術會議，更加感受到如沐春風、豁然開朗。

會議期間我們特別安排晚宴。餐飲食材來自本地桃園的山地、丘陵、池塘與大海，多元且新鮮；飯店主廚以創意巧思精心烹製各道佳餚，定能滿足各位味蕾。同時，晚宴活動將舉辦一場金光閃耀的頒獎典禮，以表揚優秀會員及其付出努力；更有精彩節目助興，表演別開生面，敬請期待。

此外，大會已與合約飯店完成簽訂，並安排專屬交通接駁服務，讓您的參與更為便捷與安心。主辦單位衷心感謝各位會員的蒞臨，並已準備精美好禮，期望您在旅程與參會過程中皆能擁有愉快的心情和難忘的回憶。

最後，我們今年選定 12 月的「13 14」日作為會期，象徵「一生一世」的美好祝願。期望這兩天的活動，能讓各位會員滿載而歸、收穫豐厚。

敬祝 身體健康，期待與您相聚於桃園會展中心!

劉景隆
台灣胸腔暨重症加護醫學會
副秘書長

大會籌備處暨第 19 屆理、監事名單

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NOTE

12.13/SAT

	701A 會議室	701B 會議室	701C 會議室	701F 會議室
08:00	Registration			
08:40 | 10:00	**Oral Presentation** Thoracic Oncology Intervention Bronchoscopy Diagnosis Other Moderator 謝俊民 醫師 楊宗穎 醫師 林建中 醫師 魏裕峰 醫師	**Oral Presentation** Airway Disease Sleep Medicine Interstitial Lung Disease Moderator 賴俊良 醫師 鍾飲文 醫師 洪仁宇 醫師	**Oral Presentation** Respiratory Tract Infections Critical Care Medicine Tuberculosis Moderator 夏德椿 醫師 古世基 醫師 蔡明儒 醫師	**台灣胸外醫學會** **08:40-09:00** Neoadjuvant immunotherapy strategies for resectable non-small cell lung cancer: real world data Speaker 周品立 醫師 Moderator 謝明儒 醫師 **09:00-09:20** Impact of neoadjuvant therapy on pathologic complete response and clinical outcomes in surgically resected non-small cell lung cancer Speaker 林冠勳 醫師 Moderator 黃才旺 醫師、吳玉琮 醫師 **09:20-09:40** Surgical experiences with neoadjuvant immunochemotherapy for locally advanced lung cancer Speaker 黃建勝 醫師 Moderator 徐博奎 醫師、莊政諺 醫師 **09:40-10:00** Optimal nodal management strategies after induction therapy: scope, challenges, and surgical precision Speaker 林孟暐 醫師 Moderator 鄭清源 醫師、張博智 醫師
10:00 10:30	Coffee break			
10:30 | 11:10	**10:30-11:00** **Young Investigator Award** Moderator 林孟志 醫師、李毓芹 醫師 **11:00-11:15** **哈利斯紀念獎** Moderator 蕭光明 醫師 **11:20-11:50** **Society Affairs Announcement** Annual report of the implementation of healthcare insurance reimbursement for thoracic medicine Speaker 周昆達 醫師 Moderator 楊政達 醫師	**Thoracic Oncology** Update of treatment in small cell lung cancer Speaker 何肇基 醫師 Moderator 施金元 醫師	**Interventional Bronchoscopy** The current status and future development of interventional EBUS at Germany Speaker Prof. Sammy Onyancha Moderator 涂智彥 醫師 (Dr. Chih-Yen Tu)	**台灣胸外醫學會** Cautious optimism: how AI is advancing medicine and surgery Speaker Prof. Jeffrey Yang Moderator 徐中平 醫師、林孟暐 醫師
11:10 | 11:50		**Thoracic Oncology** Immune checkpoint inhibitors in mNSCLC: current practice and future perspectives Speaker Prof. Terufumi Kato Moderator 余忠仁 醫師 (Dr. Chong-Jen Yu)	**Interventional Bronchoscopy** A review of key innovations from the 2025 APCB Speaker 李適鴻 醫師 Moderator 何肇基 醫師	**台灣胸外醫學會** **11:10-11:30** 生成式AI與醫療數位轉型 Speaker 蔣榮先 醫師 Moderator 趙盈凱 醫師、顏亦廷 醫師 **11:30-11:50** The application of metaverse technologies in thoracic surgery Speaker 陳晉興 醫師 Moderator 徐紹勛 醫師、劉又瑋 醫師
12:00 | 13:20	**Thoracic Oncology** 臺灣阿斯特捷利康股份有限公司 **12:00-12:40** Overcoming the Gap in Recurrence Risk with Adjuvant Therapy for Early-Stage EGFRm NSCLC Speaker 張基晟 醫師 Moderator 余忠仁 醫師 **12:40-13:20** Optimizing Survival Outcomes in EGFR-Mutant Metastatic NSCLC Speaker 楊宗穎 醫師 Moderator 楊志新 醫師	**Thoracic Oncology** 羅氏大藥廠股份有限公司 台灣中外製藥股份有限公司 Elevating Survival: Strategic Decisions for Durable OS in mNSCLC ICI combination and ALK targeting Speaker Dr. Hidenori Mizugaki Moderator 賴俊良 醫師、李岡遠 醫師	**Airway Disease** 荷商葛蘭素史克藥廠股份有限公司 **12:05-12:35** Eosinophil Subtypes and Asthma Disease Activity Speaker 廖信閔 醫師 Moderator 鍾飲文 醫師 **12:35-13:20** Refining Treatment Algorithms in Severe Asthma Speaker 陳彥甫 醫師 Moderator 鍾飲文 醫師	**Airway Disease** 賽諾菲股份有限公司 **12:05-12:35** Biologics and Airway Remodeling in Asthma: From pathophysiology to clinical evidence Speaker Prof. Klaus Rabe Moderator 許超群 醫師 **12:35-13:20** Real-world Challenges in Asthma management Speaker 黃俊凱 醫師 Moderator 許超群 醫師
13:30 14:30	**會員大會，頒發專科醫師證書 (701A會議室)**			
14:30 15:00	Coffee break			
15:00 | 15:40	**Keynote Speech** Pulmonology: past, present, and future Speaker Prof. Yoshinori Hasegawa Moderator 陳育民 理事長 (Prof. Yuh-Min Chen)	**Thoracic Oncology** Charting new waters with combination therapies in first-line EGFR-mutated NSCLC Speaker Prof. Jii Bum Lee Moderator 楊政達 醫師 (Dr. Cheng-Ta Yang)	**Sleep Medicine** Sleep apnea pharmacology Speaker Prof. Atul Malhotra Moderator 杭良文 醫師 (Dr. Liang-Wen Hang) 林嘉謨 醫師 (Dr. Chia-Mo Lin)	**Tuberculosis & Infection Control** The battle against resistant gram negative bacilli – now and the future Speaker Prof. David Leslie Paterson Moderator 王振源 醫師 (Dr. Jann-Yuan Wang)
15:40 | 16:20	**International Affairs** Approach to the evaluation and management of interstitial lung abnormalities Speaker Prof. Jin Woo Song Moderator 黃明賢 醫師 (Dr. Ming-Shyan Huang)	**Thoracic Oncology** Update of treatment of post osimertinib in EGFR mutation NSCLC Speaker 林建中 醫師 Moderator 王金洲 醫師	**Sleep Medicine** Medications for obstructive sleep syndrome body weight reduction Speaker 孫傳硯 醫師 Moderator 莊立邦 醫師	**Tuberculosis & Infection Control** From panels to the pan-genome: the evolving landscape of molecular respiratory pathogen detection Speaker 馮嘉毅 醫師 Moderator 李世偉 醫師
16:40 | 18:00	**Airway Disease** 臺灣阿斯特捷利康股份有限公司 **16:40-17:10** Epithelium in United Airway Disease and Role of Biologics for Holistic Care Speaker 張博瑞 醫師 Moderator 郭炳宏 醫師 **17:10-17:40** Targeting Eosinophilic Inflammation: From Preventing Disease Progression to Improving Clinical Outcomes Speaker 廖信閔 醫師 Moderator 林恕民 醫師	**Thoracic Oncology** 美商默沙東藥廠股份有限公司 Immunotherapy: a paradigm shift in the treatment of advanced NSCLC Speaker 曾政森 醫師 Moderator 施金元 醫師 From trials to treatment: Translating long-term clinical trial data into practice of peri-operative immunotherapy for resectable NSCLC Speaker 夏德椿 醫師 Moderator 施金元 醫師	**Thoracic Oncology** 台灣百靈佳殷格翰股份有限公司 **16:40-17:10** Real-World Treatment Landscape of EGFRm+ NSCLC: Taiwan Insights on TKI Utilization and Outcomes Speaker 陳崇裕 醫師 Moderator 王金洲 醫師 **17:20-17:50** From Trial Evidence to Pronostic Factors: Local Consolidation Therapy in Advanced NSCLC Speaker 陳沛興 醫師 Moderator 楊宗穎 醫師	**Airway Disease** 友華生技股份有限公司 **16:45-17:15** Small Airways and Pneumonia: Optimizing COPD and Asthma Control with Trimbow® Speaker 羅柏鈞 醫師 Moderator 藍胄進 醫師 **17:20-17:50** Small Airways: The Missing Link in ICS/LABA Asthma Control Speaker 黃偉彰 醫師 Moderator 林慶雄 醫師
18:30	**大會晚宴 (桃園機場假日酒店千禧廳)**			

12.14/SUN

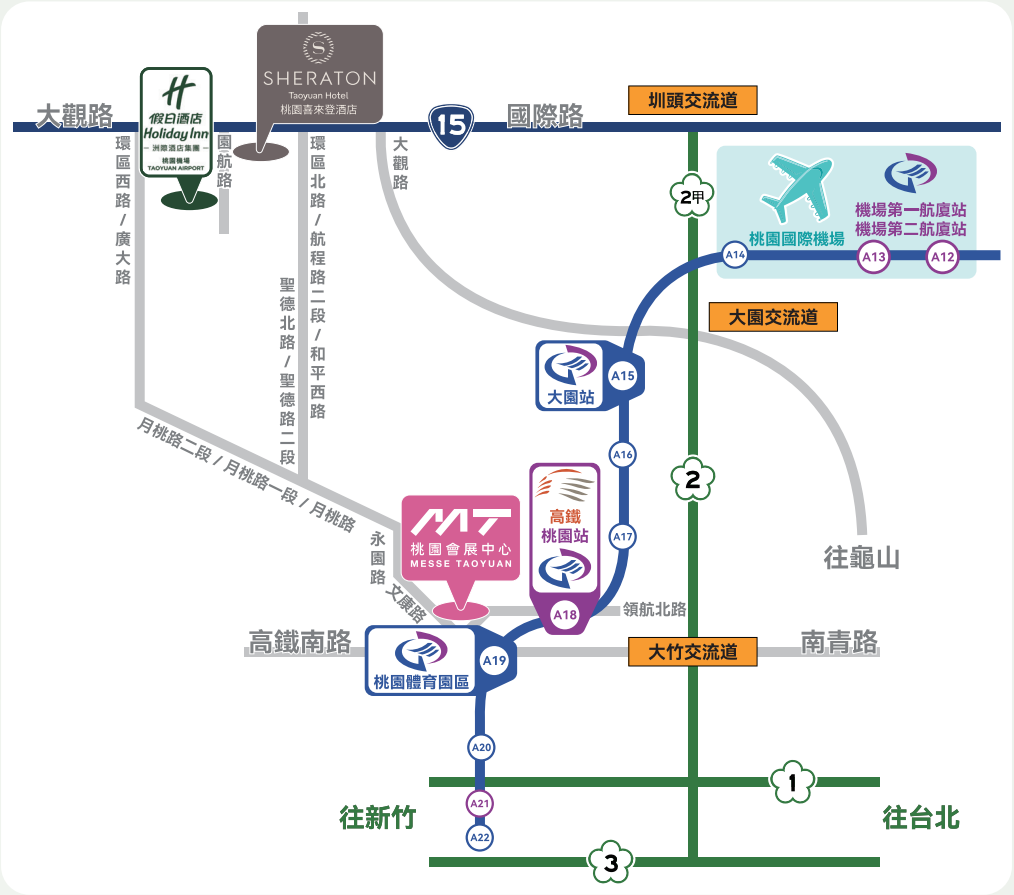
	701A 會議室	701B 會議室	701C 會議室	701F 會議室
08:00	Registration			
08:40 | 09:20	**Critical Care Medicine** Practice-changing findings and emerging concepts in sepsis Speaker 陳威志 醫師 Moderator 陳昌文 醫師	**Environmental & Occupational Medicine** Artificial stone associated occupational lung disease Speaker 陳啟信 醫師 Moderator 林基正 醫師	**Interstitial Pneumonia & Rare Diseases** The evolving treatment landscape of pulmonary fibrosis Speaker Prof. Toby Maher Moderator 林鴻銓 醫師 (Dr. Horng-Chyuan Lin)	**台灣胸腔及心臟血管外科學會** **08:40-08:55** Before entering the RAB Era: what's different, and what should we expect? Speaker 楊順貿 醫師 **08:55-09:20** Robotic bronchoscopy platforms for diagnosis and treatment: The Hong Kong experience Speaker Prof. Joyce WY Chan Moderator 黃文傑 醫師、徐博奎 醫師
09:20 | 10:00	**Critical Care Medicine** Practice-changing findings and emerging concepts in severe pneumonia Speaker 詹明澄 醫師 Moderator 陽光耀 醫師	**Environmental & Occupational Medicine** Air pollution related lung disorders: update Speaker 吳大緯 醫師 Moderator 楊泮池 醫師	**Interstitial Pneumonia & Rare Diseases** Integrating Real-World evidence into personalized management of IPF Speaker Prof. Jin Woo Song Moderator 杭良文 醫師 (Dr. Liang-Wen Hang)	**台灣胸腔及心臟血管外科學會** Robotic Bronchoscopy, Advanced Imaging, and Bronchoscopic Ablation: Expanding the Frontiers of Minimally Invasive Thoracic Oncology Speaker Prof. Erik Folch Moderator 林孟暐 醫師、黃才旺 醫師
10:00 10:30	Coffee break			
10:30 | 11:10	**Critical Care Medicine** Precision medicine on hemoglobulin levels in ICU: focus on CHF, and acute brain injury Speaker 阮聖元 醫師 Moderator 黃崇旂 醫師	**Airway Diseases** Decoding COPD heterogeneity: Type 2 inflammation and the emerging role of biologics Speaker Prof. Klaus F. Rabe Moderator 彭殿王 醫師 (Dr. Diahn-Warng Perng)	**Pulmonary Vascular Diseases & Pulmonary Hypertension** Current concepts of pulmonary arterial hypertension management - From global guideline to Japan's clinical practice Speaker Prof. Shiro Adachi Moderator 陶啟偉 醫師 (Dr. Chi-Wei Tao)	**台灣胸腔及心臟血管外科學會** **10:30-10:50** Enhanced Recovery After Thoracic Surgery (ERAS): Optimizing Outcomes in Lung Resection Speaker 吳青峰 醫師 **10:50-11:10** Risks assessments, optimization and prehabilitation of chest surgery Speaker 簡榮彥 醫師 Moderator 郭順文 醫師、郭光泰 醫師
11:10 | 11:50	**Critical Care Medicine** New technologies in the ICU Speaker 陳韋成 醫師 Moderator 黃崇旂 醫師	**Airway Diseases** Anti-cytokine biologics for asthma in adults Speaker 陳家弘 醫師 Moderator 彭忠衍 醫師	**Pulmonary Vascular Diseases & Pulmonary Hypertension** Unmet needs of the current treatment landscape of PH-ILD and international experience Speaker Prof. Vincent Cottin Moderator 徐紹勛 醫師 (Dr. Hsao-Hsun Hsu)	**台灣胸腔及心臟血管外科學會** **11:10-11:30** Body Composition and Physical Fitness in Esophageal Cancer Speaker 邱健宏 醫師 **11:30-11:50** Pain management in thoracic ERAS Speaker 許弘德 醫師 Moderator 顏亦廷 醫師、劉又瑋 醫師
12:00 | 13:20	**Airway Disease** 臺灣阿斯特捷利康股份有限公司 **12:05-12:30** Transforming asthma care in Taiwan: Integrating clinical excellence and sustainability Speaker 林聖皓 醫師 Moderator 邱國欽 醫師 **12:40-13:20** Mind the Gap for CardioPulmonary Risk in COPD: Evidence from Taiwan RWE Speaker 黃偉彰 醫師 Moderator 彭殿王 醫師	**Vaccine** 輝瑞大藥廠股份有限公司 **12:00-12:40** Value of Pneumonia Prevention in Patients with Lung Diseases Speaker 馮嘉毅 醫師 Moderator 蔡鎮良 醫師 **12:40-13:20** Transforming ALK+ aNSCLC Management: From Molecular Insight to Clinical Impact Speaker 江起陸 醫師 Moderator 陳育民 醫師	**Airway Disease** 荷商葛蘭素史克藥廠股份有限公司 **12:00-12:40** Path to Clinical Remission in Asthma with SITT: The Japan Experience Speaker Dr. Naoya Tanabe Moderator 詹明澄 醫師 **12:40-13:20** Reducing COPD Exacerbation: Are you still SITTing on the fence Speaker 潘奕宏 醫師 Moderator 林鴻銓 醫師	**Respiratory Diseases** 台灣百靈佳殷格翰股份有限公司 **12:00-12:30** Small Airway Dysfunction in COPD : Clinical Relevance and Treatment Strategies Speaker Assoc. Prof. Atsuyasu Sato Moderator 杭良文 醫師 **12:40-13:20** From INPULSIS to FIBRONEER: Changing Paradigms and Future Directions in IPF Speaker Prof. Toby Maher Moderator 鍾欽文 醫師
13:30 | 14:10	**Youth Affairs** Balancing triple roles: time management and self-positioning as a clinician, researcher, and leader Speaker 張晟瑜 醫師 Moderator 蔡鎮良 醫師	**Airway Diseases** Minimizing exacerbations and OCS use in mixed airway disease through targeted biologic therapy Speaker Prof. Naoya Tanabe Moderator 鄭世隆 醫師 (Dr. Shih-Lung Cheng)	**Cardiopulmonary Exercise Test** CPET empowers the clinician-from history to deconditioning and dyspnea Speaker 莊銘隆 醫師 Moderator 徐武輝 醫師	**Respiration Therapy** Ventilator-Associated Event Surveillance: From Definition to Clinical Practice Speaker 劉世豐 醫師 Moderator 林恕民 醫師
14:10 | 14:50	**Youth Affairs** Running Facebook pages - a pastime or a purpose for pulmonologists? 胸腔科醫師經營臉書，是在耍「肺」嗎? Speaker 陳志金 醫師 Moderator 蘇健 醫師	**Airway Diseases** Bronchiectasis evolution: past lessons, present practices, and future precision Speaker 陳彥甫 醫師 Moderator 王鶴健 醫師	**Cardiopulmonary Exercise Test** CPET-guided pulmonary rehabilitation: insights from cancer, post-COVID, ILD, and PH survivors Speaker 楊聰明 醫師 Moderator 許超群 醫師	**Respiration Therapy** Electric impedance tomography in monitoring of hypoxic respiratory failure patients Speaker 郭耀文 醫師 Moderator 林明憲 醫師

會場平面圖


試片室
秘書處
VIP休息室
701F 會議室
701C 會議室
701B 會議室
701A 會議室
攤位區
休息區
休息區
電梯
手扶梯
電梯
海報競賽區
休息區


攤位區平面圖
武田
太景
嘉旺
賽默飛
博兆
默克
達杏
艾柏
行李寄放
禮品領取
美時
BeOne
安進
上鉅
力大
MSD
晉弘科技
諾華
moderna
銓鼎
健喬信元
賽諾菲
Roche、中外
AZ
GSK
BMS
拍照區
OEP
JJ
輝瑞
BI
塩野義
充電區
大會資訊牆
茶點區
報到處

交通資訊



桃園會展中心 大會地點

(桃園市中壢區領航北路一段99號)

- 自行開車：詳細路線請掃描右方 QR code 打開 Google Map 查詢。
- 高鐵：可搭乘至**高鐵桃園站**，轉乘桃園機場捷運至A19桃園體育園區站(約3分鐘抵達)，自1號出口出站步行約6分鐘即抵達桃園會展中心。
- 捷運：可搭乘至**A19桃園體育園區站**，自**1號出口**出站步行約6分鐘即抵達桃園會展中心。
- 公車：可搭乘 **173**、**L605**、**L605A** 至 **捷運桃園體育園區站(領航北路)**；亦可搭乘 **172**、**707** 至 **桃園國際棒球場站。**

桃園機場假日酒店 晚宴地點

(桃園市大園區園航路28號)

- 於一樓千禧廳舉辦晚宴，詳細接駁資訊請參照前頁晚宴接駁時刻表。
- 距離會場(桃園會展中心)約20分鐘車程，詳細路線請掃描上方 QR code 打開 Google Map 查詢。

交通資訊

會場接駁發車時刻表

(預估到站時間與實際到站時間依路況及其它因素可能有落差)

	桃園喜來登酒店	→ 桃園機場假日酒店	→ 桃園會展中心 (Messe Taoyuan)
12/13 (六) & 12/14 (日)	08:00	08:05	08:30
	08:30	08:35	09:00
	09:00	09:05	09:30
	09:30	09:35	10:00
	10:00	10:05	10:30
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	13:00	13:05	13:30
12/13 (六)	13:30	13:35	14:00
	14:00	14:05	14:30
	14:30	14:35	15:00
	15:00	15:05	15:30
	15:30	15:35	16:00
	16:00	16:05	16:30
	16:30	16:35	

頭末班車發車時間(約30分鐘一班車)

- 12月13日(星期六): 08:00 - 16:30(桃園喜來登酒店發車)
- 12月14日(星期日): 08:00 - 13:00(桃園喜來登酒店發車)

晚宴接駁時刻表

	桃園會展中心 (大會會場)	→ 桃園機場假日酒店 (晚宴會場)
12/13 (六)	18:00(滿員發車)	18:20(抵達)

	桃園機場假日酒店 (晚宴會場)	→ 高鐵桃園站 (桃園機場捷運A18站)
12/13 (六)	20:30(滿員發車)	20:50(抵達)

演講摘要

701A 會議室

12.13/SAT

11:30-11:50 P13 Annual report of the implementation of healthcare insurance reimbursement for thoracic medicine
周昆達 醫師

12:00-13:20 P14 Satellite Symposium_ 臺灣阿斯特捷利康股份有限公司
Overcoming the Gap in Recurrence Risk with Adjuvant Therapy for Early-Stage EGFRm NSCLC
張基晟 醫師

Optimizing Survival Outcomes in EGFR-Mutant Metastatic NSCLC
楊宗穎 醫師

15:00-15:40 P16 Pulmonology: past, present, and future
Prof. Yoshinori Hasegawa

15:40-16:20 P17 Approach to the evaluation and management of interstitial lung abnormalities
Prof. Jin Woo Song

16:40-18:00 P18 Satellite Symposium_ 臺灣阿斯特捷利康股份有限公司
Epithelium in United Airway Disease and Role of Biologics for Holistic Care
張博瑞 醫師

Targeting Eosinophilic Inflammation: From Preventing Disease Progression to Improving Clinical Outcomes
廖信閔 醫師

12.14/SUN

08:40-09:20 P20 Practice-changing findings and emerging concepts in sepsis
陳威志 醫師

09:20-10:00 P21 Practice-changing findings and emerging concepts in severe pneumonia
詹明澄 醫師

10:30-11:10 P22 Precision medicine on hemoglobulin levels in ICU: focus on CHF, and acute brain injury
阮聖元 醫師

11:10-11:50 P23 New technologies in the ICU
陳韋成 醫師

12:00-13:20 P24 Satellite Symposium_ 臺灣阿斯特捷利康股份有限公司
Transforming asthma care in Taiwan: Integrating clinical excellence and sustainability
林聖皓 醫師

Mind the Gap for CardioPulmonary Risk in COPD: Evidence from Taiwan RWE
黃偉彰 醫師

13:30-14:10 P26 Balancing triple roles: time management and self-positioning as a clinician, researcher, and leader
張晟瑜 醫師

14:10-14:50 P27 Running Facebook pages - a pastime or a purpose for pulmonologists?
胸腔科醫師經營臉書，是在耍「肺」嗎?
陳志金 醫師

12.13/SAT

Annual report of the implementation of healthcare insurance reimbursement for thoracic medicine

周昆達
Kun-Ta Chou, M.D., Ph.D.

Chief, Division of Critical Respiratory Physiology & CEO., Center of Sleep Medicine, Taipei VGH

Satellite Symposium_ 臺灣阿斯特捷利康股份有限公司

Overcoming the Gap in Recurrence Risk with Adjuvant Therapy for Early-Stage EGFRm NSCLC

張基晟
Gee-Chen Chang, M.D., Ph.D.

Vice-president, Chung Shan Medical University
Deputy Superintendent, Chung Shan Medical University Hospital

With the inclusion of low-dose computed tomography (LDCT) screening under Taiwan's National Health Insurance program, an increasing number of early-stage lung cancer cases are now being detected. Beyond smoking history, national screening results have revealed a higher positive detection rate among individuals with a family history of lung cancer, suggesting that additional, yet unrecognized, carcinogenic factors may contribute to disease development.

Nevertheless, a significant proportion of patients with early-stage non–small cell lung cancer (NSCLC) still face the challenge of postoperative recurrence, with recurrence risk increasing alongside disease stage. Notably, patients harboring EGFR mutations exhibit a higher recurrence rate—even in stage IB—highlighting a subgroup of high-risk individuals characterized by features such as vascular invasion, pleural invasion, and poor differentiation.

Integrating precise molecular testing and appropriate adjuvant therapy into the postoperative management of these patients is therefore essential to reduce recurrence and improve long-term disease-free survival.

This presentation will explore how enhancing molecular testing and adjuvant treatment strategies for early-stage NSCLC patients—particularly those with EGFR mutations—can bridge the gap between early diagnosis and long-term cure, achieving true treatment completeness.

Optimizing Survival Outcomes in EGFR-Mutant Metastatic NSCLC

楊宗穎
Tsung-Ying Yang, M.D., Ph.D.

Head, Department of Chest Medicine, Taichung Veterans General Hospital

Third-generation EGFR tyrosine kinase inhibitors (EGFR-TKIs) have become the preferred first-line backbone for EGFR-mutant metastatic non-small cell lung cancer (NSCLC), with evidence demonstrating improvements in progression-free survival (PFS), overall survival (OS), and central nervous system (CNS) disease control compared with earlier-generation TKIs. Their pharmacologic properties, including enhanced CNS penetration and activity against common resistance mutations, support durable systemic control. Favorable tolerability profiles facilitate sustained adherence, which is relevant for maintaining therapeutic benefit over time.

Emerging data on combination regimens with third-generation EGFR-TKIs at the frontline—including chemotherapy, and other targeted therapies—aim to deepen responses and delay resistance. Selection should consider efficacy signals, safety and tolerability, disease burden and distribution (including CNS involvement), and patient-specific factors.

This presentation reviews the evidence to navigate the optimized treatment strategy in NSCLC, particularly focusing on the approach for treatment-naïve patients. A brief discussion of implementation considerations and clinical trial participation will be included to inform decision-making in routine practice.

12.13/SAT

Pulmonology: past, present, and future

Yoshinori Hasegawa, M.D., Ph.D.

Professor, Faculty of Nursing, Nagoya University of Arts and Sciences

Respiratory medicine encompasses a wide range of fields, including infectious diseases such as pneumonia and tuberculosis, thoracic malignancies represented by lung cancer, lifestyle-related diseases such as COPD, and allergic and autoimmune diseases such as asthma and interstitial pneumonia. With the aging of society, the prevalence of all these diseases is expected to increase significantly. According to WHO projections of global causes of death in 2030, COPD is expected to rank third, pneumonia fourth, and lung cancer sixth. While respiratory diseases are among the so-called “common diseases”, each is also known for being difficult to treat, and challenging to manage. Thus, respiratory physicians are expected to engage in balanced clinical practice, education, and research for overcoming these diseases. In this lecture, four key topics will be addressed: (1) lung cancer treatment and genomic medicine; (2) the clinical features of bronchiolitis obliterans; (3) strategies to reduce mortality from pneumonia; and (4) initiatives targeting idiopathic interstitial pneumonias. Based on the past respiratory disease research at Nagoya University, I would like to talk on the future prospects for respiratory disease.

12.13/SAT

Approach to the evaluation and management of interstitial lung abnormalities

Jin-Woo Song, M.D., Ph.D.

Professor, Pulmonary and Critical Care Medicine, University of Ulsan College of Medicine, Asan Medical Center, Seoul, Republic of Korea

Interstitial lung abnormalities (ILAs) represent incidental radiologic findings on chest CT characterized by non-dependent parenchymal changes in individuals without a known interstitial lung disease (ILD). The 2025 American Thoracic Society Clinical Statement provides updated guidance on the evaluation and management of ILAs, emphasizing risk stratification and early recognition of disease progression. A multidisciplinary approach—incorporating clinical assessment, high-resolution imaging, and selective use of pulmonary function testing—is recommended to identify individuals at high risk of progression to clinically significant ILD, including idiopathic pulmonary fibrosis. The statement highlights key risk factors such as older age, male sex, fibrotic CT patterns (particularly subpleural and basal predominant distribution), and impaired lung function. For individuals at increased risk, longitudinal follow-up with structured imaging and functional assessment is advised, whereas those at low risk may be monitored less intensively. This lecture will summarize the updated definitions, recommended diagnostic pathways, follow-up strategies, and research priorities outlined in the 2025 ATS statement, providing practical guidance for clinicians managing ILAs in both general and specialized respiratory care settings.

Satellite Symposium_ 臺灣阿斯特捷利康股份有限公司

Epithelium in United Airway Disease and Role of Biologics for Holistic Care

張博瑞
Po-Jui Chang, M.D., Ph.D.

Head of Division of Airway Disease, Department of Thoracic Medicine, Chang Gung Memorial Hospital, Linkou

Airway epithelium plays a key role in both upper and lower airway diseases by serving as a barrier and modulator of immune responses. Dysfunction of the epithelium can lead to increased inflammation and higher susceptibility to environmental triggers, influencing the progression of diseases such as asthma and chronic rhinosinusitis. These conditions often overlap, forming what is recognized as united airway disease, which is common among patients. Assessment of comorbidities is vital especially for asthma patients, as coexisting conditions may complicate management and reduce quality of life. Addressing these comorbidities early on is crucial for optimizing treatment outcomes and reducing the disease burden.

Biologics are innovative therapies that offer holistic care in united airway diseases. Clinical experience indicates biologics improve type 2 inflammation, help control multiple airway conditions simultaneously, and enhance patient quality of life. Anti-TSLP might be the next potential biologics for offering holistic care in united airway diseases. This lecture will present how important of epithelium in united airway diseases and how biologics can fill the gap in unmet needs, emphasizing their transformative role in managing complex airway disease.

Targeting Eosinophilic Inflammation: From Preventing Disease Progression to Improving Clinical Outcomes

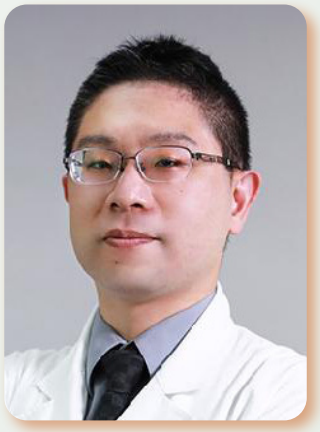
廖信閔
Xin-Ming Liao, M.D.

Attending physician, Division of Pulmonology, Department of Internal Medicine, National Cheng Kung University Hospital

This presentation highlights the central role of eosinophilic inflammation in respiratory diseases, demonstrating how tissue eosinophils contribute to epithelial damage and promote cytokine release, which perpetuate chronic inflammatory processes. Effective management depends on removing eosinophils from blood and tissue, a strategy that has been shown to reduce acute exacerbations, improve lung function, and lower the need for oral corticosteroids. Targeted biologic therapies such as Benralizumab and Mepolizumab enable precise eosinophil depletion, providing patients with improved management and less dependence on traditional systemic treatments. Furthermore, real-world studies including BEAT and TARGET confirm that reducing eosinophil levels leads to fewer exacerbations and improved disease outcomes.

12.14/SUN

Practice-changing findings and emerging concepts in sepsis



陳威志
Wei-Chih Chen, M.D., Ph.D.

Chief, Division of Respiratory Therapy, Department of Chest Medicine, Taipei Veterans General Hospital

Sepsis, defined by Sepsis-3 as life-threatening organ dysfunction caused by a dysregulated host response to infection, remains a major challenge in critical care due to its marked heterogeneity in presentation, pathophysiology, and outcomes. Precision medicine offers an opportunity to address this variability through integration of clinical phenotyping, biomarker profiling, and multi-omics approaches. Recent studies have identified relevant subphenotypes in sepsis using clustering, latent class analysis, and machine learning on large datasets such as MIMIC-III, FORCAST, and SENECA for prognosis prediction. These phenotypes, distinguished by immune status, hemodynamic patterns, inflammatory profiles, and organ dysfunction trajectories, all demonstrate specific mortality risks and variable treatment responses. For example, hyperinflammatory phenotypes are associated with worse outcomes and differential responses to activated protein C, while immunosuppressed patients identified by mHLA-DR or transcriptomic signatures may benefit from tailored immunotherapies such as IL-1 blockade or targeted corticosteroid use. Early antibiotic initiation remains beneficial overall, though absolute treatment effects vary by risk subgroup. Emerging strategies emphasize rapid point-of-care testing for phenotype assignment, enabling timely, individualized interventions. Integration of big data analytics, artificial intelligence, and multi-omics promises to refine endotype classification and guide targeted therapies. Ultimately, precision medicine in sepsis aims to resolve treatment heterogeneity, improve patient outcomes, and shift critical care toward biologically informed, patient-specific management. Future priorities include validation of phenotyping systems, development of bedside diagnostic tools, and prospective trials testing phenotype-guided therapies.

12.14/SUN

Practice-changing findings and emerging concepts in severe pneumonia

詹明澄
Ming-Cheng Chan, M.D., Ph.D.
Chief, Department of Critical Care Medicine, Taichung Veterans General Hospital

Recent advances in understanding and managing severe pneumonia have profoundly impacted clinical practice, addressing evolving challenges posed by emerging pathogens, antimicrobial resistance, and diagnostic innovations. Diagnostic techniques such as rapid molecular diagnostics and metagenomic sequencing have significantly improved pathogen identification, enabling more targeted antimicrobial therapies and reducing unnecessary antibiotic use. Recognizing patterns of resistance among key bacteria like Streptococcus pneumoniae and Gram-negative organisms has led to updated guidelines and strengthened antimicrobial stewardship efforts. Simultaneously, research into host immune responses has highlighted that an exaggerated inflammatory reaction can contribute to tissue damage, prompting investigations into immunomodulatory therapies such as corticosteroids and cytokine inhibitors tailored to specific patient populations. The emergence of new pathogens, including zoonotic viruses like SARS-CoV-2 and multidrug-resistant bacteria, underscores the ongoing threat they pose to global health. These pathogens rapidly spread across borders, overwhelm healthcare infrastructures, and challenge existing diagnostic and therapeutic approaches, emphasizing the need for robust global surveillance, rapid response capabilities, and international collaboration. The development of novel antimicrobial agents, including ceftobiprole, omadacycline, and innovative delivery systems like liposomal formulations and inhaled antibiotics, offers promising solutions to combat resistant organisms while minimizing toxicity. These innovations, combined with early supportive interventions such as lung-protective ventilation and biomarker-guided therapy, are evolving the landscape of severe pneumonia management towards a personalized, multidisciplinary approach. Overall, these practice-changing discoveries and emerging concepts reflect a shift towards more precise diagnostics, tailored treatments, and strengthened preventive strategies, including vaccination and public health measures. Continued research, global cooperation, and innovation are essential to mitigate the impact of severe pneumonia, reduce mortality, and improve long-term patient outcomes in the face of dynamic pathogenic threats and resistance patterns.

12.14/SUN

Precision medicine on hemoglobulin levels in ICU: focus on CHF, and acute brain injury

阮聖元
Sheng-Yuan Ruan, M.D., Ph.D.
Attending physician, Internal Medicine, National Taiwan University Hospital

Anemia is highly prevalent among critically ill patients in the ICU, resulting from surgical blood loss, ongoing bleeding, frequent laboratory sampling, or underlying medical conditions. The presence of anemia compromises oxygen delivery to tissues and increases myocardial oxygen demand, often necessitating a higher cardiac output to maintain perfusion. Epidemiologic studies suggest that 30–50% of ICU patients require red blood cell (RBC) transfusion during hospitalization. Although transfusion can be lifesaving, it is also associated with significant risks, including transfusion reactions, infection, transfusion-related acute lung injury, and fluid overload. Over the past two decades, numerous randomized trials have examined liberal versus restrictive transfusion strategies in both general ICU cohorts and specific patient subgroups, such as those with sepsis, acute coronary syndrome, acute brain injury, gastrointestinal bleeding, and postoperative cardiac surgery. The accumulated evidence largely supports restrictive transfusion strategies for the majority of critically ill patients, reducing unnecessary exposure to transfusion-related complications without compromising outcomes. However, the unique physiological vulnerability of the injured brain and heart raises important questions about whether transfusion thresholds derived from general ICU populations are appropriate for these subgroups. This presentation will review the current evidence, highlight ongoing controversies, and discuss the relevant evidence.

12.14/SUN

New technologies in the ICU

陳韋成
Wei-Cheng Chen, M.D.

Chief Secretary, Superintendent Office, China Medical University Hospital
Director, RICU, China Medical University Hospital

Amid rising disease complexity, rapid medical innovation, and persistent workforce shortages, smart hospitals have become indispensable for advancing efficiency and care quality. Artificial intelligence (AI) and medical robots are reshaping intensive care medicine: AI excels in structured tasks such as image interpretation, while robotics enhances clinical capacity through precision interventions, automated logistics, and continuous monitoring. In life-threatening conditions such as sepsis, acute respiratory distress syndrome, and myocardial infarction, AI already supports detection, diagnosis, treatment guidance, and outcome prediction—streamlining workflows, reducing workload, and elevating care quality. For example, the HiThings system at China Medical University Hospital functions as an AIoT-enabled digital twin and tele-consultation platform, facilitating evidence-based practice and improving patient outcomes, with a demonstrated 4% reduction in mortality rate.

Global progress is translating innovation from concept to clinical reality, with multiple FDA- and TFDA-approved solutions now safely integrated into frontline practice. Taiwan has been actively participating in this transformation, with the Ministry of Health and Welfare (MOHW) strengthening AI development through the establishment of three dedicated AI centers focused on governance, validation, and health impact. These efforts ensure that AI and robotics not only comply with ethical and regulatory standards but also deliver sustainable, trusted benefits across healthcare systems. Still, the irreplaceable human role in empathy-driven decisions—such as end-of-life care—remains central.

This presentation highlights how these developments reflect a broader global movement, where ultimately the future of intensive care lies in human–machine collaboration—leveraging the precision of AI with the compassion of clinicians—to usher in a new era of smarter, safer, and more resilient critical care.

Satellite Symposium_ 臺灣阿斯特捷利康股份有限公司

Transforming asthma care in Taiwan: Integrating clinical excellence and sustainability

林聖皓
Sheng-Hao Lin, M.D., Ph.D.

Director, Division of Chest Medicine, Department of Internal Medicine, Changhua Christian Hospital

Asthma is a persistent public health challenge in Taiwan, affecting a significant portion of the population and placing considerable demands on the healthcare system. Effective management of asthma is essential not only to improve patient outcomes but also to ensure that healthcare resources are utilized efficiently. Taiwan's National Health Insurance (NHI) system, based on a global budget model, has succeeded in providing broad access to medical care, yet it also presents complex constraints. The fixed annual budget means every new or innovative therapy must demonstrate clear clinical and economic value, making the adoption of best-practice guidelines and novel treatments an ongoing process of negotiation and adaptation.

Amidst these systemic challenges, embedding Environmental, Social, and Governance (ESG) principles into healthcare is increasingly recognized as necessary for long-term sustainability. Current discussions of ESG in respiratory care often focus on the carbon footprint differences among inhaler devices. However, such device-level analyses offer an incomplete picture. A more impactful approach is to consider the total reduction in carbon emissions resulting from improved disease control on a population scale. When asthma outcomes are optimized, patients require fewer rescue medications, experience fewer exacerbations, and avoid resource-intensive emergency care and hospitalizations. These system-wide improvements lead to significant reductions in healthcare-related emissions, including the indirect environmental costs of hospital services, manufacturing, and transportation.

Symbicort (budesonide/formoterol) plays a central role in this paradigm. Its evidence-based maintenance-and-reliever regimen is aligned with the latest asthma treatment guidelines and offers proven benefits in enhancing disease control. By reducing the frequency of severe episodes and minimizing the need for additional medical interventions, Symbicort helps streamline healthcare utilization within the strict limits of the NHI's global budget. Most crucially, the ESG impact of adopting Symbicort for broad guideline-recommended use should be evaluated in terms of overall disease improvement and the resulting decrease in total carbon emissions, rather than isolated assessments of device carbon footprint.

For Taiwan to fully realize these clinical and sustainability gains, several changes are needed. Policy updates must enable appropriate access to therapies like Symbicort that deliver high value against both medical and ESG metrics. This involves shifting reimbursement criteria and incentivizing practices that favor proven, guideline-based regimens. Concurrently, education initiatives targeting clinicians and health administrators are essential. These efforts can help foster awareness of how effective asthma management translates to environmental benefits on a system-wide scale, moving beyond narrow device comparisons.

Additionally, collaboration among local organizations such as hospitals, professional societies, patient advocacy groups, and public sector agencies is vital. Partnerships can facilitate data sharing, accelerate adoption of evidence-based protocols, and support community-wide campaigns that reinforce the message that sustainability in healthcare begins with improved patient outcomes. Only through such coordinated strategies can Taiwan integrate clinical excellence with ESG imperatives, addressing both the demands of the NHI system and broader environmental goals.

In conclusion, transforming asthma care in Taiwan necessitates an integrated approach—one that aligns robust clinical practices with comprehensive sustainability objectives. Placing ESG emphasis on total disease burden reduction, as exemplified by Symbicort's benefits, offers a practical and impactful pathway. As Taiwan continues to evolve its healthcare landscape, focusing on system-wide improvements will not only enhance patient well-being but also drive progress toward national sustainability ambitions.

Satellite Symposium_ 臺灣阿斯特捷利康股份有限公司

Mind the Gap for CardioPulmonary Risk in COPD: Evidence from Taiwan RWE

黃偉彰
Wei-Chang Huang, M.D., Ph.D.

Director, Division of Pulmonary Immunology & Infectious Disease, Department of Chest Medicine, Taichung Veterans General Hospital

The significant disparity exists between the known high cardiovascular risk in patients with chronic obstructive pulmonary disease (COPD) and the current under-recognition, under-diagnosis, and undertreatment of these risks in clinical practice. Patients with COPD have a much higher burden of cardiovascular disease (CVD) than the general population, yet standard CVD risk assessment tools, which are not developed or validated in this population, often underestimate their actual risk. This presentation highlights the need for improved awareness, more comprehensive monitoring, and targeted interventions by healthcare providers and specialists to reduce morbidity and mortality in this vulnerable patient.

12.14/SUN

Balancing triple roles: time management and self-positioning as a clinician, researcher, and leader

張晟瑜
Cheng-Yu Chang, M.D.

Attending Physician, Division of Pulmonary Medicine, Department of Internal Medicine, Far Eastern Memorial Hospital
Director of the Ultrasonic Endoscopy Center, Far Eastern Memorial Hospital

Clinicians in modern healthcare are increasingly expected to navigate multiple identities beyond bedside medicine. In addition to providing direct patient care, many physicians are also engaged in academic research and entrusted with leadership responsibilities within their institutions. Balancing these three demanding roles—clinician, researcher, and leader—poses unique challenges in time allocation, professional identity, and sustainable career development.

This presentation explores the dynamics of role integration, with emphasis on strategies for effective time management and self-positioning. From the clinician's perspective, direct patient care requires immediacy and clinical accuracy, often leaving limited flexibility for research or administrative tasks. As researchers, physicians must dedicate substantial effort to study design, data collection, and dissemination of findings, which demand long-term focus and persistence. In the leadership role, responsibilities extend to team coordination, mentorship, and strategic decision-making, requiring emotional intelligence and a broader vision beyond individual achievement.

Drawing on personal experience and case examples, this talk highlights practical methods to mitigate role conflict and enhance synergy. Key strategies include: setting clear priorities aligned with long-term professional goals; adopting evidence-based time management frameworks; leveraging collaboration and delegation; and redefining success beyond traditional metrics of clinical volume or publication count. Moreover, cultivating self-awareness and resilience is critical for navigating shifting expectations and avoiding burnout.

The discussion also addresses the evolving identity of physician-leaders in an era of precision medicine and multidisciplinary care. Rather than viewing clinical practice, research, and leadership as competing domains, these roles can be harmonized to generate mutual reinforcement. Clinical insights inform research hypotheses; research advances elevate the quality of care; and leadership fosters institutional environments where both can thrive.

Ultimately, achieving balance among these triple roles is less about equal distribution of time and more about purposeful alignment of values, priorities, and professional identity. By sharing lessons learned and reflective perspectives, this session aims to inspire fellow physicians and healthcare professionals to embrace their multifaceted roles, develop personalized strategies for time management, and position themselves to create meaningful and sustainable impact in medicine, science, and leadership.

12.14/SUN

Running Facebook pages - a pastime or a purpose for pulmonologists?
胸腔科醫師經營臉書，是在耍「肺」嗎?

陳志金
Kun-Ta Chou, M.D.

Director, Neurointensive Care Unit, Chi-Mei Medical Center

In the digital era, the medical profession extends far beyond the walls of hospitals and clinics. Pulmonologists are increasingly navigating social media platforms such as Facebook, where professional identity, patient engagement, and public health advocacy converge. This talk explores a timely question: Is managing a Facebook page merely a pastime for pulmonologists, or can it serve as a purposeful extension of professional practice?

Traditionally, physicians have relied on academic journals, conferences, and clinical encounters as their primary means of communication. Social media, however, has disrupted these channels, offering unprecedented opportunities for outreach. For pulmonologists, this means demystifying respiratory diseases, sharing the latest advances in treatment, and advocating for public health. What was once dismissed as “wasting time online” can, when managed intentionally, become a valuable tool for communication and trust-building between physicians and patients.

Social media provides a direct bridge to the public, allowing physicians to explain complex topics in accessible language, combat misinformation, and humanize the medical profession. A thoughtful online presence can foster trust, enhance visibility, and even inspire younger generations to consider careers in pulmonology. Unlike publishing in academic journals, writing on social media carries no “impact factor” — yet its societal impact may be just as significant, if not greater.

Nonetheless, risks remain. Professionalism, patient confidentiality, misinformation, and blurred personal–professional boundaries must be carefully managed. Without clear guardrails, an online presence may backfire, undermining credibility or leading to medico-legal challenges.

This talk argues that running a Facebook page should not be dismissed as trivial. Instead, it represents a unique opportunity for pulmonologists to fulfill their dual roles as clinicians and educators in the digital age. Far from being a pastime, it can be a purposeful, strategic tool for advancing both professional growth and public health. Attendees will leave with practical insights into how to harness social media thoughtfully—transforming “wasted lung power” into a meaningful voice that resonates across society.

701B 會議室

12.13/SAT

10:30–11:10 P29 Update of treatment in small cell lung cancer
何肇基 醫師

11:10–11:50 P30 Immune checkpoint inhibitors in mNSCLC: current practice and future perspectives
Prof. Terufumi Kato

12:00–13:20 P31 Satellite Symposium_ 羅氏大藥廠股份有限公司 / 台灣中外製藥股份有限公司
Elevating Survival: Strategic Decisions for Durable OS in mNSCLC ICI combination and ALK targeting
Dr. Hidenori Mizugaki

15:00–15:40 P32 Charting new waters with combination therapies in first-line EGFR-mutated NSCLC
Prof. Jii Bum Lee

15:40–16:20 P33 Update of treatment of post osimertinib in EGFR mutation NSCLC
林建中 醫師

16:40–18:00 P34 Satellite Symposium_ 美商默沙東藥廠股份有限公司
Immunotherapy: a paradigm shift in the treatment of advanced NSCLC
曾政森 醫師

From trials to treatment: Translating long-term clinical trial data into practice of peri-operative immunotherapy for resectable NSCLC
夏德椿 醫師

12.14/SUN

08:40–09:20 P36 Artificial stone associated occupational lung disease
陳啟信 醫師

09:20–10:00 P37 Air pollution related lung disorders: update
吳大緯 醫師

10:30–11:10 P38 Decoding COPD heterogeneity: Type 2 inflammation and the emerging role of biologics
Prof. Klaus F. Rabe

11:10–11:50 P39 Anti-cytokine biologics for asthma in adults
陳家弘 醫師

12:00–13:20 P40 Satellite Symposium_ 輝瑞大藥廠股份有限公司
Value of Pneumonia Prevention in Patients with Lung Diseases
馮嘉毅 醫師

Transforming ALK+ aNSCLC Management: From Molecular Insight to Clinical Impact
江起陸 醫師

13:30–14:10 P42 Minimizing exacerbations and OCS use in mixed airway disease through targeted biologic therapy
Prof. Naoya Tanabe

14:10–14:50 P43 Bronchiectasis evolution: past lessons, present practices, and future precision
陳彥甫 醫師

12.13/SAT

Update of treatment in small cell lung cancer

何肇基
Chao-Chi Ho, M.D., Ph.D.
Deputy Director, Internal Medicine, National Taiwan University Hospital

Small-cell lung cancer (SCLC) is a high-grade neuroendocrine carcinoma that arises predominantly in current or former smokers and is associated with an exceptionally poor prognosis. In the rare subset of patients diagnosed at a very early stage, treatment may include surgery followed by adjuvant platinum-based chemotherapy. More commonly, however, patients with early-stage or locally advanced disease are treated with concurrent radiation and platinum-based chemotherapy. For those with metastatic disease, systemic chemotherapy—with or without immunotherapy—remains the standard of care.

SCLC is initially highly sensitive to cytotoxic therapy. Up to 25% of patients with early-stage disease achieve long-term disease control with concurrent chemoradiotherapy (CRT), and response rates consistently exceed 60% even in patients with metastatic disease. Nevertheless, in most patients, these responses are short-lived, leading to a median survival of less than 2 years in early-stage disease and approximately 1 year in metastatic disease.

Over the past three decades, advances in second-line therapy for SCLC have been limited. Topotecan has long been the only globally accepted standard, while lurbinectedin and amrubicin have received approval in select countries. However, neither has demonstrated a substantial improvement in overall survival compared with topotecan in randomized phase 3 trials.

Tarlatamab, a bispecific T-cell engager, represents a promising novel approach. It targets delta-like ligand 3 (DLL3), expressed on the surface of SCLC cells, and simultaneously binds CD3 on T cells, thereby inducing tumor-cell lysis independent of major histocompatibility complex class I recognition. The DeLLphi-304 trial demonstrated survival benefit with tarlatamab, along with predominantly low-grade toxicities and favorable patient-reported outcomes, supporting its role as a treatment option for patients with SCLC that has progressed during or after initial platinum-based chemotherapy.

12.13/SAT

Immune checkpoint inhibitors in mNSCLC: current practice and future perspectives

Terufumi Kato, M.D.

Director, Clinical Research and Trials Center, Tokyo Metropolitan Komagome Hospital
Physician, Division of Thoracic Oncology, Tokyo Metropolitan Komagome Hospital

Immune checkpoint inhibitors (ICIs) have become central to first-line management of metastatic non-small cell lung cancer (mNSCLC), either as monotherapy or in combination with chemotherapy or anti-angiogenic agents. Recent clinical experience and guideline updates emphasize patient selection, biomarker-driven strategies, and real-world adoption patterns. The emergence of subcutaneous (SC) formulations may improve treatment convenience and clinic efficiency, offering additional flexibility in care delivery.

Future directions in immuno-oncology extend beyond formulation innovations, focusing on deeper translational profiling—such as transcriptomics and immunophenotyping—to refine predictive biomarkers and optimize treatment response. In parallel, several next-generation immune modulators (e.g., LAG-3, TIM-3) and antibody-based or cellular therapies (including bispecific antibodies, CAR-based approaches, and ADCs) are actively being investigated. These advances are expected to broaden patient eligibility and redefine the role of ICIs in mNSCLC management.

This session will review current ICI practices in mNSCLC, highlight innovations in treatment delivery, and explore emerging research shaping the next phase of immunotherapy.

Satellite Symposium_ 羅氏大藥廠股份有限公司 / 台灣中外製藥股份有限公司

Elevating Survival: Strategic Decisions for Durable OS in mNSCLC ICI combination and ALK targeting

Hidenori Mizugaki, M.D.

Chief physician, Department of Respiratory Medicine, Department of Respiratory Medicine

The therapeutic paradigm for advanced non-small cell lung cancer (NSCLC) has evolved, with durable overall survival (OS) emerging as the ultimate goal beyond short-term response. This satellite symposium explores the strategic decisions and clinical evidence that define OS optimization in two key domains: immuno-oncology (IO) combinations and ALK-positive NSCLC.

Part 1: The Strategic Value of Combination IO in Metastatic NSCLC

While immune checkpoint inhibitor (ICI) monotherapy remains foundational, the next frontier lies in rational multi-modal combinations. Comprehensive regimens integrating immunotherapy, chemotherapy, and anti-angiogenesis agents strategically overcome tumor microenvironment resistance, achieving unprecedented long-term survival in non-squamous histology and other poor-prognosis populations. This section will highlight the biological rationale and survival advantage that distinguish these combinations from dual-therapy standards, setting new efficacy benchmarks.

Part 2: Achieving Long-Term OS in ALK-Positive NSCLC

The ALK-positive subset represents a precision oncology success story. Sequential, generation-specific ALK tyrosine kinase inhibitors (ALK-TKIs) have dramatically extended survival outcomes. Discussion will focus on first-line treatment strategies, sequencing approaches, and CNS management to maximize progression-free and overall survival. The latest global and Japanese evidence will be reviewed to define realistic OS benchmarks in advanced ALK+ disease.

By integrating learnings from both IO and ALK domains, this session will provide clinicians with strategic, evidence-based insights to guide treatment selection and redefine what durable survival means for patients with advanced NSCLC.

12.13/SAT

Charting new waters with combination therapies in first-line EGFR-mutated NSCLC

Jii Bum (Joy) Lee, M.D., Ph.D.

Clinical Professor, Division of Medical Oncology, Department of Internal Medicine, Yonsei Cancer Center, Yonsei University College of Medicine

In non-small cell lung cancer (NSCLC) with nonsquamous histology, activating mutation in epidermal growth factor receptor (EGFR) accounts for 15-50% with a higher incidence observed in Asian population. Up to 90% of the EGFR mutations are identified as exon 19 deletions or exon 21 L858R substitutions. Previously, osimertinib, a third-generation EGFR-tyrosine kinase inhibitor (TKIs) was the standard of care approved by the U.S Food and Drug Administration in first-line treatment of EGFR-mutant, advanced NSCLC. In recent years, the treatment paradigm has rapidly evolved to include platinum doublet chemotherapy or amivantamab, an EGFR-MET bispecific antibody in combination with osimertinib. Compared to osimertinib monotherapy, the combination approach demonstrated statistically significant and clinically meaningful antitumor activity with improvement in both progression-free survival (PFS) and overall survival (OS). Despite the improvement in clinical outcomes of the combination regimen, managing toxicity remains a challenge in incorporating combination treatment in clinical settings.

Resistance to treatment also remains an inevitable challenge albeit maximizing upfront treatment options. Antibody-drug conjugates (ADCs), comprised of immunoconjugates that consists of monoclonal antibody tethered to a payload via a chemical linker, have been developed to combat resistance mechanism. One emerging target is trophoblast cell-surface antigen 2 (TROP-2) expression. Dato-DXd, an ADC composed of a humanized anti-TROP2 monoclonal antibody conjugated to a potent topoisomerase I inhibitor, which has demonstrated anti-tumor activity in previously treated EGFR-mutant NSCLC in TROPION-Lung01. Combination of Dato-DXd with osimertinib in front-line treatment is currently ongoing (NCT06350097).

12.13/SAT

Update of treatment of post osimertinib in EGFR mutation NSCLC

林建中
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Deputy superintendent, Tainan Hospital, Ministry of Health & Welfare, Tainan, Taiwan

Osimertinib has become the standard first-line treatment for EGFR-mutated non-small-cell lung cancer (NSCLC). However, resistance to therapy is virtually inevitable and is broadly classified into on-target, off-target (e.g., MET pathway alterations, histological transformation, other oncogene abnormalities), and unknown mechanisms. In cases of oligoprogression, combining local aggressive treatments with continued systemic therapy is recommended. Among these resistance mechanisms, MET pathway alterations—specifically MET amplification and c-Met protein overexpression—are notable. For patients exhibiting MET amplification and/or overexpression, dual-targeted regimens combining MET-TKIs with osimertinib (e.g., savolitinib plus osimertinib or tepotinib plus osimertinib) have demonstrated promising activity. Another emerging strategy involves telisotuzumab vedotin (Teliso-V) antibody-drug conjugate (ADC) combined with osimertinib, which specifically targets c-Met protein overexpression regardless of underlying gene alterations and has shown encouraging efficacy with a manageable safety profile. Additionally, amivantamab combined with chemotherapy is a significant treatment option, recommended as a preferred therapy for EGFR-mutated (Ex19del or L858R) NSCLC after progression on osimertinib, based on results from the phase III MARIPOSA-2 study. Amivantamab is an EGFR-MET bispecific antibody that works by ligand blocking, receptor degradation, and effector cell engagement—thereby bypassing intracellular mutations and effectively addressing MET-driven resistance. The chemotherapy component further covers resistance mechanisms independent of EGFR and MET pathways. In the MARIPOSA-2 study, amivantamab plus chemotherapy significantly improved objective response rate (ORR) and progression-free survival (PFS), including intracranial PFS compared to chemotherapy alone. The safety profile is manageable, with common adverse events being hematologic toxicities and EGFR-/MET-related side effects. For other resistance mechanisms—such as secondary EGFR mutations (e.g., C797S), EGFR amplification, histological transformation (e.g., small-cell lung cancer), or other driver gene abnormalities (e.g., HER2, KRAS, BRAF, RET, ALK, NTRK)—treatment strategies include chemotherapy, next-generation TKIs (especially for C797S mutations), or targeted therapies specific to the new alterations, often within clinical trials.

Immunotherapy: a paradigm shift in the treatment of advanced NSCLC

曾政森
Jeng-Sen Tseng, M.D.

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Over the past few years, the integration of immunotherapy with standard chemotherapy has revolutionized the first-line treatment of advanced non-squamous NSCLC. Once dominated by cytotoxic agents that offered limited survival benefit, this disease area now witnesses unprecedented long-term outcomes—transforming the expectation from short-lived responses to durable disease control and even long-term survival for a subset of patients.

This presentation will discuss how the combination of immune checkpoint blockade with platinum-based chemotherapy has changed the treatment paradigm, providing survival benefit across PD-L1 subgroups and maintaining efficacy even in patients with traditionally poor prognostic features, such as liver or brain metastases. The evolving understanding of biomarkers, safety management, and real-world applicability will also be explored, illustrating how clinical evidence translates into daily practice.

Ultimately, the journey of immunotherapy in lung cancer reflects more than just data—it represents a fundamental shift in how we define treatment success, moving from tumor shrinkage to long-term survival and improved quality of life for patients with advanced NSCLC.

Satellite Symposium_ 美商默沙東藥廠股份有限公司

From trials to treatment: Translating long-term clinical trial data into practice of peri-operative immunotherapy for resectable NSCLC

夏德椿
Te-Chun Hsia, M.D., Ph.D.

Deputy Head, Department of Internal Medicine, China Medical University Hospital

Recent advances in peri-operative immunotherapy have reshaped the management of resectable non–small cell lung cancer (NSCLC). Long-term follow-up data from pivotal studies have demonstrated durable event-free and overall survival benefits when immunotherapy is integrated into the surgical pathway—both before and after resection—marking a new era of multimodal treatment in early-stage disease.

This presentation will review key evidence that supports the role of peri-operative immune checkpoint blockade as a new standard of care and highlight the clinical relevance of sustained efficacy across diverse patient subgroups. Particular focus will be placed on interpreting long-term data to optimize treatment timing, patient selection, and multidisciplinary coordination between oncologists and thoracic surgeons.

By bridging trial results with real-world application, this session aims to explore how peri-operative immunotherapy not only improves long-term outcomes but also redefines treatment goals—from cure through surgery alone to durable immune-mediated control—ultimately offering new hope for patients with resectable NSCLC.

Artificial stone associated occupational lung disease

陳啟信
Chi-Hsien Chen, M.D., Ph.D.

Associate professor, Environmental and Occupational Medicine, National Taiwan University Hospital

In the past decade, artificial stone-related silicosis has rapidly emerged in Spain, Israel, Australia, the United States, and China. Patients often develop silicosis after short-term exposure (<10 years), presenting an accelerated disease course. Some cases progress rapidly and require lung transplantation, posing a major challenge for clinicians. In Australia, chest CT screening among artificial stone workers has revealed a silicosis prevalence of up to 30%.

Several severe silicosis cases caused by artificial stone dust exposure have already been reported in Taiwan. Local epidemiologic studies have demonstrated a clear dose-response relationship between exposure and pulmonary function decline: for every 1 mg/m^3-year increase in exposure, FVC and FEV$_1$ decrease by approximately 0.5%, accompanied by a significantly elevated risk of abnormality. Among high-exposure workers, more than 60% showed radiologic abnormalities, such as rounded opacities, ground-glass attenuation, or interstitial markings, on low-dose chest CT, while their chest X-rays remained largely normal. This indicates that conventional X-ray surveillance lacks sufficient sensitivity.

Radiologic manifestations of artificial stone silicosis may resemble chronic inflammatory or infectious lung diseases; therefore, accurate diagnosis requires integration of occupational exposure history and imaging findings. Further clinical observation has identified subpleural curvilinear lines, typically located within 0.5 cm beneath the pleura in the upper lobes, as a potential early and distinctive imaging feature of artificial stone silicosis that aids disease recognition and differentiation. In addition, mediastinal lymphadenopathy is commonly observed and reflects cumulative silica exposure.

Artificial quartz stone remains a popular material for interior decoration in Taiwan. Workers engaged in its manufacture and installation continue to face high exposure to respirable crystalline silica at hazardous concentrations. Looking ahead, clinical monitoring should adopt a multilayered approach: for high-risk groups, low-dose CT should replace conventional chest X-ray screening, while functional indices such as reductions in forced vital capacity and carbon-monoxide diffusion capacity should be closely tracked as early indicators of impairment. Meanwhile, the development of blood-based biomarkers linked to exposure and disease progression is urgently needed. Such biomarkers hold promise as auxiliary tools for diagnosis and prognosis in artificial stone-related silicosis.

Air pollution related lung disorders: update

吳大緯
Da-Wei Wu, M.D., Ph.D.

Assistant Professor, School of Post-Baccalaureate Medicine, College of Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan

Air pollution remains a major environmental determinant of health, contributing to the global burden of respiratory and systemic diseases. Taiwan offers a unique context for evaluating exposure-related health outcomes and the effectiveness of policy and clinical interventions. Recent evidence highlights that long-term exposure to ambient pollutants, particularly carbon monoxide (CO), particulate matter (PM_{10}, $PM_{2.5}$), and nitrogen dioxide (NO_2), is associated with traditional cardiopulmonary outcomes and increased risk of osteoarthritis, suggesting broader systemic impacts. Epigenetic clock analyses further demonstrate that $PM_{2.5}$ and ozone exposure accelerate biological aging, providing mechanistic insight into premature health decline. Alarmingly, children under five in high-pollution municipalities experienced a 12% increase in mortality, underscoring their vulnerability.

At the population level, Taiwan ranked 45th worldwide in $PM_{2.5}$ exposure in 2023, with Changhua, Tainan, and Donggang among the most polluted regions. Although concentrations of CO, NOx, PM_{10}, $PM_{2.5}$, and SO_2 have declined over recent decades, ozone mitigation remains challenging. Modeling studies project that achieving the WHO guideline of 5 $\mu g/m^3$ $PM_{2.5}$ could prevent up to 3.2 million disability-adjusted life years (DALYs) and save US$3.7 billion in healthcare costs by 2050, with Kaohsiung City expected to benefit most. The 2012 Indoor Air Quality Management Act improved $PM_{2.5}$ levels in hospitals and libraries, but schools and public transport facilities remain poorly controlled, with elevated formaldehyde and CO_2 levels.

Emerging technologies are offering innovative solutions to mitigate the impact of air pollution on health. Gradient boosting machine learning models enhanced the accuracy of 24-hour $PM_{2.5}$ forecasts, especially when industrial emission data were included, providing a valuable tool for environmental health prediction and policy planning. On the clinical side, randomized controlled trials of high-efficiency particulate air (HEPA) purifiers demonstrated reductions in indoor $PM_{2.5}$ concentration and health benefits among COPD patients, including improved quality of life, fewer exacerbations, and lower systemic inflammation. However, these effects varied with patient adherence, duration of use, and background conditions, suggesting that individualized strategies are needed to maximize impact. In parallel, sustainability initiatives are being integrated into daily healthcare practice. A notable example is the inhaler recycling program in Kaohsiung, which achieved nearly 90% return within three months. This program reduced about 20.06 kg of CO_2e emissions from plastic waste and improved medication adherence, as patients returning empty inhalers were simultaneously monitored through the WaCare App. This closed-loop system allowed physicians to track real-world inhaler use, reinforce technique, and enhance continuity of care. Collectively, these advances highlight how technology-driven forecasting, clinical interventions, and sustainable healthcare practices can synergistically reduce the burden of air-pollution–related lung disorders.

In conclusion, the Taiwanese experience illustrates multifaceted challenges of air pollution in lung health. While national policies have yielded progress, persistent risks from $PM_{2.5}$ and ozone continue to threaten population health, particularly among children and the elderly. Advances in AI-based forecasting, health economic modeling, clinical interventions, and sustainable healthcare initiatives provide valuable strategies to mitigate the impact of air pollution–related lung disorders. These integrated approaches highlight the importance of aligning public health policy, clinical care, and environmental responsibility in advancing respiratory health.

12.14/SUN

Decoding COPD heterogeneity: Type 2 inflammation and the emerging role of biologics

Klaus F. Rabe, M.D., Ph.D.

Pneumology, LungenClinic Grosshansdorf

In recent years, asthma management has advanced rapidly, with the emergence of biologics targeting various pathways and numerous novel agents currently under clinical investigation. Biologics have also become a central focus in international congresses. This session will explore the latest developments in asthma treatment, with a particular emphasis on the evidence, clinical impact, and applications of biologics in small airways and airway remodeling.

Regarding treatment goals, recent studies have highlighted the concept of clinical remission, encompassing improvement in exacerbation control, reduction in corticosteroid use, lung function improvement, and enhanced symptom management — all key indicators of optimal asthma control. How can physicians select the most appropriate biologic to achieve these outcomes?

This session will integrate theoretical insights with clinical practice to provide participants with a comprehensive and up-to-date understanding of modern asthma care.

12.14/SUN

Anti-cytokine biologics for asthma in adults

陳家弘
Chia-Hung Chen, M.D., Ph.D.

Physician, Department of internal medicine, Division of pulmonary and respiratory care medicine, China medical university hospital

Severe asthma represents a heterogeneous clinical entity characterized by chronic airway inflammation, airflow limitation, and frequent exacerbations despite optimal inhaled therapy. Increasing understanding of asthma's immunopathology, particularly the central role of type 2 (T2) inflammation, has led to the development of targeted biologic therapies that neutralize key cytokines and their signaling pathways. Anti-cytokine biologics have transformed the management of adults with severe asthma, offering precision treatment tailored to underlying endotypes.

Currently approved biologics primarily target interleukin (IL)-5, IL-4, and IL-13 pathways, which are pivotal in eosinophilic airway inflammation. Mepolizumab, reslizumab, and benralizumab inhibit IL-5 or its receptor, leading to a reduction in eosinophil numbers and associated exacerbations. Dupilumab, an IL-4 receptor α antagonist, blocks signaling of both IL-4 and IL-13, resulting in broad suppression of T2-driven inflammation and improvement in lung function and symptom control. Tezepelumab, an anti-thymic stromal lymphopoietin (TSLP) monoclonal antibody, extends this paradigm by targeting an upstream epithelial cytokine that drives both T2 and non-T2 inflammation, thereby benefiting a broader range of patients irrespective of eosinophil count.

Patient selection for biologic therapy is guided by biomarkers such as blood eosinophil counts, serum periostin, and fractional exhaled nitric oxide (FeNO), which help identify T2-high asthma phenotypes. Emerging evidence also suggests potential utility in biomarker combinations and longitudinal monitoring to optimize therapeutic response. The introduction of these biologics has reduced oral corticosteroid dependence, decreased exacerbation rates, and significantly improved quality of life in adults with severe asthma.

Nevertheless, challenges remain. Non-T2 asthma continues to lack effective biologic options, and the long-term effects of cytokine modulation on immune homeostasis require further study. Cost, access, and adherence also represent real-world barriers. Ongoing research into novel targets such as IL-33, IL-25, and other alarmins, as well as exploration of personalized treatment algorithms, may further refine asthma care.

In conclusion, anti-cytokine biologics have redefined severe asthma management in adults by providing precision therapy based on immunologic endotypes. Continued advances in biomarker discovery and understanding of airway immunopathogenesis promise to expand their efficacy and applicability across diverse asthma phenotypes.

Satellite Symposium_ 輝瑞大藥廠股份有限公司

Value of Pneumonia Prevention in Patients with Lung Diseases

馮嘉毅
Jia-Yih Feng, M.D., Ph.D.

Chief, Division of Pulmonary Immunology & Infectious Diseases, Department of Chest Medicine, Taipei Veterans General Hospital

Pneumonia kept leading the third place of cause of death in Taiwan since 2016. People with older age and comorbidities are associated with higher risk of pneumonia development. The consequences of pneumonia will lead to hospitalization, mechanical ventilation, ICU admission and even mortality. However, the impact of pneumonia can be even longer. Pneumonia can worsen the underlying comorbidities, and it would take months to recover. In this case, pneumonia prevention serves as an important role in holistic care, especially in super-aging society. One of the most under-estimated pathogens of pneumonia is Respiratory syncytial virus (RSV). RSV causes infections of the lungs and respiratory tract. RSV can cause severe infection in some people, including babies 12 months and younger (infants), older adults, people with heart and lung disease, or anyone with immunocompromised conditions. The structure of RSV pre-fusion protein was stabilized in 2013, and it's found it can trigger much higher neutralizing antibody titer. RSVpreF protein is a bivalent, non-adjuvanted protein subunit vaccine. Currently it's licenced by TFDA for maternal immunization and adult over 60 y.o. In the phase 3 RCT of population over 60 y.o., which was called RENOIR, it shown comparable safety profile with placebo group. And the efficacy of RSV-LRTI was 88.9% for 1st season, 77.8% for 2nd season, and 81.5% for overall two seasons. Current Taiwan ACIP recommend RSVpreF protein for pregnant woman during 28th-36th gestational weeks, all adults over 75 y.o. and adult over 60 y.o. with risk conditions. In addition to RSV, pneumococcus was one of the most common pathogen in community-acquired pneumonia. Currently, PCV13 is reimbursed by national immunization program by CDC for those over 65-year-old and 18 to 64-year-old with high-risk conditions. In addition, PCV20 is also available in Taiwan. Patients aged 18 to 64 year with chronic medical conditions are eligible for PCV20 based on recommendation from US ACIP.

Satellite Symposium_ 輝瑞大藥廠股份有限公司

Transforming ALK+ aNSCLC Management: From Molecular Insight to Clinical Impact

江起陸
Chi-Lu Chiang, M.D.

Attending physician, Department of Chest Medicine, Taipei Veterans General Hospital

The treatment landscape of ALK-positive advanced non-small cell lung cancer (ALK+ aNSCLC) has evolved rapidly, moving from early targeted approaches to the transformative impact of third-generation ALK inhibitors. These agents have set a new benchmark in efficacy, CNS control, and quality of life, reshaping expectations for long-term outcomes. This presentation will review how clinical experience with third-generation TKIs has redefined the management of ALK+ aNSCLC, emphasizing practical approaches to optimize treatment benefits and patient care. Looking forward, we will explore the next wave of innovation in ALK therapy—including novel TKIs and strategies to overcome resistance—aiming to further extend survival and sustain the meaningful progress achieved in recent years.

12.14/SUN

Minimizing exacerbations and OCS use in mixed airway disease through targeted biologic therapy

Naoya Tanabe, M.D., Ph.D.

Lecturer, Respiratory Medicine, Kyoto University

The coexistence of asthma and chronic obstructive pulmonary disease (COPD), termed mixed airway disease or asthma-COPD overlap (ACO), presents significant therapeutic challenges in clinical practice. While inhaled corticosteroid/long-acting beta-2 agonist (ICS/LABA) combination therapy remains the first-line treatment, many patients continue to experience exacerbations and persistent symptoms despite escalation to triple therapy with ICS/LABA/long-acting muscarinic antagonist (LAMA). A substantial proportion of these patients require repeated courses of oral corticosteroids (OCS) and should be treated with biologics.

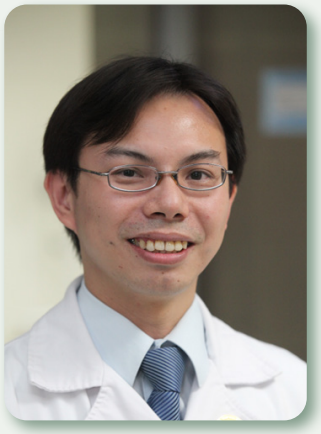
In Japan, five biologics—omalizumab, mepolizumab, benralizumab, dupilumab, and tezepelumab—are approved for severe asthma, while dupilumab has recently gained approval for specific COPD phenotypes. The selection of appropriate biologic therapy requires comprehensive phenotyping, including assessment of blood eosinophil counts, fractional exhaled nitric oxide levels, and evaluation of type 2 inflammatory comorbidities such as chronic rhinosinusitis with nasal polyps and atopic dermatitis.

Targeted biologic therapy can reduce exacerbation rates, minimize OCS dependence, and improve quality of life in selected patients with mixed airway disease. This presentation will review Japanese guidelines for mixed airway disease management, focusing on biologic selection based on clinical phenotyping and biomarker profiles. I will discuss evidence showing biologics' effectiveness in reducing exacerbations and OCS burden, alongside strategies for monitoring response and achieving clinical remission. Special attention will be given to airway mucus plugs, increasingly recognized as a treatable trait in patients with asthma and COPD. Through targeted therapy guided by precision medicine, we can minimize exacerbations, reduce OCS exposure, and improve long-term outcomes for patients with this complex respiratory phenotype.

12.14/SUN

701B 會議室

Bronchiectasis evolution: past lessons, present practices, and future precision



陳彥甫
Yen-Fu Chen, M.D., Ph.D.
Director of the Outpatient Department, Yunlin Branch, National Taiwan University Hospital
Clinical Assistant Professor, College of Medicine, National Taiwan University

Bronchiectasis, long regarded as an orphan and neglected disease, illustrates how shifts in medical attention reshape clinical landscapes. Once overshadowed by asthma and COPD, it was historically defined by recurrent infection and airway destruction within the “vicious vortex” paradigm. Early lessons emphasized the consequences of underrecognition, diagnostic delay, and fragmented research efforts, highlighting the urgent need for systematic study, global registries, and multidisciplinary collaboration to move the field forward.

Current management has evolved through evidence-based guidelines and large-scale registry insights. Treatment remains anchored in infection control, airway clearance, and exacerbation prevention, with long-term macrolides and inhaled antibiotics offering meaningful benefit. Increasingly, bronchiectasis is recognized as a heterogeneous syndrome defined by “treatable traits” rather than a uniform entity. Advances in microbiome profiling, biomarker discovery, and multiomics have delineated inflammatory endotypes—neutrophilic, eosinophilic, or mixed—that inform therapy. Landmark clinical trials, such as those targeting dipeptidyl peptidase-1 inhibition with brensocatib, have validated neutrophil-directed strategies, demonstrating that novel anti-inflammatory approaches can modify disease trajectory.

The next phase lies in transforming bronchiectasis care from descriptive recognition to predictive and personalized medicine. Integration of microbiome–immune–structural signatures, advanced imaging, and artificial intelligence promises a new framework to stratify risk, anticipate progression, and tailor interventions. Beyond biology, future research must embed patient-centered outcomes, comorbidities, and quality-of-life priorities into therapeutic design. By bridging mechanistic discovery with holistic care, bronchiectasis research can serve as a model of how precision medicine reshapes chronic airway disease, ultimately delivering not only longer survival but also healthier lives for patients worldwide.

701C 會議室

12.13/SAT

10:30-11:10 P45 The current status and future development of interventional EBUS at Germany
Prof. Sammy Onyancha

11:10-11:50 P46 A review of key innovations from the 2025 APCB
李適鴻 醫師

12:00-13:20 P47 Satellite Symposium_ 荷商葛蘭素史克藥廠股份有限公司
Refining Treatment Algorithms in Severe Asthma
陳彥甫 醫師

15:00-15:40 P48 Sleep apnea pharmacology
Prof. Atul Malhotra

15:40-16:20 P49 Medications for obstructive sleep syndrome body weight reduction
孫傳硯 醫師

16:40-18:00 P50 Satellite Symposium_ 台灣百靈佳殷格翰股份有限公司
Real-World Treatment Landscape of EGFRm+ NSCLC: Taiwan Insights on TKI Utilization and Outcomes
陳崇裕 醫師

From Trial Evidence to Pronostic Factors: Local Consolidation Therapy in Advanced NSCLC
陳沛興 醫師

12.14/SUN

08:40-09:20 P52 The evolving treatment landscape of pulmonary fibrosis
Prof. Toby Maher

09:20-10:00 P53 Integrating Real-World evidence into personalized management of IPF
Prof. Jin Woo Song

10:30-11:10 P54 Current concepts of pulmonary arterial hypertension management - From global guideline to Japan's clinical practice
Prof. Shiro Adachi

11:10-11:50 P55 Unmet needs of the current treatment landscape of PH-ILD and international experience
Prof. Vincent Cottin

12:00-13:20 P56 Satellite Symposium_ 荷商葛蘭素史克藥廠股份有限公司
Path to Clinical Remission in Asthma with SITT: The Japan Experience
Dr. Naoya Tanabe

13:30-14:10 P57 CPET empowers the clinician-from history to deconditioning and dyspnea
莊銘隆 醫師

14:10-14:50 P58 CPET-guided pulmonary rehabilitation: insights from cancer, post-COVID, ILD, and PH survivors
楊聰明 醫師

12.13/SAT

The current status and future development of interventional EBUS at Germany

Sammy Onyancha, M.D.

Head of the Endoscopy Department, St. Elisabeth Hospital in Frankfurt, Germany

EDUCATION

Victor Babes University of Medicine and Pharmacy, Timisoara, Romania
2008 - 2014
Bachelors in General Medicine

WORK EXPERIENCE

Klinikum Memmingen, Memmingen, Germany
December 2015 – December 2016
- Residency in internal medicine

Ketteler Krankenhaus, Offenbach, Germany
April 2017 – April 2021
- Completion of internal medicine residency.
- Start of residency in pulmonology

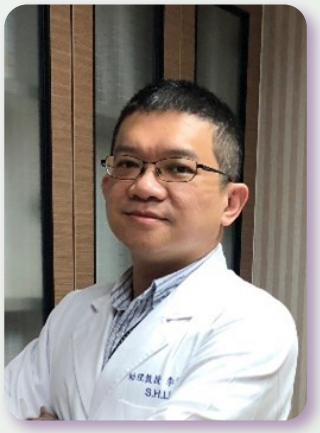
Klinik Rotes Kreuz, Frankfurt, Germany
May 2021 – June 2023
- Specialization in interventional pulmonology
- Consultant in pulmonology from April 2022

St. Elisabethen Krankenhaus, Frankfurt, Germany
0ctober 2023 - Present
- Head of endoscopy
- Senior consultant for internal medicine and pulmonology

EXPERTISE

- Team Management
- Clinical research
- Advanced endoscopic modalities
- Therapeutic bronchoschopic interventions
- Diagnostic and therapeutical modalities in pleural diseases
- Advanced thoracic ultrasound

A review of key innovations from the 2025 APCB

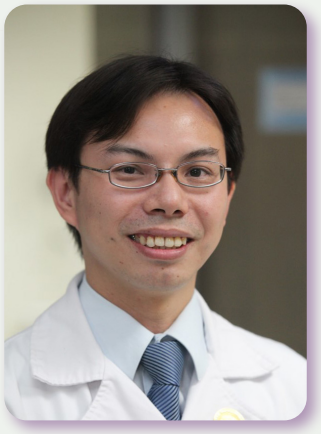


李適鴻
Shih-Hong Li, M.D.

Attending physician, Thoracic Medicine, Chang Gung Memorial Hospital, Linkou

The 2025 APCB was successfully held this year and provided a deep dive into several specialized areas. We will review and summarize these key topics during this presentation:

* Advanced Bronchoscopy: Focusing on ultrathin bronchoscopy and EBUS for sampling pulmonary and mediastinal lesions.
* Navigational Technology: Highlighting modern guidance systems like EMN bronchoscopy, VBTI, and Archimedes to improve diagnostic accuracy.
* Airway Management: Discussing the roles of rigid and flexible bronchoscopy in treating central airway obstruction and tumors.
* Tumor Ablation: Covering techniques such as transbronchial microwave, radiofrequency ablation, and percutaneous lung cryoablation.
* Pleural Disease: Reviewing patient preparation, pleuroscopy techniques, and the use of thoracic ultrasound for diagnosis and biopsy.



Refining Treatment Algorithms in Severe Asthma

陳彥甫
Yen-Fu Chen, M.D., Ph.D.

Attending Physician, Department of Pulmonary Medicine, Yunlin Branch, National Taiwan University Hospital

Severe asthma is a complex and heterogeneous disease driven largely by type 2 (T2) inflammation, characterized by eosinophilic airway inflammation, elevated FeNO, and increased IgE. Recent advances in biologic therapies have transformed disease management; however, selecting the most appropriate biologic remains a clinical challenge.

Choosing therapy according to T2 biomarkers is now central to precision medicine in severe asthma. Among these biomarkers, blood eosinophil count (BEC) stands out as the most reliable and widely available indicator. Elevated BEC reflects ongoing eosinophilic airway inflammation, which is strongly associated with higher exacerbation frequency, accelerated lung function decline, and poor asthma control. Indeed, the higher the blood eosinophil count, the worse the outcomes in asthma.

At the core of this pathophysiology is interleukin-5 (IL-5), the pivotal cytokine responsible for eosinophil maturation, activation, and survival. IL-5 orchestrates key pathological processes underlying T2 inflammation—including mucus hypersecretion, airway remodeling, and corticosteroid resistance—making the IL-5 pathway an attractive and validated therapeutic target.

To translate these insights into daily practice, clinicians may apply the ABCDEF framework—Age, Blood eosinophils, Comorbidities, Dependence on oral corticosteroids, Exacerbation history, and lung Function—to guide biologic selection. This structured approach enables the alignment of individual patient profiles with the most suitable targeted therapy, ensuring both efficacy and long-term disease control.

In summary, refining treatment algorithms in severe asthma requires integrating biomarker-driven decision-making, prioritizing blood eosinophil evaluation, and recognizing the central role of IL-5 in disease progression. With this precision framework, clinicians can move closer to true disease modification rather than symptom management.

12.13/SAT

Sleep apnea pharmacology

Atul Malhotra, M.D.

Research Chief, Division of Pulmonary and Critical Care Medicine, University of California San Diego

701C 會議室

12.13/SAT

Medications for obstructive sleep syndrome body weight reduction

孫傳硯
Chuan-Yen Sun, M.D.

Attending physician, Department of Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwan

Obstructive sleep apnea (OSA) is a relatively common sleep disorder characterized by repetitive narrowing or obstruction of the upper airway, including the nasal cavity, pharynx, and larynx, during sleep. OSA can cause a variety of symptoms and/or complications, such as excessive daytime sleepiness, reduced concentration, hypertension, type II diabetes, and stroke. Obesity is an important risk factor for OSA and is characterized by the abnormal accumulation of fat in the body, including the upper airway. Obesity was associated with 1) increased collapsibility; 2) inadequately compensated OSA upper airway function; and 3) increased loop gain among Asian patients with OSA. Weight loss is the preferred choice for obese patients with OSA and has been proven effective in reducing AHI. Various therapeutic options exist for patients with overweight or obesity, including diet, behavioral modifications, exercise, pharmacological treatments, and surgical procedures. However, their results are relatively unsatisfactory, and pharmacotherapy and bariatric surgery are generally implemented in obese patients with sleep apnea. After pharmacological treatments, there is not only decreased body weight, and AHI but also decreased the arousal threshold, loop gain, collapsibility and increased the airway compensation.

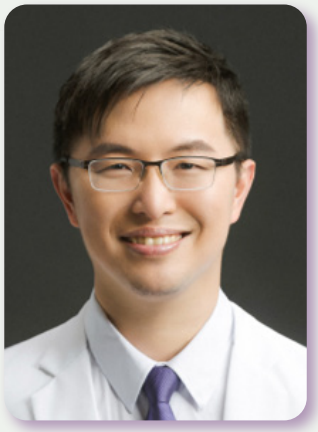
Satellite Symposium_ 台灣百靈佳殷格翰股份有限公司

Real-World Treatment Landscape of EGFRm+ NSCLC: Taiwan Insights on TKI Utilization and Outcomes

陳崇裕
Chung-Yu Chen, M.D., Ph.D.
Medical Executive Assistant, National Taiwan University Hospital Yunlin Branch Yunlin, Taiwan
Associate Professor, College of Medicine, National Taiwan University
Attending Physician, Internal Medicine, National Taiwan University Hospital Yunlin Branch Yunlin, Taiwan

The treatment landscape of EGFR mutation–positive NSCLC is increasingly shaped by both multinational clinical data and Taiwanese real-world evidence. This presentation will showcase Taiwan's experience with TKI utilization and outcomes, while integrating insights from international real-world cohorts and pivotal studies. By bridging local and international perspectives, it highlights differences in mutation subtypes, treatment sequencing, and survival outcomes, offering a comprehensive framework to refine patient management.

Satellite Symposium_ 台灣百靈佳殷格翰股份有限公司



From Trial Evidence to Pronostic Factors: Local Consolidation Therapy in Advanced NSCLC

陳沛興
Wei-Chang Huang, M.D.
Assistant Professor, College of Medicine, National Taiwan University
Attending Physician, Division of Thoracic Surgery, Department of surgery, National Taiwan University Hospital

In advanced EGFR-mutant metastatic non–small cell lung cancer (NSCLC), integrating early resection of the primary tumour alongside EGFR-tyrosine kinase inhibitor (TKI) therapy offers promising outcomes. Data from a phase II trial show that patients undergoing surgical resection of the primary tumour after initial TKI therapy experienced a significantly prolonged progression-free survival (hazard ratio 0.48; 95% CI 0.25–0.93; p = 0.031). This approach not only reduces tumour burden but also enables postoperative molecular analysis, potentially guiding more precise management of resistant clones. The results indicate a new horizon for combining local therapy with systemic EGFR-TKIs, though follow-up for long-term survival outcomes is still ongoing.

12.14/SUN

The evolving treatment landscape of pulmonary fibrosis

Toby Maher, M.D., Ph.D.

Professor of Clinical Medicine and Director of Interstitial Lung Disease, Department of Medicine, Keck School of Medicine, University of Southern California

Pulmonary fibrosis encompasses a group of progressive interstitial lung diseases characterized by scarring of the lung tissue, leading to respiratory failure and significant morbidity. Over the past decade, the treatment landscape for pulmonary fibrosis—particularly idiopathic pulmonary fibrosis (IPF) and connective tissue disease-associated ILD—has evolved rapidly. Advances in molecular diagnostics, imaging, and biomarker discovery have enabled earlier and more accurate diagnosis. The introduction of antifibrotic therapies has transformed patient outcomes, while ongoing clinical trials continue to explore novel agents and combination strategies. This presentation will review the latest evidence from pivotal studies and discuss the integration of personalized medicine, multidisciplinary care, and digital health tools in optimizing management. The session will also address emerging challenges and future directions in the quest to improve survival and quality of life for patients with pulmonary fibrosis

12.14/SUN

Integrating Real-World evidence into personalized management of IPF

Jin Woo Song, M.D., Ph.D.

Professor, Pulmonary and Critical Care Medicine, University of Ulsan College of Medicine, Asan Medical Center, Seoul, Republic of Korea

Idiopathic pulmonary fibrosis (IPF) is a relentlessly progressive and fatal fibrosing interstitial lung disease characterized by heterogeneous clinical courses and variable responses to therapy. Although randomized controlled trials have confirmed the efficacy of antifibrotic agents such as nintedanib and pirfenidone, their restrictive inclusion criteria exclude many real-world patients with advanced age, comorbidities, or overlapping phenotypes, thereby limiting generalizability. Real-world evidence (RWE) derived from multicenter registries and longitudinal cohort studies has become essential to complement trial data and guide personalized management strategies. Recent registry analyses consistently demonstrate that early initiation of antifibrotic therapy is associated with slower decline in forced vital capacity (FVC), reduced frequency of acute exacerbations, and improved survival compared with delayed or no treatment. Comparative effectiveness data indicate similar real-world outcomes between nintedanib and pirfenidone, suggesting that treatment selection should be individualized according to comorbidity profiles, tolerability, and patient preference rather than drug efficacy alone. Importantly, RWE reveals that dose reductions—particularly with nintedanib—are frequent and do not appear to compromise therapeutic benefit, underscoring the value of pragmatic dose adjustments to maintain adherence. Furthermore, switching between antifibrotic agents following intolerance or progression has been shown to prolong survival relative to discontinuation, providing an evidence-based strategy for continuous disease control. Phenotypic analyses highlight that patients with combined pulmonary fibrosis and emphysema or reduced baseline diffusing capacity (DLCO) experience poorer outcomes yet still derive meaningful benefit from antifibrotic therapy. In parallel, the integration of home spirometry and digital symptom monitoring into clinical practice enables earlier detection of progression and facilitates timely treatment modification. Collectively, RWE supports a paradigm shift toward individualized, dynamic management of IPF, emphasizing early intervention, flexible dosing, proactive switching, and risk-stratified monitoring. Establishing national and institutional IPF registries to capture treatment patterns, adverse events, and long-term outcomes will further close the gap between controlled trials and everyday practice, ultimately translating population-level evidence into personalized patient care.

12.14/SUN

Current concepts of pulmonary arterial hypertension management - From global guideline to Japan's clinical practice

Shiro Adachi, M.D., Ph.D.

Assistant Professor, Department of Cardiology, Nagoya University Hospital

Pulmonary arterial hypertension (PAH) is a serious, progressive disease marked by high pulmonary arterial pressure, leading to right heart failure and increased mortality. Despite advances in understanding its mechanisms, managing PAH remains complex and requires a multidisciplinary approach. In this presentation, Dr. Shiro Adachi, a leading Japanese cardiologist, will discuss current concepts in PAH management, connecting international guidelines with Japan's clinical practices.

The talk will start with an overview of key international guidelines, including the ESC/ERS recommendations and the 7th WSPH consensus, focusing on diagnosis, risk assessment, and stepwise treatment strategies. Emphasis will be placed on early diagnosis, thorough hemodynamic evaluation, and personalized treatment to improve outcomes.

Dr. Adachi will then share insights into Japan's unique clinical approach, influenced by local healthcare systems and available therapies. He will highlight how guideline-based treatments—such as pulmonary vasodilators, prostacyclin analogs, endothelin receptor antagonists, and phosphodiesterase-5 inhibitors—are integrated into practice. The importance of combination therapy, timely escalation, and regular monitoring will also be discussed.

The presentation will include recent Japanese clinical trial data and real-world experiences, offering practical tips for managing complex cases, including those with comorbidities or advanced disease. The session aims to provide clinicians with a clear understanding of current PAH management, tailored to Japan's context, while encouraging a global perspective to improve patient care and quality of life.

12.14/SUN

Unmet needs of the current treatment landscape of PH-ILD and international experience

Vincent Cottin, M.D., Ph.D.

Professor of Respiratory Medicine, Department of Respiratory Medicine, National Reference Center for Rare Pulmonary Diseases, Louis Pradel University Hospital, Lyon, France

Pulmonary hypertension associated with interstitial lung disease (PH-ILD) represents a complex and often under-recognized clinical entity with significant morbidity and mortality. This keynote presentation aims to provide a comprehensive overview of PH-ILD by raising disease awareness, highlighting unmet clinical needs, and discussing the trend of cross-disciplinary collaboration. Special attention will be given to the diagnostic challenges posed by overlapping symptoms with underlying ILD, and the crucial role of right heart catheterization (RHC) in achieving an accurate diagnosis. The session will review current therapeutic limitations and focus on recent advancements with a particular focus on the INCREASE study on inhaled treprostinil, exploring its mechanism of action, efficacy, and safety data. In addition to treatment updates, practical aspects of patient care and management will be discussed, including referral patterns, multidisciplinary care models, and the value of shared clinical consensus. International strategies and case examples will illustrate how integrated approaches can improve outcomes in PH-ILD. The session will also briefly touch on emerging trends in the research of idiopathic pulmonary fibrosis (IPF) and progressive pulmonary fibrosis (PPF), providing a broader context to disease management in fibrosing lung conditions. This presentation aims to equip clinicians with both foundational understanding and practical insights to enhance PH-ILD recognition, diagnosis, and care.

Path to Clinical Remission in Asthma with SITT: The Japan Experience

Naoya Tanabe, M.D.

Assistant Professor, Department of Respiratory Medicine Graduate School of Medicine, Kyoto University

Despite the progress in asthma management, a substantial proportion of patients treated with ICS/LABA combinations remain uncontrolled, facing persistent symptoms and exacerbations that compromise their quality of life. Moving beyond symptom relief, the concept of clinical remission has recently emerged as a new therapeutic goal — representing sustained control of symptoms, prevention of exacerbations, and stabilization of lung function.

In this session, Dr. Tanabe from Japan will share the Japanese clinical experience in managing ICS/LABA-uncontrolled asthma patients, exploring real-world strategies, patient characteristics, and treatment outcomes that pave the way toward clinical remission. Through case insights and evidence-based discussion, this presentation aims to provide practical perspectives for optimizing treatment pathways and improving long-term disease control in asthma management.

12.14/SUN

CPET empowers the clinician-from history to deconditioning and dyspnea

莊銘隆
Ming-Lung Chuang , M.D., Ph.D.
Attending physician, Internal Medicine, National Taiwan University Hospital

Cardiopulmonary exercise testing (CPET) should be one of the key missions of our pulmonology peers in Taiwan. Its roots trace back to the era of National Labor Insurance in late 1995, when CPET was required to include measurements of $V'O_2$, $V'CO_2$, and V'E. After the introduction of National Health Insurance, CPET implementation was adapted according to hospital levels. However, $V'O_2$ max measurement and the 6-minute walk distance have remained essential quality control indicators for cardiopulmonary rehabilitation programs in primary care institutions.

To increase awareness of pulmonary physiology, here are several easy-to-learn yet important tips for interpreting pulmonary physiology, such as the Wasserman number and the assessment of pulmonary shunt levels refractory to high O_2 breathing. Standard lung function tests, while useful, are not comprehensive—they do not evaluate dead-space fraction, perfusion (Q'), ventilation–perfusion ratio, or control of breathing. CPET can partially bridge this gap.

Moreover, CPET is the only medical tool that can directly identify muscle deconditioning, a condition common in the general population and even more prevalent among individuals with chronic diseases or recent hospitalization. In a single test, CPET can reveal multiple system dysfunctions causing dyspnea and exercise intolerance, detect ischemic heart disease missed by a standard exercise ECG, and indicate pulmonary vasculopathy with or without shunting. CPET also plays a role in prognosis evaluation for many cardiopulmonary diseases.

For example, seven patients may present with the same symptoms—dyspnea or exercise intolerance—yet CPET can reveal entirely different underlying causes: 1) COPD with muscle deconditioning; 2) CAD post-stenting with restenosis; 3) Postoperative pulmonary embolism; 4) Anemia from chronic immunotherapy for rheumatoid arthritis; 5) Osler–Weber–Rendu syndrome; 6) VSD with Eisenmenger syndrome; 7) Hepatopulmonary syndrome. Knowledge is power—and CPET empowers clinicians.

CPET-guided pulmonary rehabilitation: insights from cancer, post-COVID, ILD, and PH survivors

楊聰明
Tsung-Ming, Yang M.D., Ph.D.
Attending physician, Internal Medicine, National Taiwan University Hospital

Anemia is highly prevalent among critically ill patients in the ICU, resulting from surgical blood loss, ongoing bleeding, frequent laboratory sampling, or underlying medical conditions. The presence of anemia compromises oxygen delivery to tissues and increases myocardial oxygen demand, often necessitating a higher cardiac output to maintain perfusion. Epidemiologic studies suggest that 30–50% of ICU patients require red blood cell (RBC) transfusion during hospitalization. Although transfusion can be lifesaving, it is also associated with significant risks, including transfusion reactions, infection, transfusion-related acute lung injury, and fluid overload. Over the past two decades, numerous randomized trials have examined liberal versus restrictive transfusion strategies in both general ICU cohorts and specific patient subgroups, such as those with sepsis, acute coronary syndrome, acute brain injury, gastrointestinal bleeding, and postoperative cardiac surgery. The accumulated evidence largely supports restrictive transfusion strategies for the majority of critically ill patients, reducing unnecessary exposure to transfusion-related complications without compromising outcomes. However, the unique physiological vulnerability of the injured brain and heart raises important questions about whether transfusion thresholds derived from general ICU populations are appropriate for these subgroups. This presentation will review the current evidence, highlight ongoing controversies, and discuss the relevant evidence.

701F 會議室

12.13/SAT

08:40-09:00 **P61** Neoadjuvant immunotherapy strategies for resectable non-small cell lung cancer: real world data
周品立 醫師

09:00-09:20 **P62** Impact of neoadjuvant therapy on pathologic complete response and clinical outcomes in surgically resected non-small cell lung cancer
林冠勳 醫師

09:20-09:40 **P63** Surgical experiences with neoadjuvant immunochemotherapy for locally advanced lung cancer
黃建勝 醫師

09:40-10:00 **P64** Optimal nodal management strategies after induction therapy: scope, challenges, and surgical precision
林孟暐 醫師

10:30-11:10 **P65** Cautious optimism: how AI is advancing medicine and surgery
Prof. Jeffrey Yang

11:10-11:30 **P66** 生成式 AI 與醫療數位轉型
蔣榮先 醫師

11:30-11:50 **P67** The application of metaverse technologies in thoracic surgery
陳晉興 醫師

12:00-13:20 **P68** Satellite Symposium_ 賽諾菲股份有限公司
Biologics and Airway Remodeling in Asthma: From pathophysiology to clinical evidence
Prof. Klaus Rabe
Real-world Challenges in Asthma management
黃俊凱 醫師

15:00-15:40 **P70** The battle against resistant gram negative bacilli – now and the future
Prof. David Leslie Paterson

15:40-16:20 **P71** From panels to the pan-genome: the evolving landscape of molecular respiratory pathogen detection
馮嘉毅 醫師

16:40-18:00 **P72** Satellite Symposium_ 友華生技股份有限公司
Small Airways and Pneumonia: Optimizing COPD and Asthma Control with Trimbow®
羅柏鈞 醫師
Small Airways: The Missing Link in ICS/LABA Asthma Control
黃偉彰 醫師

12.14/SUN

08:40-08:55 **P74** Before entering the RAB Era: what? different, and what should we expect?
楊順貿 醫師

08:55-09:20 **P75** Robotic bronchoscopy platforms for diagnosis and treatment: The Hong Kong experience
Prof. Joyce WY Chan

09:20-10:00 **P76** Robotic Bronchoscopy, Advanced Imaging, and Bronchoscopic Ablation: Expanding the Frontiers of Minimally Invasive Thoracic Oncology
Prof. Erik Folch

10:30–10:50	P77	Enhanced Recovery After Thoracic Surgery (ERAS): Optimizing Outcomes in Lung Resection **吳青峰 醫師**
10:50–11:10	P78	Risks assessments, optimization and prehabilitation of chest surgery **簡榮彥 醫師**
11:10–11:30	P79	Body Composition and Physical Fitness in Esophageal Cancer **邱健宏 醫師**
11:30–11:50	P80	Pain management in thoracic ERAS **許弘德 醫師**
12:00–13:20	P81	Satellite Symposium_ 台灣百靈佳殷格翰股份有限公司 Small Airway Dysfunction in COPD : Clinical relevance and treatment strategies **Prof. Atsuyasu Sato** From INPULSIS to FIBRONEER: Changing Paradigms and Future Directions in IPF **Prof. Toby Maher**
13:30–14:10	P83	Ventilator-Associated Event Surveillance: From Definition to Clinical Practice **劉世豐 醫師**
14:10–14:50	P84	Electric impedance tomography in monitoring of hypoxic respiratory failure patients **郭耀文 醫師**

701F 會議室

12.13/SAT

Neoadjuvant immunotherapy strategies for resectable non-small cell lung cancer: real world data

周品立
Pin-Li Chou, M.D.

Attending, Thoracic surgery, Chang Gung Memorial Hospital, Linkou branch

Non-small cell lung cancer (NSCLC) remains the leading cause of cancer-related mortality worldwide. About one third of patients with Non-Small Cell Lung Cancer (NSCLC) presents at diagnosis with localized or locally advanced disease amenable to curative surgical resection. Surgical operability refers to stage I to IIIA and selected stage IIIB NSCLC. Despite advances in surgical techniques and adjuvant treatments, recurrence rates after resection remain high, particularly for stage II–III disease. Recently, neoadjuvant immunotherapy—alone or combined with chemotherapy—has emerged as a promising strategy to induce systemic and intratumoral immune responses, eradicate micrometastatic disease, and improve long-term survival. Preclinical rationale of targeting specific subsets of T-cells by acting early on immune checkpoint receptors (e.g., PD-(L)1 and CTLA-4) is strong. Randomized controlled trials such as CheckMate 816 have demonstrated encouraging pathological response and event-free survival benefits. However, there is limited evidence regarding how these strategies perform in routine clinical practice, where patient characteristics, comorbidities, and treatment adherence may differ from trial populations. Recent evidence is in favor of the neoadjuvant approach alone or as a part of perioperative strategy, demonstrating survival benefit. Real-world data (RWD) are essential to evaluate the generalizability, feasibility, and safety of neoadjuvant immunotherapy in resectable NSCLC.

12.13/SAT

Impact of neoadjuvant therapy on pathologic complete response and clinical outcomes in surgically resected non-small cell lung cancer

林冠勳
Kuan-Hsun Lin, M.D., Ph.D.

Attending Physician, Department of Surgery, Division of Thoracic Surgery, Tri-Service General Hospital

Background: Recurrence after curative resection for non-small cell lung cancer (NSCLC) remains common despite adjuvant therapy. Randomized trials (e.g., CheckMate 816) have shown that neoadjuvant chemo-immunotherapy increases pathologic complete response (pCR) and prolongs event-free survival in resectable disease. We evaluated real-world outcomes of neoadjuvant therapy at a tertiary center and compared chemo-immunotherapy (C/T+IO) with chemotherapy alone (C/T).
Methods: We conducted a single-center retrospective cohort study of patients with resectable clinical stage IIA–IVB NSCLC who received neoadjuvant therapy followed by surgery. Primary end points were pathologic response—major pathologic response (MPR) and pCR—radiologic/pathologic downstaging. Secondary end points included adjuvant-therapy utilization and time-to-event outcomes estimated with Kaplan–Meier and Cox models. Outcomes were compared between patients treated with C/T+IO and those treated with C/T.
Results: Among 86 resected patients, overall downstaging occurred in 60.0% (49/86). pCR and MPR rates in the cohort were comparable to those reported in contemporary randomized trials. In the treatment-group comparison, C/T+IO (n=23) was associated with a substantially lower recurrence rate than C/T (n=44) (21.7% vs 56.8%). Time-to-event analyses showed a favorable trend for event-free outcomes with C/T+IO relative to C/T, whereas differences did not reach statistical significance in small exploratory subgroups. In an analysis restricted to patients who received C/T+IO (n=18), adding adjuvant therapy did not significantly change time-to-event outcomes, and patients achieving MPR showed numerically improved outcomes versus non-MPR, though follow-up and sample size limited statistical power.
Conclusions: In a real-world, single-center cohort of resectable NSCLC, neoadjuvant chemo-immunotherapy achieved meaningful downstaging and a markedly lower recurrence rate compared with chemotherapy alone, while pCR/MPR rates were consistent with those in randomized trials. These findings support the integration of neoadjuvant chemo-immunotherapy into multimodality management for appropriately selected patients. Longer follow-up with larger samples is needed to define the durability of benefit, clarify which patients still require adjuvant therapy after C/T+IO, and refine response-guided perioperative strategies.

12.13/SAT

Surgical experiences with neoadjuvant immunochemotherapy for locally advanced lung cancer

黃建勝
Chien-Sheng Huang, M.D., Ph.D.
Attending Physician, Department of Surgery, Division of Thoracic Surgery, Taipei Veterans General Hospital

Introduction: Neoadjuvant immunotherapy plus chemotherapy in patients with locally advanced non-small cell lung cancers (NSCLC) significantly improves event-free survival and pathological complete response (pCR) rates. However, the real-world data regarding perioperative morbidity and pCR achievement for this treatment modality is not established well.
Materials and Methods: Forty seven Consecutive patients diagnosed as locally advanced NSCLC who received neoadjuvant immunotherapy plus platinum-based chemotherapy at a single territory hospital from April 2019 to October 2025 were analyzed. Overall data presented in the median ± interquartile range (IQR).
Results: The median age was 61.5 (53.0-68.0) with a high percentage of male gender (n=40, 85%), a smoking history (n=38, 81%), and clinical stage III (n=44, 94%). Three patients with stable-disease and 2 patients with disease-progression were observed after neoadjuvant immunochemotherapy, and the pretreatment and preoperative median tumor sizes were 6.2 (5.0-8.0) cm and 4.4 (3.2-6.3) cm, respectively. Forty two patients (89%) underwent scheduled surgical resection. The median duration after the last treatment to surgery was 34 (28.0-38.3) days, with 3 (7.1%) patients who received the operation > 6 weeks. The majority patients underwent lobectomy (except two sleeve lobectomy and two bilobectomy). The VATS approach was performed for 39 patients, with 5 (11.9 %) converted to the open thoracotomy, and the median lymph node harvesting numbers and stations were 23 (16-29) and 6 (6-7), respectively. The median operative time was 300 (207-418) minutes, and eight patients (19.0%) had estimated blood loss of > 500ml. The median hospital stay after the surgery was 5.5 (5.0-6.8) days. Nineteen (45.2%) patients experienced operative-related complications, and seven (16.6%) were ≧ Gr. III. In particular, 16 patients (38.1%) achieved a pCR, and none of the patients who had a pCR had a relapse during a median follow-up time of 6.6 (3.9-14.0) months.
Conclusions: A high pCR rate was observed in the locally advanced NSCLCs that received neoadjuvant immunochemotherapy, which was compatible with NADIM studies. Further real-world investigations will be needed, especially for the long-term outcome for pCR patients.

701F 會議室

12.13/SAT

Optimal nodal management strategies after induction therapy: scope, challenges, and surgical precision

林孟暐
Mong-Wei Lin, M.D., Ph.D.

Professor and Chief, Division of Thoracic Surgery, Department of Surgery, National Taiwan University Hospital, Taiwan

Optimal nodal management after induction therapy remains a critical yet unresolved issue in thoracic oncology. This presentation will review the evidence from current randomized controlled trials, highlight the importance of accurate lymph node evaluation in patients undergoing induction therapy, and discuss the appropriate extent of nodal assessment in this setting. Finally, the role of surgical precision in achieving both oncologic completeness and patient safety will be emphasized.

12.13/SAT

Cautious optimism: how AI is advancing medicine and surgery

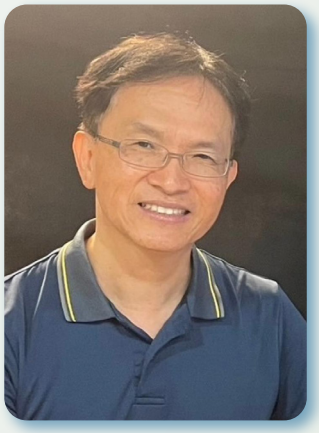
Chi-Fu Jeffrey Yang, M.D.

Thoracic Surgeon, Thoracic Surgery, Harvard Medical School, Massachusetts General Brigham
Associate Professor, Harvard Medical School, Massachusetts General Brigham

In this talk, we will discuss how artificial intelligence (AI) is advancing medicine and surgery. Key topics will range from discussions about the role of chatbots in medicine to the early detection of complications after surgery to lung cancer risk prediction. At the end of the talk, the audience will have a key understanding of the major strengths and limitations of AI and how fututure investigations will shape healthcare in the U.S., Taiwan and the rest of the world.

701F 會議室

12.13/SAT



生成式 AI 與醫療數位轉型

蔣榮先
Jung-Hsien Chiang, Ph.D.

Distinguished Professor, Department of Information Engineering, National Cheng Kung University

701F 會議室

12.13/SAT

The application of metaverse technologies in thoracic surgery

陳晉興
Jin-Shing Chen, M.D., Ph.D.

Distinguished Professor, Chairman, Department of Surgery, National Taiwan University Hospital, Taipei, Taiwan

The rapid evolution of surgical techniques has highlighted the need for advanced technologies that enhance precision, safety, and training. Thoracic surgery at National Taiwan University Hospital (NTUH), which has performed more than 10,000 lung cancer operations, is characterized by uniportal minimally invasive approaches and accurate lesion localization. However, challenges remain in incision determination and intraoperative localization of small pulmonary nodules, particularly for less-experienced surgeons. To address these issues, NTU developed OpVerse, an integrated metaverse-assisted surgical system combining digital twin modeling, mixed reality (MR), and extended reality (XR) applications.

The OpVerse platform enables immersive visualization, free 3D manipulation, interactive measurement, and real-time case sharing across devices. Clinical applications include education, cross-disciplinary communication, and direct intraoperative guidance. Three prospective randomized clinical trials have been initiated: (1) the use of 3D metaverse-printed models for anatomy-based teaching, (2) XR-assisted incision planning for uniportal video-assisted thoracoscopic surgery (VATS), and (3) XR-guided localization of pulmonary nodules without reliance on intraoperative CT). Early results demonstrate improved accuracy in incision placement, reduced operative time, and successful localization of otherwise impalpable nodules, while avoiding repeated radiation exposure and reducing costs compared with conventional hybrid operating rooms.

Beyond thoracic surgery, OpVerse has been applied to interventional radiology and orthopedic procedures, suggesting broad translational potential. The platform has gained international recognition, with presentations at the European Association for Medical Education, Toronto General Hospital, and multiple scientific symposia. Supported by interdepartmental collaboration among surgeons, radiologists, engineers, and digital media specialists, OpVerse represents a paradigm shift toward the “future operating room,” where digital twin and metaverse technologies empower both clinical practice and surgical education.

701F 會議室

Satellite Symposium_ 賽諾菲股份有限公司

Biologics and Airway Remodeling in Asthma: From pathophysiology to clinical evidence

Klaus F. Rabe, M.D., Ph.D.

Pneumology, LungenClinic Grosshansdorf

Past President of the European Respiratory Society
Past President of the German Chest Society
Vice Chairman of the German Center for Lung Research

701F 會議室

Satellite Symposium_ 賽諾菲股份有限公司

Real-world Challenges in Asthma management

黃俊凱
Chun-Kai Huang, M.D., Ph.D.

Clinical Instructor, Department of Internal Medicine, College of Medicine, National Taiwan University

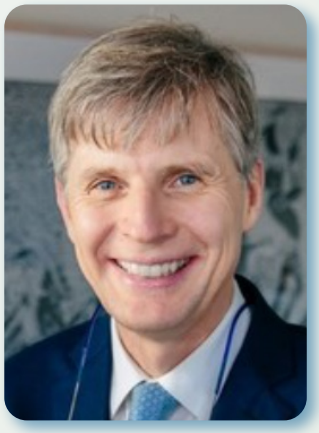
Attending Physician, Division of Chest, Department of Internal Medicine, National Taiwan University Hospital

Adjunct Attending Physician, Division of Chest, Department of Internal Medicine, National Taiwan University Hospital Bei-Hu Branch

701F 會議室

12.13/SAT

The battle against resistant gram negative bacilli – now and the future



David Leslie Paterson, Ph.D.

Director, ADVANCE-ID, Faculty of Medicine, NATIONAL UNIVERSITY OF SINGAPORE

The pipeline of new antibiotics for multiply resistant Gram-negative bacteria remains “thin” but is far from “dry”. While antibiotic therapy against carbapenem-resistant Enterobacterales due to KPC or OXA-48 producers and carbapenem-resistant Pseudomonas aeruginosa is now available in most middle and high income countries, coverage against metallo-enzyme producing organisms and carbapenem-resistant Acinetobacter baumannii has been poor. In addition to cefiderocol, recent advances have been made against metallo-enzyme producers by clinical development of aztreonam-avibactam and cefepime-taniborbactam. These new beta-lactam-be-ta-lactamase inhibitor combinations are unfortunately not perfect due to resistance mediated by PBP changes (affecting cefiderocol and aztreonam-avibactam) and a lack of coverage of IMP carbapenemases (taniborbactam). Broad-spectrum antibiotic therapy does remain a viable option via non-beta-lactam options like new polymyxins in early clinical development which have reduced toxicity and activity against colistin-resistant organisms.

The concept of pathogen-specific antibiotic therapy opens a new era. For it to be optimally effective, it needs to coupled with rapid diagnostics in order to allow early, directed, “impact” therapy. Pathogen-specific options against Pseudomonas aeruginosa and Klebsiella pneumoniae are also in development. In some cases, patho-gen-specific therapy is being developed by way of phage therapy, lysins or monoclonal antibodies.

While these advances are promising a number of significant problems remain. Foremost among these is access to new antibiotics. It is notable that even in high-income countries outside of the United States, the United Kingdom and Western Europe substantial delays occur in marketing approvals for new antibiotics. For example, South Korea lags Western Europe by 7 years in availability of ceftazidime-avibactam. Cefiderocol, which was approved in the United States in 2019, is available commercially in Taiwan and Japan. The situation is far worse in low-middle income countries where carbapenem resistant organisms are highly prevalent yet colistin remains the backbone of therapy. Finally, substantial challenges remain in getting the antibiotic pipeline fully flowing. A number of companies developing antibiotics have undergone bankrupt-cy, even after successfully gaining FDA approval for their new antibiotics. A combination of “push” and “pull” incentives is needed in order to make antibiotic development financially attractive for industry.

12.13/SAT

From panels to the pan-genome: the evolving landscape of molecular respiratory pathogen detection

馮嘉毅
Jia-Yih Feng, M.D.

Chief, Department of chest Medicine, Division of pulmonary infection and immunology, Taipei Veterans General Hospital

The diagnostic landscape for pulmonary infections has rapidly evolved with the integration of next-generation sequencing (NGS) and multiplex molecular platforms such as FilmArray, which together are reshaping clinical microbiology by enabling more comprehensive, rapid, and precise pathogen identification. Traditionally, culture-based methods required days to yield results and often failed in cases of fastidious or slow-growing organisms, while empiric antimicrobial therapy risked inappropriate coverage and resistance development. NGS, with its ability to capture broad microbial diversity by sequencing microbial DNA or RNA directly from respiratory specimens, provides an unbiased and highly sensitive tool that can detect bacteria, viruses, fungi, and even mixed infections, while also offering insights into antimicrobial resistance genes and microbial community dynamics. This is particularly valuable in critically ill or immunocompromised patients, where atypical pathogens or polymicrobial infections are common and conventional methods are limited. On the other hand, the BioFire FilmArray Pneumonia Panel (and related respiratory panels) represents a complementary approach, offering rapid syndromic testing through multiplex PCR with turnaround times of about one hour, covering dozens of common respiratory pathogens and key resistance markers. Unlike NGS, FilmArray is highly standardized, requires minimal technical expertise, and is already integrated into routine clinical practice across many hospitals, making it especially useful for urgent clinical decision-making in acute pulmonary infections. Recent studies have demonstrated that combining NGS with FilmArray testing can bridge the gap between speed and comprehensiveness: FilmArray provides immediate actionable results for common pathogens and resistance determinants, while NGS delivers deeper insights into unusual organisms, co-infections, and resistance mechanisms that extend beyond the PCR panel's scope. The progress in applying these technologies has also been supported by improvements in bioinformatics pipelines, reductions in sequencing costs, and growing clinical validation studies showing improved diagnostic yield, antimicrobial stewardship, and patient outcomes. Nevertheless, challenges remain, including the need for standardized interpretation frameworks, distinguishing colonization from true infection in complex respiratory samples, managing high data output in NGS, and aligning costs with routine clinical feasibility. Overall, the convergence of NGS and FilmArray in pulmonary infection diagnostics illustrates a paradigm shift toward precision infectious disease medicine: a tiered strategy in which rapid multiplex PCR delivers immediate front-line results, while NGS expands the diagnostic window for difficult-to-treat, culture-negative, or antimicrobial-resistant infections, paving the way for more targeted therapy, reduced inappropriate antibiotic use, and ultimately better clinical outcomes in respiratory infectious diseases.

701F 會議室

Satellite Symposium_ 友華生技股份有限公司

Small Airways and Pneumonia: Optimizing COPD and Asthma Control with Trimbow®

羅柏鈞
Po-Chun Lo, M.D.

Physician, Division of Pulmonary and Critical Care Medicine, Taoyuan Armed Forces General Hospital

In the management of COPD, optimizing disease control often comes with the challenge of balancing treatment intensity and safety. Inhaled corticosteroids (ICS) play a crucial role in reducing exacerbations, yet their use has been associated with an increased risk of pneumonia. It highlights how optimized lung deposition and rational ICS exposure can achieve comprehensive disease control without compromising patient safety. Extrafine Trimbow® exemplifies how precision in formulation and delivery can translate to a new standard of care—maximizing therapeutic benefit while minimizing risk. By redefining what “control” truly means, clinicians can better tailor treatment for long-term stability and safety. Trimbow® represents a new benchmark in extrafine triple therapy—maximizing clinical benefit while minimizing pneumonia risk, enabling sustained control and long-term safety for patients with COPD.

Satellite Symposium_ 友華生技股份有限公司

Small Airways: The Missing Link in ICS/LABA Asthma Control

黃偉彰
Wei-Chang Huang, M.D.

Director, Division of Pulmonary Immunology & Infectious Disease, Department of Chest Medicine, Taichung Veterans General Hospital

Despite advances in inhaled corticosteroid/long-acting β_2-agonist (ICS/LABA) therapy, a significant proportion of asthma patients remain suboptimally controlled. Emerging evidence indicates that small airways dysfunction (SAD) plays a critical role in persistent symptoms and exacerbations, yet it is often overlooked in routine clinical practice. It will highlight how Foster® (extrafine beclometasone/formoterol) achieves optimal lung deposition—reaching both central and peripheral airways—to deliver comprehensive anti-inflammatory and bronchodilatory effects. By addressing inflammation and obstruction in the small airways—the "silent zone" of asthma—Foster® offers a more complete and physiologically rational approach to disease management. Understanding and treating this missing link is essential for achieving true asthma control.

701F 會議室

12.14/SUN

Before Entering the RAB Era: What's Different, and What Should We Expect?

楊順貿
Shun-Mao Yang, M.D.

Director, Thoracic Surgery, National Taiwan University Hospital, Hsin-Chu Branch

Robotic-assisted bronchoscopy (RAB) represents a significant milestone in the evolution of interventional pulmonology, promising enhanced navigation, precision, and diagnostic yield in the evaluation of peripheral pulmonary lesions. However, before entering the RAB era, it is critical to reflect on the foundations built by conventional and advanced bronchoscopic techniques, including electromagnetic navigation, radial EBUS, and ultrathin scopes. These modalities have expanded our diagnostic reach, yet limitations in stability, reach, and sampling accuracy remain.

This lecture will highlight the key differences between existing approaches and RAB platforms, focusing on technical innovations such as improved scope articulation, real-time imaging integration, and more stable tool deployment. It will also address the potential impact of RAB on diagnostic accuracy, procedural safety, and workflow efficiency, while acknowledging the ongoing need for rigorous clinical validation and cost-effectiveness studies.

Equally important is managing expectations: while RAB holds great promise, it is not a panacea. Questions remain regarding learning curves, procedural standardization, and the integration of RAB into multidisciplinary lung cancer care. Understanding these nuances will prepare clinicians to adopt RAB thoughtfully, balancing enthusiasm with evidence.

Ultimately, this session aims to provide a forward-looking perspective on what we can realistically expect from the RAB era, equipping the audience with insights to evaluate its role in practice and to anticipate the next steps in the continuous advancement of bronchoscopic innovation.

12.14/SUN

Robotic bronchoscopy platforms for diagnosis and treatment: The Hong Kong experience

Chan Wing Yan Joyce, M.D.

Associate Consultant, Division of Cardiothoracic Surgery, Department of Surgery, Prince of Wales Hospital, the Chinese University of Hong Kong

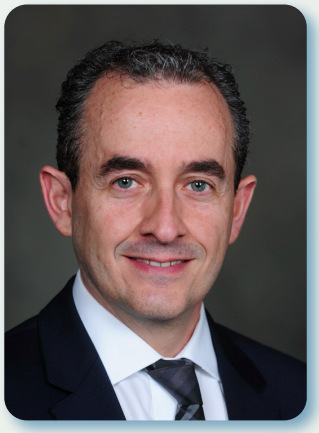
The rapid evolution of robotic bronchoscopy has expanded the boundaries of diagnostic and therapeutic pulmonary interventions. Conventional flexible bronchoscopy and even navigational bronchoscopy have inherent limitations in reaching small, peripheral, or anatomically challenging lesions. Robotic bronchoscopy platforms have been developed to overcome these challenges by offering superior manoeuvrability, stability, and precise control during navigation and targeting. These systems allow operators to maintain direct visualization while navigating to distal airways, enabling higher diagnostic yield in small pulmonary nodules when compared to traditional approaches. Furthermore, their ability to integrate with cone-beam CT, fluoroscopy, and electromagnetic navigation (ENB) enhances real-time accuracy. Recently, newer generation robotic bronchoscopy models offers integrated adjuncts to reduce CT-to-body divergence, further improving the accuracy.

Apart from diagnosis, robotic bronchoscopy opens the door to therapeutic applications such as transbronchial ablation (thermal modalities like radiofrequency and microwave, electroporation via pulsed electric field, etc), and intra-operative dye marking to facilitate subsequent minimally invasive resection.

In Hong Kong, utilizing the hybrid theatre with cone beam CT, our center has been a pioneer in the field of navigational bronchoscopy,. Since 2019, we have completed over 290 cases of transbronchial ablation, most of which with microwave energy. We started our robotic bronchoscopy program since 2021, one of the very first in Asia-Pacific. Since then, we have performed over 100 Auris Monarch cases and over 30 Noah Galaxy cases, of which 25 were ablation cases, combining robotic bronchoscopy with various ablation catheters. We are also planning to perform transbronchial ablation using cryoablation, and have performed the first transbronchial pulsed electric field (PEF) ablation via robotic bronchoscopic guidance. This presentation will outline our clinical outcomes, discuss the technical and logistical insights gained, and offer perspectives on future directions for research in this rapidly evolving field.

12.14/SUN

Robotic Bronchoscopy, Advanced Imaging, and Bronchoscopic Ablation: Expanding the Frontiers of Minimally Invasive Thoracic Oncology



Erik Folch, M.D., MSc

Director, Interventional Pulmonary, Pulmonary and Critical Care Medicine, Massachusetts General Hospital, Harvard Medical School, Keck School of Medicine, University of Southern California

Background:
Shape-sensing robotic bronchoscopy has redefined the diagnostic potential of flexible bronchoscopy by enabling accurate navigation to small and peripheral pulmonary lesions. The parallel development of intra-procedural imaging and therapeutic technologies now allows for a single-platform approach to both diagnosis and local treatment of thoracic tumors.

Methods:
Recent robotic platforms were evaluated in combination with fluoroscopy, cone-beam CT, and radial endobronchial ultrasound, for lesion localization and confirmation of tool-in-target position. Multiple energy-based ablation modalities—including microwave, radiofrequency, and cryoablation—have been adapted for bronchoscopic use. Workflow integration, targeting accuracy, and safety data were analyzed from early translational and robust clinical experience.

Results:
Shape-sensing robotic systems achieve high diagnostic yields, often exceeding 90% for peripheral pulmonary nodules. Real-time imaging provides immediate confirmation of instrument position and allows precise planning of ablation margins. Early experiences with bronchoscopic thermal ablation demonstrate favorable safety profiles and reproducible zones of necrosis with preservation of surrounding parenchyma. These developments enable true minimally invasive management of selected intrathoracic malignancies.

Conclusions:
The convergence of robotic navigation, advanced imaging, and bronchoscopic ablation represents a major evolution in thoracic oncology. Together, these technologies create the foundation for same-session diagnosis and treatment, reducing the need for transthoracic procedures and broadening the role of bronchoscopy as an adjunctive therapy in lung cancer care. Importantly, this integrated approach has the potential to enhance thoracic surgery capabilities by enabling targeted treatment of small lesions while minimizing or sparing parenchymal resection.

Keywords:
Robotic bronchoscopy, shape-sensing, cone-beam CT, advanced imaging, bronchoscopic ablation, thoracic oncology

12.14/SUN

Enhanced Recovery After Thoracic Surgery (ERAS): Optimizing Outcomes in Lung Resection

吳青峰
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Associate Professor, Division of thoracic surgery, Department of surgery, Chang Gung Memorial Hospital

Background:
Enhanced Recovery After Surgery (ERAS) programs aim to reduce surgical stress, accelerate recovery, and improve outcomes through standardized, multidisciplinary care. In thoracic surgery, particularly lung resections, ERAS integrates minimally invasive techniques with evidence-based perioperative measures to optimize both short- and long-term results.

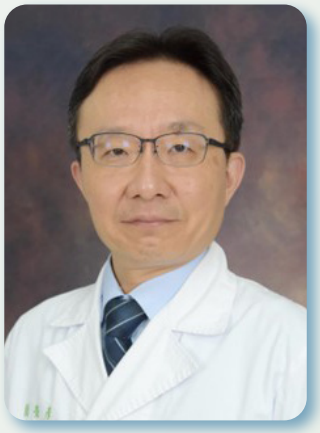
Methods and Key Elements:
ERAS protocols span the perioperative continuum. Preoperative: patient education, smoking cessation, pulmonary rehabilitation, and nutritional support. Intraoperative: uniportal or multiportal VATS, lung-protective ventilation, restrictive fluid therapy, and opioid-sparing anesthesia. Postoperative: early chest tube removal, multimodal analgesia, rapid mobilization, and early oral intake. These components require coordinated efforts among surgeons, anesthesiologists, nurses, and allied health professionals.

Results and Evidence:
Evidence from randomized and observational studies demonstrates that ERAS reduces postoperative complications, opioid use, and hospital stay by 1–3 days, without increasing readmission or mortality. Pulmonary outcomes are improved through early mobilization and optimized chest tube management. Minimally invasive approaches such as VATS further enhance ERAS effectiveness by reducing surgical trauma. Patient satisfaction and quality of recovery are consistently higher with ERAS pathways compared to conventional care.

Discussion:
Despite strong evidence, implementation varies due to institutional resources, team compliance, and local practice differences. Successful adoption requires education, continuous auditing, and adaptation to patient and institutional needs. Future directions include digital health integration (tele-rehabilitation, remote monitoring), refined analgesic strategies, and tailored protocols for elderly or high-risk patients.

Conclusion:
ERAS in thoracic surgery is a safe, effective, and evidence-based framework that improves recovery and reduces complications after lung resection. Wider adoption and refinement will be key to establishing ERAS as the standard of care in thoracic surgery worldwide.

12.14/SUN



Risks assessments, optimization and prehabilitation of chest surgery

簡榮彥
Jung-Yien Chien, M.D., Ph.D.
Clinical Professor, Internal Medicine, National Taiwan University Hospital

Chest surgery carries high perioperative risk due to impaired lung function, cardiovascular disease, malnutrition, and postoperative complications. To improve outcomes, accurate risk assessment could help to identify vulnerable patients. Frailty indices, comorbidity scales, and nutritional screening add predictive value. Psychosocial factors, smoking, and medication reconciliation should also be considered. Preoperative optimization addresses modifiable risks. Smoking cessation four to six weeks prior lowers pulmonary complications. Pulmonary care includes bronchodilators, physiotherapy, and infection control. Cardiovascular stabilization with antihypertensives or antiarrhythmics reduces intraoperative risk. Nutritional supplementation supports healing. Enhanced Recovery After Surgery (ERAS) protocols integrate multimodal analgesia, early mobilization, and shorter fasting to standardize care. Prehabilitation proactively enhances physiologic reserve. Exercise and inspiratory muscle training improve cardiorespiratory endurance, while nutrition and psychological support reduce frailty and anxiety. Evidence shows multimodal prehabilitation reduces complications, accelerates recovery, and shortens hospital stay. By combining thorough risk assessment, targeted optimization, and structured prehabilitation within multidisciplinary teams, chest surgery can transition from reactive complication management to proactive risk reduction. Integrating these strategies into ERAS pathways improves safety, functional recovery, and long-term outcomes.

12.14/SUN

Body Composition and Physical Fitness in Esophageal Cancer

邱健宏
Chien-Hung Chiu, M.D.

Attending physician, Division of Thoracic Surgery, Chang Gung Memorial Hospital at Linkou

Body composition and physical fitness are essential components in evaluating overall health status and have been recognized as important prognostic indicators in patients with malignancies. Among esophageal cancer patients, poor nutritional status and impaired physical fitness are common, resulting from inadequate oral intake, cancer cachexia, and treatment-related side effects. In this presentation, we highlight the association between body composition and physical fitness. Furthermore, we demonstrate their predictive value for chemoradiation response and postoperative complications following esophagectomy.

701F 會議室

12.14/SUN

Pain management in thoracic ERAS

許弘德
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Effective postoperative pain management remains a major challenge in thoracic surgery, particularly after thoracotomy and video-assisted thoracoscopic surgery (VATS). Pain in these patients is multifactorial, arising from surgical incision, rib spreading, pleural and parenchymal injury, intercostal nerve trauma, and the presence of chest tubes. Ipsilateral shoulder pain, commonly reported in up to 80% of thoracotomy cases, may be musculoskeletal due to positioning or referred via diaphragmatic irritation through the phrenic nerve. Poorly controlled pain contributes to respiratory complications, reduced patient satisfaction, prolonged hospitalization, and increased risks such as pneumonia and deep vein thrombosis.

Multimodal analgesia (MMA) has therefore become the cornerstone of thoracic postoperative care. Essential strategies include regional anesthesia, systemic non-opioid analgesics, and limited opioid use. Ultrasound-guided nerve blocks play a pivotal role, particularly thoracic paravertebral block (TPVB), intercostal nerve block, and the more recently developed erector spinae plane block (ESPB). ESPB, first described in 2016, has shown notable safety advantages, ease of performance, and reliable analgesic efficacy. Although ESPB may offer slightly better outcomes than the serratus anterior plane block (SAPB), both techniques are clinically effective.

At Kaohsiung Medical University Hospital (KMUH), several MMA regimens have been implemented. Traditionally, patient-controlled epidural analgesia (PCEA) or intravenous patient-controlled analgesia (IVPCA) with fentanyl was combined with TPVB or intercostal blocks and adjunctive parecoxib/acetaminophen. Recently, nalbuphine sebacate (Naldebain®), a long-acting intramuscular formulation, has been introduced into MMA protocols. Naldebain acts as a κ-opioid receptor agonist and partial μ-opioid antagonist, offering effective analgesia with fewer side effects such as nausea, pruritus, and respiratory depression compared with morphine.

Data from KMUH show that adding Naldebain to MMA significantly reduced fentanyl consumption within the first three postoperative days after VATS. Furthermore, patients in the Naldebain group reported lower pain scores at rest and with movement, with marked reductions in pain interference with daily life at both one week and one month. Therefore, integrating Naldebain into MMA for thoracic surgery appears to enhance analgesic efficacy, reduce perioperative opioid requirements, and extend pain relief into the post-discharge period. These findings support the role of long-acting opioid formulations as valuable adjuncts in multimodal strategies to optimize postoperative recovery in thoracic surgical patients.

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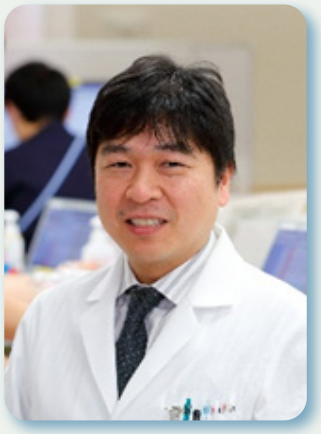

Small Airway Dysfunction in COPD: Clinical relevance and treatment strategies

Atsuyasu Sato, M.D., Ph.D.

Associate Professor, Department of Respiratory Medicine, Kyoto University Hospital

The core issue in COPD is the narrowing of the small airways, which leads to air trapping and subsequent pulmonary hyperinflation. This mechanism makes it difficult for patients to exhale fully, creating the sensation of being unable to take a proper breath. Therefore, the key to treatment is managing this hyperinflation to reduce the burden on breathing.

For stable COPD management, both the Japanese guidelines and the 2025 GOLD Report commonly recommend starting with LAMA+LABA dual bronchodilator therapy. However, for patients experiencing recurrent acute exacerbations combined with eosinophil counts above 300, the strategy should be escalated to triple therapy (LABA+LAMA+ICS). Notably, LAMA agents are critically important because they counteract the increased airway constriction resulting from decreased M2 receptor function in COPD.

Conversely, the use of ICS must be cautious. Inhaled corticosteroids are limited because they fail to suppress oxidative stress and may also increase the risk of bacterial colonization, which is often observed in COPD patients.

Ultimately, treatment must be guided by the official recommendations while also considering how effectively the drug is delivered to the small airways, necessitating careful selection of the inhaler device and drug combination based on the individual patient's condition.

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From INPULSIS to FIBRONEER: Changing Paradigms and Future Directions in IPF

Toby Maher, M.D., Ph.D.

5th June 2020 to present Professor of Clinical Medicine and Director of Interstitial Lung Disease, Keck Medical School of University of Southern California, 1510 San Pablo Street, Los Angeles, California

Professional History

2018 – 2020	Director, NIHR Royal Brompton Respiratory Clinical Research Facility
2018 – 2020	Director of Respiratory Research, Royal Brompton Hospital
2017 –	Professor of Interstitial Lung Disease, Imperial College London
2017 –	British Lung Foundation Chair in Respiratory Research
2015 – 2017	Senior Lecturer, Imperial College, London
2014 – 2019	NIHR Clinician Scientist, Royal Brompton Hospital
2010 – 2015	Honorary Senior Lecturer, Imperial College, London
2009– 2015	Honorary Senior Lecturer, University College London
2009 – 2022	Consultant Physician, Royal Brompton Hospital
2006 – 2009	Wellcome Trust Clinical PhD Research Fellow, UCL

12.14/SUN

Ventilator-Associated Event Surveillance: From Definition to Clinical Practice

劉世豐
Wei-Chang Huang, M.D.

Professor and Attending Physician, Division of Chest Medicine, Internal Medicine & Respiratory Therapy Department, Kaohsiung Chang Gung Memorial Hospital & Chang Gung University College of Medicine

Ventilator-associated events (VAEs) are increasingly recognized as important indicators of patient safety and ICU quality. This presentation outlines the evolution from traditional ventilator-associated pneumonia (VAP) surveillance toward the more objective and standardized VAE paradigm introduced by the CDC. It covers the definitions and diagnostic criteria for ventilator-associated conditions (VAC), infection-related VAC (IVAC), and possible ventilator-associated pneumonia (PVAP). The impact of VAE on mortality, ICU length of stay, and healthcare costs will be discussed, as well as case-based analyses from real-world ICU settings.

We further describe our experience at Kaohsiung Chang Gung Memorial Hospital in implementing VAE monitoring in the ICU and utilizing this data to improve patient outcomes. Prevention strategies, including technical bundles, LTVV for ARDS, and the ABCDEF bundle, are also explored. The session concludes with practical insights on how to interpret surveillance data and provide effective clinical feedback to reduce ventilator-associated harm.

701F 會議室

12.14/SUN

Electric impedance tomography in monitoring of hypoxic respiratory failure patients

郭耀文
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Director of the Respiratory Therapy Section, Department of Integrated Diagnostics & Therapeutics, National Taiwan University Hospital

Electrical Impedance Tomography (EIT) is a non-invasive, radiation-free bedside imaging modality that enables real-time, breath-by-breath visualization of regional lung ventilation. It is particularly useful in managing patients with hypoxemic respiratory failure, including acute respiratory distress syndrome (ARDS), where heterogeneous aeration, cyclic alveolar collapse, and overdistension increase the risk of ventilator-induced lung injury (VILI). EIT works by applying small alternating electrical currents via a thoracic electrode belt and measuring voltage changes to reconstruct dynamic impedance images. These images correlate with regional changes in lung aeration and volume, offering unique insights into patient-specific respiratory mechanics. As hypoxemic respiratory failure is often marked by complex pathophysiology and a narrow window for optimizing ventilatory support, EIT provides clinicians with a real-time tool to personalize interventions.

Multiple clinical applications of EIT have been validated in recent years. It enables precise PEEP titration through identification of regions prone to collapse or overdistension during recruitment and decremental PEEP maneuvers. Pixel-wise compliance analysis helps identify the PEEP level that minimizes both collapse and overdistension, supporting lung-protective strategies. Furthermore, EIT-derived parameters such as the global inhomogeneity (GI) index, center of ventilation (CoV), and regional ventilation delay (RVD) allow quantification of ventilation distribution and temporal heterogeneity; in patients with spontaneous effort, EIT can detect intrapulmonary dyssynchrony such as pendelluft, a phenomenon where tidal volume shifts between lung regions rather than entering or exiting the lung as a whole. Pendelluft is particularly insidious in ARDS patients with strong inspiratory effort and may be missed by conventional airway pressure or flow monitoring. EIT also detects patient–ventilator asynchrony, including breath stacking, which may result in excessive regional strain and undetected overdistension; beyond ventilation monitoring, EIT can assess regional perfusion by tracking hypertonic saline bolus transit or analyzing pulsatility signals, enabling bedside evaluation of ventilation–perfusion mismatch without transport or radiation exposure. Additional applications include early detection of pneumothorax, airway closure, derecruitment after suctioning, and guidance during spontaneous breathing trials.

Although limited by low spatial resolution and a lack of standardization across populations, EIT provides a dynamic, individualized approach to managing hypoxemic respiratory failure. Integration with ventilator platforms and AI-driven analytics may enhance its clinical relevance. Continuous, non-invasive assessment of regional lung function supports personalized, lung-protective strategies and early detection of injurious phenomena. Ongoing research should prioritize outcome-based validation, clinician training, and technical refinement to support wider adoption in intensive care settings.

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適應症：

轉移性大腸直腸癌(mCRC): 1) 與5-fluorouracil化學療法合併使用可以作為第一線治療。2) 與5-fluorouracil/leucovorin/oxaliplatin化學療法合併使用可以作為先前接受過以fluoropyrimidine為基礎的化學療法無效，且未曾接受過Avastin治療的病人的治療。3) 與含有fluoropyrimidine-irinotecan-或fluoropyrimidineoxaliplatin-為基礎的化學療法合併使用，可以做為第一線已接受過以Avastin併用化療後惡化之轉移性大腸或直腸癌病人的第二線治療。[不適用於高風險的二期以及三期大腸癌輔助性療法]

轉移性乳癌(mBC): 與paclitaxel合併使用可以做為HER2(-)轉移性乳癌病人的第一線治療。[不適用於經anthracycline及taxane治療轉移性乳癌又出現疾病進展的病人。]

惡性神經膠質瘤(WHO第4級) - 神經膠母細胞瘤: 單獨使用可用於治療曾接受標準放射線治療， 且含Temozolomide在內之化學藥物治療失敗之多型性神經膠母細胞瘤復發之成人病人。

晚期、轉移性或復發性非鱗狀非小細胞肺癌(NSCLC): 1) 與carboplatin及paclitaxel合併使用可以作為第一線治療。2) 併用erlotinib可作為EGFR活化性突變的非鱗狀非小細胞肺癌病人的第一線治療。

卵巢上皮細胞、輸卵管或原發性腹膜癌(Epithelial Ovarian, Fallopian Tube or Primary Peritoneal Cancer): 1) 與carboplatin及paclitaxel合併使用接著單獨使用Avastin，可以做為第三期或第四期病人接受初次手術切除後之治療。2) 與carboplatin及gemcitabine合併使用， 可以做為曾接受過第一線含鉑類藥物化學治療間隔至少6個月再復發，且未曾接受過bevacizumab或VEGF抑制劑或VEGF receptor-targeted agents治療之復發性病人之治療。3) 與carboplatin及paclitaxel合併使用，接著單獨使用Avastin治療，可以做為對含鉑藥物具感受性之復發性病人的治療。4) 併用paclitaxel、topotecan或pegylated liposomal doxorubicin可以做為接受過含鉑類藥物化療治療後6個月內再復發、之前接受不超過2種化療療程且未曾接受過bevacizumab或VEGF抑制劑或VEGF receptor-targeted agents治療之病人的治療。

持續性、復發性或轉移性之子宮頸癌(Persistent, Recurrent, or MetastaticCervical Cancer): 1) 與paclitaxel及cisplatin合併使用。2) 與paclitaxel及topotecan合併使用，可用於無法接受含鉑類藥物治療之病人。

使用劑量：

轉移性大腸直腸癌(mCRC): 1) 第一線治療：5毫克/公斤(體重)，每兩週一次；或7.5毫克/公斤(體重)，每三週一次。2) 第二線治療：10毫克/公斤(體重)，每兩週一次；15毫克/公斤(體重)，每三週一次。3) 當用於治療第一線已接受過以Avastin的治療法後惡化的第二線治療，應與含有fluoropyrimidine-irinotecan-或fluoropyrimidine-oxaliplatin-為基礎的化學療法合併使用，投與Avastin 5毫克/公斤(體重)，每兩週一次或7.5毫克/公斤(體重)，每三週一次。

轉移性乳癌(mBC): 靜脈輸注給予10毫克/公斤(體重)，每兩週一次。

惡性神經膠質瘤(WHO第4級) - 神經膠母細胞瘤: 靜脈輸注給予10毫克/公斤(體重)，每兩週一次；或15毫克/公斤(體重)，每三週一次。

晚期、轉移性或復發性非鱗狀非小細胞肺癌(NSCLC): 1) 合併使用含鉑類化學療法的第一線治療：靜脈輸注15毫克/公斤(體重)，每三週一次。合併使用鉑類化學療法六個治療週期，接著單獨使用Avastin治療，直到疾病惡化為止。2) 合併使用erlotinib：靜脈輸注15毫克/公斤(體重)，每三週一次。建議應持續以Avastin併用erlotinib治療至潛在疾病發生惡化為止。

卵巢上皮細胞、輸卵管或原發性腹膜癌(Epithelial Ovarian, Fallopian Tube or Primary Peritoneal Cancer): 1) 第三期或第四期疾病初次手術切除後之治療：靜脈輸注給予15毫克/公斤 (體重)，每三週一次。Avastin與carboplatin及paclitaxel合併使用至多六個治療週期，接著單獨使用Avastin治療直到疾病惡化、無法忍受的毒性產生或接受治療達15個月為止(取決於何者先發生)。2) 疾病復發的治療: 對含鉑藥物具敏感性：Avastin的建議劑量是靜脈輸注給予15毫克/公斤(體重)，每三週一次。Avastin與carboplatin及paclitaxel合併使用六個治療週期，最多用到八個治療週期，接著單獨使用Avastin治療直到疾病惡化為止。抑或，Avastin與carboplatin及gemcitabine合併使用六個治療週期，最多用到十個治療週期，接著單獨使用Avastin治療直到疾病惡化為止。對鉑類化療具抗藥性：與paclitaxel、topotecan (每週投予)或pegylated liposomal doxorubicin任一藥劑併用時Avastin投與劑量為10毫克/公斤(體重)，每2週1次以IV輸注。若topotecan為每3週的第1至5天投予時，與其併用之Avastin投與劑量為15毫克/公斤(體重)，每3週1次以IV輸注。建議持續治療直到疾病惡化或無法忍受的毒性產生為止。

子宮頸癌(Cervical Cancer)：可與下列其中一種化學治療方式併用：Paclitaxel加上cisplatin或paclitaxel加上topotecan。建議劑量為15毫克/每公斤(體重)，每三週給藥一次，以靜脈輸注方式給藥。

使用方法：

用於靜脈(i.v.)輸注之透明至稍微乳白、無色至淡棕色的無菌溶液。調配後供輸注之溶液。Avastin並非用於眼球玻璃體內之配方。

禁忌症：

已知會對下列東西過敏的病人禁止使用Avastin：1) 本產品的任何成份。2) 中國倉鼠卵巢細胞製劑或其他基因重組之人類或人化的抗體。

警語：

胃腸穿孔，外科手術和傷口癒合的併發症及出血胃腸穿孔：使用Avastin治療的病人發生胃腸穿孔(有些是致命的)的發生率為0.3-3.2%。發生胃腸穿孔應停止使用Avastin。外科手術和傷口癒合的併發症：在使用Avastin治療的病人有較高傷口癒合和外科手術併發症的發生率，包括嚴重和致命的併發症的發生率。病人有傷口裂開現象時應停止使用Avastin。目前仍未知為避免減弱傷口癒合能力並減少傷口裂開的風險所需停用Avastin至進行選擇性手術的適當時間間隔。在進行選擇性手術前至少28天，應暫停使用Avastin。在手術後至少28天且手術傷口完全癒合後再開始進行Avastin的治療。出血：在使用Avastin的病人發生嚴重或致命的出血(包括咳血、胃腸出血、神經系統出血、鼻出血和陰道出血)較頻繁(最高達5倍)。對於有嚴重出血或最近曾發生咳血的病人，不可投予Avastin來治療。

副作用：

出血：在針對各種不同適應症的所有臨床試驗中，所有以Avastin治療的病人有0.4%至6.9%發生NCI-CTC 3級至5級出血事件，而化學療法對照組病人則僅有0至4.5%的發生率。在Avastin臨床試驗中所出現的出血事件主要是腫瘤相關的出血及輕微的黏膜皮膚出血 (如鼻出血)。

高血壓：以Avastin治療的病人，其整體高血壓(所有級別)的發生率達42.1%，相較於對照組達14%。以Avastin治療的病人其NCI-CTC 3級和4級高血壓的整體發生率，為0.4%到17.9%。第4級高血壓(高血壓危象)的發生率，在以Avastin治療的病人中達1.0%，而單獨使用相同化學療法的病人達0.2%。高血壓一般都是以口服降血壓藥物予以適當的控制，例如血管收縮素轉換酶抑制劑、利尿劑及鈣離子通道阻斷劑，很少會造成Avastin停藥或住院。

蛋白尿：在臨床試驗中，有0.7%到54.7%接受Avastin治療的病人曾有蛋白尿的報告。蛋白尿的嚴重程度由無臨床症狀、短暫性、輕微的蛋白尿到腎病症候群都有。8.1%的治療組病人發生3級蛋白尿。4級蛋白尿(腎病症候群)發生在治療病人中達1.4%。有高血壓病史的病人在以Avastin治療時，發生蛋白尿的危險性較高。有證據顯示1級蛋白尿可能和Avastin的劑量有關。建議在以Avastin治療前進行蛋白尿的檢驗。在大多數的研究中，尿蛋白值≥2公克/24小時會導致Avastin的停用，直到恢復到<2公克/24小時為止。

過敏、輸注反應：在一些臨床試驗中，相較於單獨使用化學療法的病人，使用Avastin併用化學療法的病人較常有過敏性(anaphylactic)及類過敏性(anaphylactoidtype)反應的報告。Avastin在一些臨床試驗中這類反應的發生率是常見的(bevacizumab治療之病人的發生率達5%)。

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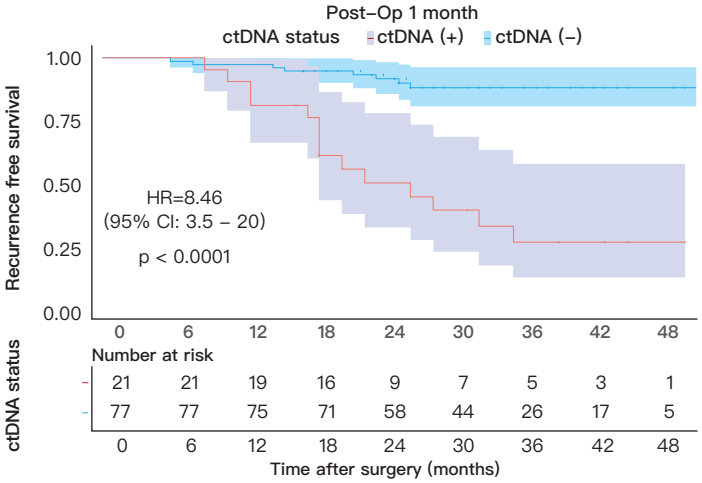

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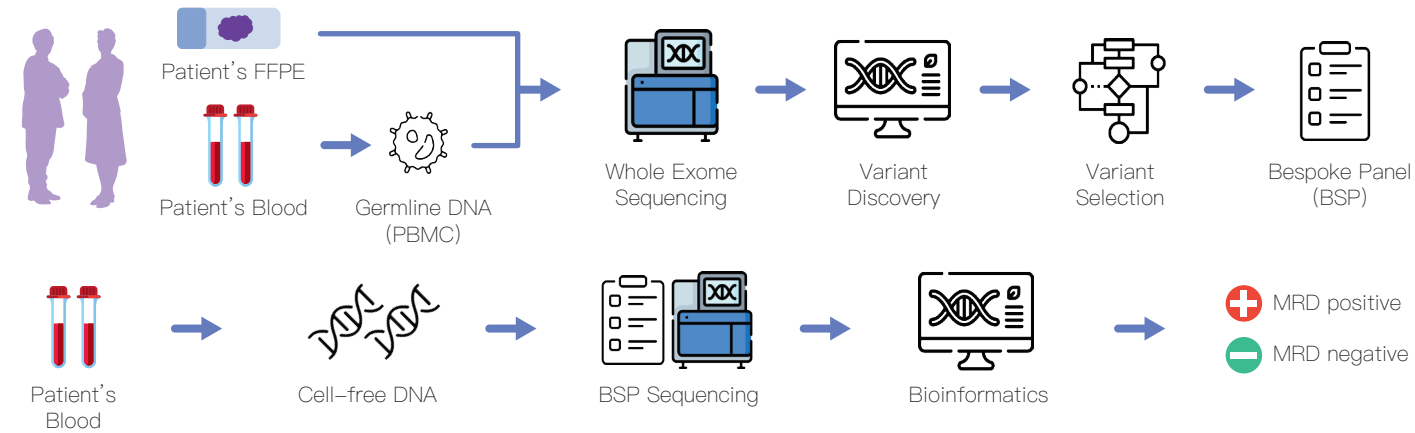

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NOTE

「胸腔醫學雜誌」
優秀論文獎

【胸腔醫學雜誌】優秀論文獎第一名

Mei-Yuan Teo, M.D. 張美元醫師 長庚紀念醫院胸腔內科

Characteristics and Outcome Analysis of Pneumonia with Bloodstream Infection Caused by Carbapenem-Resistant Klebsiella Pneumoniae in Critically Ill Patients with Respiratory Failure: A 5-Year Retrospective Study

Mei-Yuan Teo[1], Bing-Chen Wu[1], Shaw-Woei Leu[1], Kuo-Chin Kao[1,2], Han-Chung Hu[1,2]

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ABSTRACT

Background: Infections caused by carbapenem-resistant Klebsiella pneumoniae (CRKP) have emerged as a serious threat to the lives of patients in intensive care units (ICUs). In this study, we aimed to analyze the outcome of critically ill patients with pneumonia with bloodstream infections (BSIs) caused by CRKP to enhance treatment and prognosis.

Methods and materials: We conducted a retrospective study involving data from ICU treated patients with CRKP-induced pneumonia with BSIs at Chang Gung Memorial Hospital,Linkou branch, from January 2017 to December 2021. Clinical characteristics, laboratory data, and treatment and outcome information were collected. Predictive factors were analyzed using statistical methods to determine their association with outcomes.

Results: A total of 161 patients were included in the study. The all-cause ICU mortality rate was 72%, and the 30-day mortality rate was 65%. Most CRKP clinical isolates were carbapenemase producers (132/161; 81.9%), of which K. pneumoniae carbapenemaseproducing isolates were most prevalent (112/132; 84.8%). Cox regression analysis revealed that the use of appropriate antibiotics within 48 hours (HR 0.47, CI 95% 0.26–0.85, $p = 0.013$) was associated with a favorable outcome, while a high sequential organ failure assessment score (HR 1.24, CI 95% 1.15–1.35, $p < 0.001$) was associated with death.

Conclusion: Administering appropriate antibiotics within 48 hours after onset of CRKP pneumonia with BSI has been identified as vital for reducing 30-day mortality in critically ill patients with respiratory failure.

Key words: Bloodstream infections, carbapenem-resistant Klebsiella pneumoniae, mortality rate, appropriate antibiotic treatments, critically ill patients

【胸腔醫學雜誌】優秀論文獎第二名

You-Cyuan Liang, M.D. 梁佑全醫師 奇美醫院內科部胸腔內科

Influence of a Pay-for-Performance Program on 3-Year Follow-Up of Patients with COPD: A Retrospective Study from Taiwan

You-Cyuan Liang1*, Shu-Farn Tey[1,2*], Shyh-Ren Chiang[1], Kuo-Chen Cheng[1],Mei-I Sung[3], Jui-Lin Liang[4]

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[4]Department of Intensive Care, Chi-Mei Medical Center,Liuying, Tainan, Taiwan.

ABSTRACT

Background: Chronic obstructive pulmonary disease (COPD) is a heterogeneous lung condition that cause airway obstruction, and is a leading cause of morbidity and mortality worldwide, with an economic and social burden. In recent years, multidisciplinary management of COPD has been emphasized for the purpose of improving the quality of patient care and reducing acute exacerbations. Pay for performance (P4P) is a strategy that aligns healthcare provider incentives with improvements in care quality and cost control. This study was conducted to assess the effectiveness of a COPD P4P program in patients with COPD.

Methods: This study retrospectively included patients diagnosed with COPD under ICD-10 codes J41-J44, who registered for the P4P program in our hospital between September 2018 and August 2019 and had been diagnosed at the same hospital at least 1 year prior to participation. Patients who did not complete the COPD Assessment Test (CAT), the modified Medical Research Council (mMRC) symptom score assessment, and pulmonary function tests (FEV1 and FVC) were excluded from the study.

Results: From Sep 1, 2018 to Aug 31, 2019, 388 patients were enrolled. The number of hospitalized patients decreased from 55 during the year in which the study cases were included to 26 patients at the third year; the ratio of the number of hospitalized patients decreased from 14.2% to 9.6%, and the number of hospitalizations decreased from 83 to 45. However, the mean length of stay per hospitalization increased from 7.17 days to 10.73 days, with statistical significance ($p = 0.011$). The total cost of hospitalization of patients with diagnostic codes J41-J44 and/or J12-J18 did not reveal a decreasing trend from 1 year before, to the third year after study enrollment, with a similar trend regarding the cost of hospitalization per day per hospitalization. Regardless of whether the patients had diagnostic codes J41-J44 or J12-J18, both the number of hospitalized patients and the number of hospitalizations decreased from the time of study enrollment to the subsequent 3 years. The number and rate of intensive care unit admissions showed a decreasing trend between the year of enrollment and the third year, as did the number of in-hospital deaths and the mortality rate of those hospitalized revealed. In terms of emergency department (ED) visits only, the total cost, number of patients and number of visits generally revealed a downward trend, but the mean cost per ED visit did not show a consistent trend. Subgroup analysis demonstrated that patients with diabetes mellitus, a GOLD classification, lower mean pre- and postbronchodilator FEV1 at baseline lung function, COPD, a higher CAT score, an mMRC score and episodes of COPD exacerbations in the prior year had a significantly higher tendency of visiting the ED or being hospitalized. The GOLD classification was a potential risk factor for an ED visit or hospitalization, with overall statistical significance ($p = 0.002$), and GOLD grade III seemed to have higher risk tendency than GOLD grade I. Likewise, COPD was a potential risk factor for an ED visit or hospitalization, with overall statistical significance ($p < 0.001$), and COPD roups C and D seemed to have a higher risk tendency than groups A and B.

Conclusion: This study revealed the benefits of P4P program enrollment for patients with COPD. Our results suggest a different kind of medical care concept using an integrated multidisciplinary approach. Further studies with a longer follow-up period are warranted to distinguish the effectiveness of P4P and other factors or comorbidities that may have an impact on ED visits or hospitalization of patients with COPD.

Key words: chronic obstructive pulmonary disease, pay-for-performance, multidisciplinary management, medical costs

【胸腔醫學雜誌】優秀論文獎第三名

Hung-Jui Ko, M.D. 柯宏叡醫師 台北榮民總醫院胸腔部

Comparison of Clinical Efficacy of Extended Infusion and Intermittent Bolus Dosing of Piperacillin-Tazobactam in the Treatment of Pneumonia

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ABSTRACT

Introduction: Pneumonia is a significant cause of morbidity and mortality worldwide.Beta-lactam antibiotic is a choice as an empirical treatment for pneumonia. Based on pharmacodynamic and pharmacokinetic characteristics, extended infusion beta-lactam antibiotic had a potentially better outcome than intermittent bolus dosing. This study aimed to compare the effectiveness of intermittent bolus dosing of piperacillin-tazobactam (PIP-TAZ) and extended infusion of PIP-TAZ in the treatment of pneumonia patients in Taiwan.

Methods: This retrospective study enrolled adult patients diagnosed with either severe community-acquired pneumonia (SCAP) or nosocomial pneumonia across 9 hospitals in Taiwan from March 1, 2018 to May 30, 2019. Primary outcome was clinical cure rate, while secondary outcomes included clinical effectiveness and in-hospital mortality.

Results: A total 1212 patients with pneumonia were included, of which 639 received intermittent bolus dosing of PIP-TAZ and 34 received extended infusion of PIP-TAZ. After propensity score matching using the Charlson comorbidity index, the clinical cure rate and clinical effectiveness were similar in both groups. However, in the SCAP group, the intermittent bolus group demonstrated higher rates of clinical cure and effectiveness than the extended infusion group (clinical cure rate: 94.4% vs 61.1%, p = 0.016; clinical effectiveness:94.4% vs 66.7%, p = 0.035).

Conclusion: For the treatment of nosocomial pneumonia, intermittent bolus dosing of PIP-TAZ was non-inferior to an extended infusion strategy. Moreover, intermittent bolus dosing of PIP-TAZ demonstrated higher potency in treating SCAP than the extended infusion strategy.

Key words: piperacillin-tazobactam, pneumonia, extended infusion

Young Investigator Award

【Young Investigator Award】

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Evolving risk factors and predisposing conditions of Pneumocystis pneumonia in non-HIV patients: A seven-year multicenter study

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ABSTRACT

Objectives: As Pneumocystis pneumonia (PCP) increasingly develops in non-HIV patients without established immunocompromising factors, the study examined the evolving predisposing factors and at-risk medications.

Methods: This multicenter retrospective study included non-HIV PCP at seven clinical centers from 2016–2023. Patients were categorized by exposed medications and underlying predisposing diseases. Demographic characteristics, disease severity, treatment approaches, and outcomes were reported.

Results: 470 non-HIV PCP were identified, and 420 probable cases were included for analysis. The proportion of PCP without established high-risk medications increased from 47% in 2016 to 61% by 2023. 209 (49.8%) received established high-risk medications, 106 (25.2%) with suspected at-risk medications, and 155 (36.9%) with no at-risk medications. Subjects with established high-risk medications were more likely to have hematological malignancies (50.2%, $P < 0.001$). Those with suspected at-risk medications had higher rates of solid cancers (63.2%,$P < 0.001$) and transplantation (24.5%, $P < 0.001$). Overall mortality rates were 43.8% at 60-day, with comparable mortality across medication groups (log-rank $P=0.08$) but significant differences by disease category (log-rank $P < 0.001$), with solid cancers exhibiting the worst outcome (58.0%).

Conclusion: The epidemiology of non-HIV PCP is evolving beyond traditional risk categories. Both emerging high-risk medications and predisposing comorbidities might require further investigation and addressed in prophylaxis guidelines.

【Young Investigator Award】

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Cardiac Events and Survival in Patients With EGFR-Mutant Non–Small Cell Lung Cancer Treated With Osimertinib

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ABSTRACT

Importance: Although it has been reported that osimertinib mesylate provides better survival benefits compared with first- or second-generation epidermal growth factor receptor tyrosine kinase inhibitors (EGFR TKIs), it remains unclear whether osimertinib is associated with more cancer therapy–related cardiac events (CTRCEs) compared with other EGFR TKIs, as does the extent of the association these adverse effects may have with overall survival. This issue is particularly critical due to the high prevalence of EGFR variants within Asian populations, including that of Taiwan.

Objective: To compare CTRCEs and their association with survival in patients treated with osimertinib vs other EGFR TKIs.

Design, Setting, and Participants：This cohort study was conducted at the National Cheng Kung University Hospital, a college hospital and tertiary academic referral center in Taiwan. The median follow-up duration was 23.2 (IQR, 15.2-31.5) months. A total of 401 patients with EGFR-mutant non–small cell lung cancer (NSCLC) beginning treatment with EGFR TKIs from September 1, 2019, to July 31, 2022, were retrospectively analyzed. CTRCEs included newly emerging arrhythmias, valvular heart diseases (moderate and more), myocardial infarction, and heart failure and were analyzed after adjusting for age, sex, smoking, alcohol consumption, body mass index, cardiovascular comorbidities, thoracic radiotherapy, and cardiovascular medications. Follow-up was completed January 31, 2024.

Exposure Osimertinib.

Main Outcomes and Measures：The Cox proportional hazards model was used to estimate CTRCEs in patients treated with osimertinib or other EGFR TKIs. Considering that death can lower the incidence of CTRCEs, the competing risk method was used to calculate CTRCEs after adjusting for potential confounders. Multivariable Cox proportional hazard regression analysis for overall survival was used to explore whether CTRCEs were independently associated with overall survival.

Results: Among the 401 patients (253 [63.1%] female; mean [SD] age, 69.2 [11.3] years), 195 (48.6%) treated with osimertinib were matched with 206 (51.4%) treated with other EGFR TKIs. Occurrence of CTRCEs in patients receiving osimertinib was significantly higher compared with patients treated with other EGFR TKIs (29 [14.9%] vs 9 [4.4%]; hazard ratio [HR], 3.37; 95% CI, 1.56-7.26; P = .002). After adjustment for relevant cardiovascular risk factors, the HR of CTRCEs was significantly higher in the group treated with osimertinib (adjusted subdistribution HR, 4.00; 95% CI, 1.81-8.85; P < .001). In addition, CTRCEs were independently associated with overall survival (HR, 4.02; 95% CI, 2.44-6.63; P < .001).

Conclusions and Relevance : In this cohort study of patients with EGFR-mutant NSCLC, osimertinib was associated with a higher incidence of CTRCEs compared with other EGFR TKIs; CTRCEs were independently associated with overall survival. These findings highlight the need for ongoing cardiac monitoring in these patients, regardless of preexisting cardiac risk factors.

【Young Investigator Award】

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A Two-Staged, Risk-Stratified Strategy Combining FEV1/FEV6 and COPD Diagnostic Questionnaire Acts as an Accurate and Cost-Effective COPD Case-Finding Method

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ABSTRACT

Background and Objective: Symptom-based questionnaires and handheld lung function devices are widely used for COPD case finding, but the optimal combination remains unclear. This study aimed to compare the diagnostic accuracy (DA) of various combinations of handheld lung function devices and questionnaires and develop a COPD case-finding strategy.

Methods: This cross-sectional, prospective, observational study enrolled participants aged ≥ 40 years with respiratory symp-toms and ≥ 10 smoking pack-years. Participants completed three questionnaires (COPD diagnostic questionnaire [CDQ], lung function questionnaire; COPD Population Screener) and 2 handheld lung function devices (peak flow meter, microspirometer), followed by spirometry to confirm COPD (post-bronchodilation FEV1/FVC < 0.7). DA is assessed using the area under the ROC curve (AUROC).

Results: Among 224 participants, COPD incidence was 29%. Individually, handheld devices showed significantly higher DA than questionnaires (AUROC 0.678–0.69 for questionnaires vs. 0.807 for peak expiratory flow rate [PEFR] and 0.888 for FEV1/FEV6; all pairwise $p < 0.05$). FEV1/FEV6-based combinations outperformed PEFR-based combinations (all n = 224; AUROC 0.897–0.903 vs. 0.810–0.818; $p < 0.05$). The CDQ and FEV1/FEV6 combination reached the highest DA (AUROC 0.903). FEV1/FEV6 < 0.76 was the optimal cutoff value. A two-staged strategy (sensitivity/specificity 0.82/0.84) was proposed: low-risk partic-ipants (CDQ ≤ 13) need no further testing; middle-risk (CDQ 14–26) should undergo FEV1/FEV6; and high-risk (CDQ ≥ 27) and middle-risk with FEV1/FEV6 < 0.76 require confirmatory spirometry. This approach would reduce misdiagnoses and save costs and time compared to FEV1/FEV6 alone.

Conclusions: FEV1/FEV6 and CDQ combination achieves the highest DA. A two-staged, risk-stratified strategy combining CDQ and FEV1/FEV6 can be accurate and cost-effective to detect at-risk, undiagnosed COPD subjects. External validation is required.

優秀學術論文摘要

Thoracic Oncology
Intervention Bronchoscopy
Diagnosis
Other

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OA01

基於電子鼻與大型語言模型進行院區特定肺癌診斷：一項多中心前瞻性研究

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Site-Specific Lung Cancer Diagnosis via Electronic Nose with Large Language Models: a Multicenter Prospective Study

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Purpose: Electronic Nose (eNose) breathprints are promising non-invasive lung cancer diagnostic tools, but cross-site validation and adaptation remained barriers to clinical applications. It remains unknown whether a natural language processing (NLP)-pretrained large language model (LLM) can enable few-shot, site-specific classification of lung cancer using eNose breathprints.

Materials and Methods: We collected eNose breathprints of lung cancer and non-lung cancer patients from two medical centers in Taiwan. A GPT-2–backbone LLM with parameter-efficient adaptation was compared with CNNs trained from scratch or pretrained on CIFAR-100. Few-shot protocols (2–6 shots per class) and full-data training were evaluated.

Results: We collected 432 eNose breathprints from two sites (S1 and S2). With just 6 labeled samples per class (6 shots), our LLM model achieves AUCs of 0.79 (95% CI: 0.71–0.87) and 0.76 (95% CI:0.69–0.82) on S1 and S2, respectively, outperforms the scratch CNN models (S1; AUC: 0.44; 95% CI: 0.35 - 0.54, p=0.0002) (S2; AUC: 0.63; 95% CI: 0.55 - 0.71, p=0.0198) and CNN pretrained on CIFAR-100 images (S1; AUC: 0.57, 95% CI: 0.47–0.67, p=0.0100) and (S2; AUC: 0.61; 95% CI: 0.53–0.68, p=0.0248). LLM or a CNN model trained on the source site fails to improve performance after transferring it to the target site for fine-tuning; for the LLM, performance even deteriorates (S1→S2; AUC: 0.64, 95% CI: 0.57–0.71); (S2→S1; AUC: 0.35, 95% CI: 0.26–0.46).

Conclusions: Our study demonstrates the potential of pretrained LLMs for practical, site-specific lung cancer screening through few-shot adaptation and reducing dependence on large site-specific datasets.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OA02

探討具有 HER2 基因變異與蛋白質過度表現之非小細胞肺癌患者的臨床特徵與預後：台灣回溯性研究

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Investigating Clinical Characteristics and Prognosis in Patients with Non-Small Cell Lung Cancer Harboring HER2 Genetic Alterations & Protein Overexpression: A Retrospective Study in Taiwan

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Purpose: HER2 alterations represent a rare but clinically significant subset of NSCLC. Their clinical features and prognosis in Taiwanese patients remain unclear. This study aimed to characterize clinical profiles, treatment patterns, and outcomes of HER2-altered NSCLC in Taiwan.

Materials and Methods: This multicenter retrospective study enrolled 186 patients with stage IIIB-IV NSCLC harboring HER2 mutations, amplification, or protein overexpression diagnosed between March 2016 and July 2025. HER2 status was confirmed using NGS, FISH, or IHC. Clinical and molecular features were collected from electronic medical records. PFS and OS were estimated using Kaplan–Meier method, and Cox regression identified independent prognostic factors.

Results: Among 186 patients, 60.8% were female, 70.4% were never-smokers, and 92.5% had adenocarcinoma. Exon 20 insertions accounted for 78.9% of HER2 mutations, and HER2 IHC 2+/3+ expression was observed in 41.3% of tumors. Median PFS and OS following first-line platinum-based chemotherapy (C/T) were 5.1 and 11.2 months, respectively. Patients who received HER2-targeted therapies demonstrated a numerically longer median PFS (7.6 vs. 4.8 months) compared with those treated with C/T alone. Multivariate analysis identified poor ECOG performance status (≥2) and non-tyrosine kinase domain mutations as independent predictors of inferior survival.

Conclusions: HER2-altered NSCLC in Taiwanese patients predominantly affects females and never-smokers. Conventional C/T provides limited benefits, whereas HER2-targeted therapies show potential to improve outcomes. Comprehensive HER2 testing, including mutation, amplification, and protein expression, is essential to guide treatment decisions and future clinical research.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OA03

以免疫組織化學分型作為接受一線免疫化學治療之晚期小細胞肺癌病患的預後指標

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Immunohistochemistry-Based Molecular Subtyping as a Prognostic Marker in ES-SCLC Treated with First-Line Immunochemotherapy

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Introduction:

Immunochemotherapy has become the standard first-line treatment for extensive-stage small cell lung cancer (ES-SCLC). Molecular subtyping using immunohistochemistry (IHC) has been shown to be feasible in clinical practice. However, the association between IHC-defined subtypes and treatment efficacy remains unclear.

Methods:

Patients with ES-SCLC treated with immune checkpoint inhibitors (ICIs) plus chemotherapy were prospectively enrolled. Tumor subtypes were determined by IHC staining for ASCL1, NEUROD1, POU2F3, and YAP1. Subtypes were classified based on dominant expression using H-scores. Treatment response was evaluated radiologically according to RECIST version 1.1. Progression-free survival (PFS) was calculated from treatment initiation to radiologic progression. Kaplan–Meier analysis and log-rank tests were used to compare survival outcomes between IHC-defined subtypes.

Results:

Among 43 patients, 81.4% were male and 95.3% had a history of smoking. The median age was 64 years (range 46–81), and 97.7% had ECOG performance status 0–1. Baseline brain and liver metastases were observed in 20.9% and 23.3% of patients, respectively. First-line treatment consisted of atezolizumab–EP (74.5%) or durvalumab–EP (23.3%). The overall response rate was 79.1%. Median PFS and OS were 6.0 and 17.4 months, respectively.

IHC subtyping was available in 41 patients: SCLC-A (53.7%), SCLC-N (31.7%), SCLC-P (9.8%), and triple-negative (4.9%). Response rates were 86.4% for SCLC-A, 61.5% for SCLC-N, and 75.0% for SCLC-P. Median PFS was longest in SCLC-A (8.0 months, 95% CI: 6.3–9.7), compared with SCLC-N (4.7 months, 95% CI: 3.2–6.2) and SCLC-P (4.4 months, 95% CI: 2.4–6.4).

Conclusion:

IHC-based molecular subtyping is feasible in clinical practice and may provide prognostic information in ES-SCLC patients treated with first-line immunochemotherapy. Subtype-specific differences in progression-free survival were observed, with the ASCL1-dominant group showing the most favorable outcomes. Overall survival data are being collected and will further clarify the clinical relevance of these subtypes.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OA04

腦源性神經營養因子會促進表皮生長因子受體基因突變陽性肺腺癌的纖維細胞浸潤並且支持抗藥性癌細胞的持續存在

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BDNF facilitates fibroblast infiltration and supports drug-tolerant persistence in EGFR-mutated lung adenocarcinoma

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Purpose: Lung adenocarcinoma (LUAD) patients with activating epidermal growth factor receptor (EGFR) mutations often respond well to tyrosine kinase inhibitors (TKIs) initially. However, acquired drug resistance to EGFR-TKIs arises from enriched drug-tolerant persister cells (DTPCs) within tumors. Our study will reveal that brain-derived neurotrophic factor (BDNF) is highly expressed in EGFR-TKI DTPCs, and which fosters the growth of both cancer and fibroblast cells.

Materials and Methods: Our lab developed the EGFR-TKI–resistant cells HCC827GR and H1975OR by exposing them to the EGFR-TKI drugs gefitinib and osimertinib, respectively**.** NIH3T3 cells were procured from the Bioresource Collection and Research Center (BCRC) in Hsinchu, Taiwan. BDNF concentrations were measured using the ARG81251 Human BDNF ELISA Kit (Arigo Biolaboratories) following the manufacturer's protocol. For clonogenic assay, cells were evenly distributed in 6-well plates with 500 cells per well and placed in an incubator set at 37°C with 5% CO2 for two weeks. Following incubation, the media were aspirated, and the colonies were stained using a 0.25% crystal violet solution (Thermo Fisher Scientific, C581-25).

Results: Brain-derived neurotrophic factor (BDNF) is highly expressed in EGFR-TKI DTPCs, which fosters the growth of both cancer and fibroblast cells. This growth is mediated by the expression of BIRC2/3 in cancer cells and FGF2 in fibroblasts, activating survival signaling pathways in DTPCs. Additionally, HDAC inhibitors elevate BDNF expression and augment the population of DTPCs, while silencing BDNF diminishes their abundance. Suppressing BDNF in DTPCs impedes their proliferation, whereas its upregulation exacerbates DTPCs, rendering EGFR-mutated lung cancer cells resistant to EGFR-TKIs and chemotherapeutic agents. Correlation analysis reveals an association between FGF2 levels and BDNF expression, which coincides with fibroblast infiltration in LUAD.

Conclusions: High BDNF expression predicts a poor prognosis, and elevated BDNF, FGF2, and FGFR1 expression correlate with a prominent fibroblast signature in tumors. BDNF expression in EGFR-mutated lung cancer cells upregulates BIRC2/3 expression, and treatment with BIRC2/3 inhibitors reduces DTPCs, enhancing EGFR-TKI sensitivity. Our findings underscore the critical role of BDNF in maintaining DTPCs and its potential role as a therapeutic and prognostic factor in lung cancer treatment.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OA05

晚期非小細胞肺癌患者的免疫特徵與免疫治療後療效之預測

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Immune Signatures of Patients with Advanced Non-small-cell Lung Cancer for Efficacy Prediction after Immunotherapy

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Purpose: Programmed cell death protein 1 ligand 1 (PD-L1) expression alone may not be the optimal predictor of immunotherapy (IO) efficacy in advanced non-small-cell lung cancer (NSCLC). Evaluation of circulating immune signatures using mass cytometry is a promising technique for predicting IO response and patient prognosis. This study investigated the feasibility of circulating immune cells and cytokines in predicting tumor response to IO in advanced NSCLC.

Materials and Methods: To investigate dynamic changes in immune signatures, blood specimens were prospectively collected from patients with NSCLC at baseline and following chemotherapy (C/T) and/or IO. Mass cytometry and enzyme-linked immunosorbent assay were used to characterize immune signatures and cytokine patterns to identify correlations between immune profiles and treatment efficacy. The cell levels of different exhausted T cells (PD-1^+ T cells, TIM-3^+ T cells, and LAG-3^+ T cells) before and after treatment in patients with or without treatment response (partial response) were analyzed.

Results: The study enrolled 45 patients. The proportion of circulating natural killer (NK) cells and $CD8^+$ T cells significantly increased after IO alone treatment. Cell levels of PD-1^+CD8^+ T cells, PD-1^+CD4^+ T cells, TIM-3^+CD8^+ T cells, LAG-3^+ NK cells, and LAG-3^+CD8^+ T cells significantly decreased in patients with treatment response to IO alone. The responders to C/T alone treatment also showed decreases in cell levels of PD-1^+CD8^+, TIM-3^+CD4^+, and LAG-3^+CD4^+ T cells after treatment. Tumor necrosis factor-alpha (TNF-α) levels significantly increased after IO alone treatment ($p < 0.05$). Patients with high PD-1^+CD8^+ T cells before IO alone treatment had shorter overall survival (OS) compared to those with low levels ($p = 0.0159$). Patients with high LAG-3^+CD8^+ T cells before C/T plus IO treatment had shorter OS compared to those with low levels ($p = 0.0248$).

Conclusions: Responses to IO in NSCLC were correlated with declines in specific exhausted T cells, suggesting that IO may exert therapeutical efficacy by decreasing circulating exhausted T cells, which were associated with poorer survival, while also increasing TNF-α. These results highlight the prognostic value of monitoring changes in circulating exhausted T cells to predict IO response and survival outcomes in advanced lung cancer.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OA06

剪切波超音波彈性影像在肋膜病灶診斷中的應用

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Application of Shear-Wave Ultrasound Elastography in Pleural Lesions

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Background: This study aimed to improve the diagnostic accuracy of transthoracic ultrasonography for pleural lesions by integrating two-dimensional shear-wave elastography with conventional ultrasound. We hypothesized that quantitative assessment of pleural elasticity would add diagnostic value in distinguishing malignant from benign pleural lesions.

Methods: We conducted a prospective, single-center diagnostic study with a derivation cohort (May 2018 to October 2021) and a validation cohort (November 2021 to January 2024). Adults ≥20 years with pleural lesions or effusions underwent transthoracic B-mode ultrasound and 2D shear-wave elastography using convex or linear probes. Final diagnoses were established by pathology, cytology, microbiology, or 6-month clinical follow-up. Diagnostic performance was assessed using ROC analysis with the Youden index-derived cut-off values, along with sensitivity, specificity, and accuracy, and multivariable logistic regression was applied to identify independent predictors of malignant pleural lesions.

Results: A total of 389 patients were analyzed. The median age was 68.0 years (IQR 60.4–74.9), with male predominance (53.5%). The median diameter of the pleural lesion was 5.1 mm (IQR 2.7–8.4). Malignant lesions were identified in 245 (63.0%) and benign in 144 (37.0%) participants. Among the 90 patients in the derivation cohort, the optimal cut-off value to differentiate benign from malignant lesions was 60.2 kPa, yielding a Youden index of 0.41, sensitivity of 79.7%, specificity of 61.3%, and accuracy of 73.3%. Applying this cut-off to the validation cohort (n=299) resulted in sensitivity of 63.5%, specificity of 62.8%, and accuracy of 63.2%. Univariable analyses showed that maximal pleural thickness, pleural thickness >10 mm, presence of pleural nodule/mass, presence of diaphragmatic nodule, unilateral involvement, and elasticity values >60.2 kPa were significantly associated with malignant pleural lesions ($p \leq 0.05$) and were included in the multivariable model. In multivariable analysis, pleural thickness >10 mm (OR 2.56, 95% CI 1.19–5.47, $p=0.016$), unilateral involvement (OR 2.21, 95% CI 1.29–3.77, $p=0.004$), and elasticity >60.2 kPa (OR 2.64, 95% CI 1.67–4.15, $p<0.001$) remained significant independent predictors of malignant pleural lesions.

Conclusions: Shear-wave elastography provides quantitative tissue stiffness assessment that enhances transthoracic ultrasound in differentiating benign from malignant pleural lesions. Further research should investigate its potential to guide pleural biopsy and validate its diagnostic performance and clinical applicability.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OA07

結合術中錐狀電腦斷層影像輔助支氣管內視鏡超音波導引經支氣管切片與冷凍切片之周邊毛玻璃結節診斷研究

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Using Intraprocedural Cone-Beam Computed Tomography with Endobronchial Ultrasound-Guided Transbronchial Forceps followed by Cryobiopsies for the Diagnosis of Peripheral Ground-Glass Nodules

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Purpose: Ground-glass opacities (GGOs) remain challenging to diagnose using bronchoscopic procedures. Cone-beam computed tomography (CBCT) provides three-dimensional (3D) CT images, offering updated information on lung anatomy and the spatial relationship between the lesion and diagnostic devices during the procedure. In addition, transbronchial cryobiopsy (TBC) allows the collection of larger tissue specimens compared with conventional biopsy forceps. Therefore, this study aims to evaluate the efficacy of intraprocedural CBCT combined with TBC in improving the diagnostic yield of endobronchial ultrasound-guided transbronchial biopsy (EBUS-TBB) for GGOs.

Materials and Methods: Patients who EBUS-TBB and TBC combined with intraprocedural CBCT for the diagnosis of GGOs with a consolidation-to-tumor ratio (CTR) of less than 50% between January 2022 and December 2024 were retrospectively enrolled. The primary endpoint was diagnostic accuracy.

Results: A total of 90 patients who underwent EBUS-TBB followed by TBC with intraprocedural CBCT were included in the final analysis. The overall diagnostic accuracy of EBUS-TBB with intraprocedural CBCT was 68.9%. The accuracy showed a trend toward improvement when TBC was used for the diagnosis of GGOs (76.7%, $P = 0.241$). Moreover, combining both forceps biopsy and TBC significantly improved the overall diagnostic accuracy compared with TBB alone (85.6% vs. 68.9%, $P = 0.008$). Subgroup analyses demonstrated similar improvements in diagnostic accuracy (TBB vs. TBB + TBC) among lesions smaller than 2 cm (69.0% vs. 84.5%, $P = 0.029$), lesions located in the upper lobe (70.0% vs. 86.7%, $P = 0.027$), pure GGOs (66.7% vs. 86.7%, $P = 0.025$), and lesions not visible on chest radiography (52.6% vs. 78.9%, $P = 0.016$). The tissue area obtained by TBC was also significantly larger than that obtained by TBB (16.8 mm² vs. 3.7 mm², $P < 0.001$). No severe complications resulting in death or permanent disability were observed.

Conclusions: Intraprocedural CBCT effectively assists EBUS-TBB in the diagnosis of GGOs. The addition of TBC further improves diagnostic accuracy and yields larger tissue specimens.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OA08

Spread Through Air Spaces 對第一期非小細胞肺癌復發與手術趨勢的影響：真實世界研究

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Impact of Spread Through Air Spaces (STAS) o Recurrence and Surgical Trends in Stage I Non-Small Cell Lung Cancer: A Real-World Cohort Study

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Introduction

Non-small cell lung cancer (NSCLC) is the most prevalent type of lung cancer and remains a leading cause of cancer-related mortality worldwide. Early detection, particularly at Stage I, significantly improves survival outcomes. The widespread use of low-dose computed tomography (LDCT) has increased the detection of small, asymptomatic tumors, allowing for earlier diagnosis and facilitating less invasive surgical options such as segmentectomy and wedge resection. Despite these advances, risk factors associated with recurrence in Stage I NSCLC are not fully understood.

Methods

We conducted a retrospective cohort study of 1,077 patients with Stage I NSCLC who underwent surgical resection at Kaohsiung Medical University Hospital between 2010 and 2022. Data collected included clinicopathologic characteristics, AJCC 7th and 8th edition staging, surgical procedures, and recurrence outcomes. Trends in stage distribution and surgical approaches were analyzed over time. Kaplan–Meier and Cox regression analyses were used to evaluate recurrence-free survival (RFS) and identify independent risk factors for recurrence.

Results

The proportion of Stage I NSCLC cases increased from 9.3% in 2010 to 33.8% in 2017, while Stage IA cases rose from 12.1% in 2018 to 38.2% in 2022. Concurrently, the lobectomy rate declined from 75% to 43.6%, with an increased adoption of sublobar resections. Kaplan–Meier analysis demonstrated no significant difference in RFS between lobectomy and sublobar resection with regional lymph node dissection. Multivariate Cox regression identified spread through air spaces (STAS) as an independent predictor of recurrence (hazard ratio 2.87, $p = 0.006$), along with male sex, larger tumor size, and visceral pleural invasion.

Conclusion

This study highlights the substantial impact of LDCT screening on the early detection and surgical management of NSCLC, reflected in the growing proportion of Stage I diagnoses and increased use of sublobar resections. Although surgical extent did not significantly affect recurrence-free survival, the presence of STAS emerged as a key risk factor for recurrence. These findings emphasize the importance of incorporating pathological features such as STAS into postoperative risk stratification and tailoring treatment strategies to optimize outcomes in patients with Stage I NSCLC.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA01

一位右側乳糜胸病人接受保守治療

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Right chylothorax in a patient underwent conservative care

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Background:

Right-sided chylothorax is rare due to the thoracic duct's typical left-sided termination. Its occurrence may indicate high-level duct injury or obstruction, necessitating prompt diagnosis and management to prevent respiratory compromise as well as nutritional and immunologic deficits.

Case Presentation:

A 78-year-old female with a history of old cerebrovascular accident and left breast cancer post-modified radical mastectomy under regular follow-up was admitted for an acute ischemic stroke. On hospital day 11, she developed shortness of breath and fever. Chest radiography revealed a rapid increase in right pleural effusion. Thoracentesis produced milky fluid, and pleural analysis demonstrated elevated triglycerides (452 mg/dL), lymphocyte predominance (92%), and absence of malignant cells, confirming acute right-sided chylothorax. She was transferred to the ICU, where conservative management was initiated. A right-sided closed thoracostomy drainage was performed using a Fr.14 catheter. The drainage volume progressively decreased, clinical symptoms improved, and the catheter was removed uneventfully. With dietary modification and supportive care, the chylothorax resolved completely without recurrence.

Discussion:

Chylothorax is the accumulation of lymphatic fluid, rich in triglycerides and chylomicrons, within the pleural space. It most often results from thoracic duct disruption or obstruction due to trauma, surgery, malignancy, or congenital anomalies. The characteristic milky appearance is attributable to high fat content from intestinal absorption. Diagnosis is established by pleural fluid triglyceride levels >110 mg/dL or detection of chylomicrons. Common symptoms include dyspnea, cough, and chest discomfort. Management strategies vary according to etiology and may involve dietary modification, drainage, and, in refractory cases, surgical or interventional thoracic duct repair. This case illustrates that acute right-sided chylothorax may resolve without major surgery if the underlying cause is reversible and timely conservative intervention is provided. Early recognition, low-fat diet, appropriate drainage, and supportive care are essential for favorable outcomes.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA02

成功脫離人工呼吸器的顱內出血患者的生命終末決策

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End-of-life decisions of patients with intracranial hemorrhage successfully weaned from prolonged mechanical ventilation

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Purpose: Factors related to end-of-life decisions of patients with intracranial hemorrhage successfully weaned from prolonged mechanical ventilation remain unclear. This study aims to evaluate the factors influencing the end-of-life decisions of patients with intracranial hemorrhage successfully weaned from prolonged mechanical ventilation and those of ward mortality patients. Thus, evaluating these factors could provide information to patients' families to assist in clinical decision-making.

Materials and Methods: This retrospective study has examined all patients with intracranial hemorrhage successfully weaned from prolonged mechanical ventilation for 6 years. The following data were analyzed: age, gender, comorbidities, intracranial hemorrhage type, spontaneous or traumatic intracranial hemorrhage, presence or absence of an intraventricular hemorrhage, Glasgow Coma Scale scores, receipt or not of intracranial hemorrhage surgery, discharge dispositions and end-of-life decisions.

Results: In total, 109 patients had intracranial hemorrhage that resulted in acute respiratory failure necessitating prolonged mechanical ventilation, including 12 respiratory care center mortality patients, 6 ventilator-dependent patients, 20 ward mortality patients and 71 discharged patients after prolonged mechanical ventilation. Among 91 successfully weaned patients, the families of 62 (68.1%) patients signed the do-not-resuscitate order. Patient's Glasgow Coma Scale score ≥10 during respiratory care center discharge and absence of comorbidities were the influencing factors between patients whose do-not-resuscitate orders were signed and those whose orders were not signed. Among 20 ward mortality patients, signing both the do-not-resuscitate and do-not-intubate orders by patients' family was the influencing factor between patients discharged after prolonged mechanical ventilation and ward mortality patients.

Conclusions: The challenges and the emotional, physical, and practical burdens for intracranial hemorrhage prolonged mechanical ventilation patients' families weigh heavily throughout the illness trajectory. For patients with severe comorbidities and more neurologic impairment after successful weaning from the ventilator, their families believed that palliative therapy would provide greater benefit. Physicians should be early intervention of palliative care for intracranial hemorrhage prolonged mechanical ventilation patients, especially heavy comorbidities and more neurologic impairment.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA03

呼吸器管路更換頻率與呼吸器相關性肺炎的發生率：實證探討

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Frequency of Ventilator Circuit Changes and the Incidence of Ventilator-Associated Pneumonia: An Evidence-Based Review

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Abstract: Ventilator-associated pneumonia (VAP) is one of the most common complications in intensive care units (ICUs). Traditionally, frequent replacement of ventilator circuits has been considered beneficial in reducing the incidence of VAP. However, this routine practice consumes substantial healthcare resources and manpower. This study aims to systematically review and synthesize the evidence regarding whether frequent ventilator circuit changes effectively reduce VAP incidence, and to provide evidence-based recommendations for clinical practice.

This study adopted an evidence-based medicine approach, applying the PICO framework (Population, Intervention, Comparison, Outcome) for literature search and analysis:

- **P (Patient/Population):** Adult patients receiving mechanical ventilation.
- **I (Intervention):** Frequent ventilator circuit changes (e.g., every 48 hours or every 7 days).
- **C (Comparison/Control):** Extended replacement intervals (e.g., no change or every 14 days).
- **(Outcome):** Incidence of VAP.

Literature searches were conducted in PubMed, Cochrane Library, and other academic databases using keywords such as “ventilator circuit change,” “VAP,” and “pneumonia.” Randomized controlled trials (RCTs) and observational studies were included, and all selected studies were rigorously appraised using the Oxford Centre for Evidence-Based Medicine levels of evidence and the Critical Appraisal Skills Programme (CASP) tools.

Results: Multiple high-quality studies demonstrated that frequent circuit changes (e.g., every 2 days) did not provide an advantage over less frequent changes (e.g., every 7 or 14 days). A well-known study (Craven et al., 1996) even reported higher VAP incidence in the frequent-change group (12 cases per 1,000 ventilator-days vs. 3 or 6 cases). Moreover, other studies confirmed that extending the circuit replacement interval from 7 days to 14 days did not significantly increase VAP incidence (Choi & Yeon, 2010).

Conclusion and Recommendations: Based on the current body of evidence, this review does not support frequent ventilator circuit changes as a routine measure for VAP prevention. When circuits are not visibly contaminated and remain functional, extending the replacement interval to at least 7 days, and potentially up to 14 days, is recommended. This approach not only effectively controls infection risk but also optimizes healthcare resource and manpower utilization.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA04

腫瘤氣道擴散可預測 EGFR 突變進展期肺腺癌標靶治療後救援手術的早期復發

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Spread through air spaces may predict early progression after salvage surgery for EGFR-mutant advanced lung adenocarcinoma treated with targeted therapy

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Purpose: Salvage resection for residual lung cancer harboring epidermal growth factor receptor (EGFR) mutations following EGFR-tyrosine kinase inhibitor (TKI) treatment is gaining traction for its survival benefits. However, the impact of pathological factors on survival remains unclear.

Materials and Methods: Between 2013 and 2023, we retrospectively reviewed 34 patients with advanced lung adenocarcinoma who received EGFR-TKI therapy. After a median TKI treatment duration of 9.1 months, all patients demonstrated either partial response (n=27) or stable disease (n=7) before salvage surgery. Demographic, pathological outcomes, progression-free survival (PFS), and overall survival (OS) were analyzed.

Results: Among the 34 patients, six (17.6%) achieved a pathological complete response (pCR) and nine (26.5%) had a major pathological response (MPR). Additionally, 11 patients (32.4%) exhibited spread through air spaces (STAS), and lymphovascular invasion (LVI) was observed in nine patients (26.5%). The 3-year PFS and OS rates were 55.5% and 73.2%, respectively. No significant differences in PFS or OS were observed regarding TKI generation, mutation type, pCR, MPR, or LVI. However, Kaplan-Meier analysis revealed that STAS was associated with shorter PFS compared to non-STAS cases (p=0.011). In multivariate analysis, STAS was identified as an independent prognostic factor for PFS (hazard ratio: 2.83, 95% CI: 1.35–28.54, p=0.02). No significant prognosticators were found for OS in univariate or multivariate analyses.

Conclusions: While salvage surgery following TKI treatment is feasible and prolongs survival by removing residual primary tumor with potential TKI resistance, STAS may contribute to a higher risk of early progression. This finding warrants further investigation and tailored treatment strategies.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA05

一位以慢性腹痛為表現，經偶然感染治療後發現之胡桃鉗症候群病例報告

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Nutcracker Syndrome Presenting as Chronic Abdominal Pain: A Case Revealed Through Incidental Infection Episode

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Abstract: Nutcracker syndrome is a rare vascular disorder caused by left renal vein compression, often overlooked due to nonspecific symptoms. We present a case of chronic abdominal pain in a patient who developed fever and was initially treated for bacteremia and a suspected hepatic abscess. Despite antibiotics, abdominal pain persisted. Careful review of computed tomography (CT) revealed nutcracker syndrome. The patient underwent left renal vein stenting with adjuvant micronized purified flavonoid fraction (MPFF), leading to marked symptom improvement. This case emphasizes that nutcracker syndrome should be considered in unexplained chronic abdominal pain to avoid delayed diagnosis and enable effective treatment.

Case Presentation: A 60-year-old woman with months-long chronic abdominal pain (without hematuria or proteinuria) presented with fever, chills, nausea, and vomiting. She had insomnia and a history of heroin and amphetamine use (inhalation and injection). Blood cultures grew gram-negative bacteria. Ultrasonography revealed a cystic lesion in the left hepatic lobe and a small right pleural effusion. CT demonstrated a 3.4-cm left hepatic lesion suspicious for hepatic abscess with possible left portal vein branch thrombosis. Empirical broad-spectrum antibiotics were initiated, yet the abdominal pain persisted despite initial infection control. Therefore, a multidisciplinary review of the CT identified compression of the left renal vein between the superior mesenteric artery and the aorta, with venous dilation/retrograde flow and pelvic venous congestion, including left ovarian engorgement. These findings consistent with nutcracker syndrome and concordant with her chronic pain. Cardiovascular surgery was consulted. The patient underwent endovascular stenting of the left renal vein, with adjunct MPFF to support venous tone. Post-procedure, abdominal pain improved markedly, oral intake resumed smoothly, and she was discharged in stable condition with outpatient follow-up.

Discussion: Nutcracker syndrome is diagnostically challenging because of its variable, nonspecific presentation. Although hematuria and proteinuria are typical, our patient had only chronic abdominal pain. The presumed hepatic abscess did not account for this chronic pain, and symptoms failed to improve with antibiotics. Careful re-evaluation of imaging revealed nutcracker syndrome, underscoring the importance of reconsidering vascular compression syndromes when initial management is unsatisfactory and findings are incongruent with the clinical course.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA06

呼氣一氧化氮（FeNO）檢測容易嗎？
影響健康人完成呼氣一氧化氮（FeNO）檢測成功率的相關因素

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Is It Easy to Perform the Exhaled Nitric Oxide (FeNO) Test?
Factors Influencing Successful FeNO Test Performance in Healthy Individuals

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Purpose: The exhaled nitric oxide (FeNO) test is a valuable method for detecting type 2 airway inflammation and is crucial for asthma diagnosis and monitoring. Successfully performing FeNO requires patient cooperation; however, individuals often experience frustration when unable to complete pulmonary function or FeNO tests. This study aims to identify factors influencing the number of attempts needed to successfully perform the FeNO test.

Materials and Methods: 75 healthy volunteers were recruited, all with normal chest X-ray results, no history of asthma, and no recent respiratory symptoms. Demographic data (age, gender, body weight, and height) were recorded. All participants performed FeNO and spirometry tests under technician guidance; reference formulas for FEV1 and PEF originated from Taipei Veterans General Hospital. Correlation and independent t-tests were used to identify predictive factors. ROC curve analysis was performed to determine variables linked with needing more than six practice attempts to complete FeNO testing.

Results: Among 75 volunteers, 67 completed testing (40 females and 27 males). 19 participants required more than three attempts to finish the FeNO test; 8 required more than six. Gender, PEF, and MMEF were associated with the number of practice attempts (Female gender: Pearson's r = -0.292, p = 0.016; PEF: r = -0.268, p = 0.028; MMEF: r = -0.261, p = 0.033). FEV1, PEF%predicted, and MMEF%predicted showed a non-significant trend towards negative correlation. No correlation was found for age, body measures, days after technician training, FeNO value, or IOS parameters. The area under the ROC curve for predicting >3 attempts was 0.708 (gender), 0.707 (PEF), and 0.760 (MMEF).

Conclusions: Gender, PEF, and MMEF are important predictors of the number of attempts required to successfully complete the FeNO test. Female participants and those with lower PEF and MMEF values may require additional practice to accomplish satisfactory FeNO measurement.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA07

結核病合併淋巴瘤之病例報告與文獻回顧

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The co-occurrence of tuberculosis and lymphoma：a case report and literature review

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Abstract

Diffuse large B-cell lymphoma (DLBCL) is the most common lymphoid malignancy in adults and the predominant subtype of non-Hodgkin lymphoma (NHL), accounting for about one-third of all cases. Tuberculosis (TB) infection may contribute to lymphoma development through chronic inflammation and immune dysfunction, increasing the risk of abnormal lymphocyte proliferation. The coexistence of TB and lymphoma, particularly DLBCL, represents a complex clinical scenario posing diagnostic and therapeutic challenges. Growing evidence supports a bidirectional relationship between the two diseases: TB as a risk factor for lymphoma and lymphoma as a predisposing condition for TB. This case report describes a 76-year-old woman who initially presented with anemia and dizziness, followed by fever. Chest CT revealed multiple bilateral consolidations, and bronchoscopy showed bronchial narrowing and irregular lesions in the left lower lobe. Biopsy and lavage specimens confirmed Mycobacterium tuberculosis, and HERZ therapy (isoniazid, ethambutol, rifampin, pyrazinamide) was initiated. After one month of anti-TB treatment, her condition worsened with recurrent dizziness and new abdominal pain. Abdominal CT revealed multiple enlarged para-aortic lymph nodes, and a CT-guided biopsy confirmed DLBCL. PET scan showed metabolically active lymph nodes above and below the diaphragm (Deauville score 5).

Following the DLBCL diagnosis, treatment was adjusted to R-miniCHOP chemotherapy (rituximab, cyclophosphamide, doxorubicin, vincristine). The patient has since remained stable under close follow-up. This case underscores the diagnostic complexity and management challenges of coexisting TB and lymphoma with overlapping clinical features.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA08

以多發性肺部結節為表現之轉移性副神經節瘤：個案報告

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Metastatic Paraganglioma Presenting As Multiple Pulmonary Nodules: A Case Report

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Background: Multiple pulmonary nodules are common seen in malignancy lung cancers or metastatic malignancy, especially in patients with known solid organ tumors. Other differential diagnosis also includes sarcoidosis, infectious diseases, autoimmune diseases and interstitial lung disease. Diagnostic approach requested history taking, biochemistry profile, image study, microbiology result and finally with pathological confirmation.

Case report: We reported on a 71-year-old female who was admitted for unexplained lower limb edema and shortness of breath, and imaging studies revealed multiple bilateral pulmonary nodules. After a series of diagnostic workups, the patient ultimately underwent video-assisted thoracoscopic surgery (VATS) with wedge resection, as the initial CT-guided biopsy tissue was insufficient for a definitive diagnosis.

Result and discussion: Pathological findings of VATS revealed paraganglioma with metastasis. Paraganglioma typically occurs in the head and neck or adrenal glands, and pulmonary metastasis is extremely rare, which significantly increases diagnostic difficulty. The nonspecific cardiovascular symptoms in this case were likely related to this type of tumor. Immunohistochemical staining of chromogranin A, synaptophysin, GATA3 would be helpful in confirming the differentiation of paraganglioma and assessing the difference between primary and metastatic paraganglioma.

Conclusion: This case serves as a reminder to clinicians to consider this rare entity such as paraganglioma in the differential diagnosis when faced with similar presentations and inconclusive routine examinations, especially in patients with multiple pulmonary nodules.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA09

肺部鱗狀細胞癌患者接受免疫治療後出現噬血性淋巴組織球增生症: Tocilizumab 成功治療案例

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Hemophagocytic Lymphohistiocytosis Induced by Pembrolizumab in Lung Squamous Cell Carcinoma: Effective Treatment with Tocilizumab

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Background:

Hemophagocytic lymphohistiocytosis (HLH) is a rare but life-threatening immune-related adverse event (irAE) of immune checkpoint inhibitors (ICIs). Its nonspecific manifestations often mimic infection, delaying diagnosis and treatment.

Case Presentation:

A 44-year-old man with advanced squamous cell carcinoma of the right upper lung (cT3N2M1b, stage IV, PD-L1 TPS 55%) received first-line cisplatin, paclitaxel, and pembrolizumab. After the third pembrolizumab cycle, he developed ICI-induced HLH, fulfilling HLH-2004 criteria with fever, cytopenias, splenomegaly, hyperferritinemia, and hypofibrinogenemia. Corticosteroids failed to induce remission, but tocilizumab led to rapid improvement. Chemotherapy was resumed without immunotherapy, and subsequent surgical resection achieved pathological complete response. No recurrence of lung cancer was observed during three years of follow-up.

Conclusions:

This case highlights that early recognition of HLH in patients receiving ICIs is essential to prevent life-threatening complications. Tocilizumab offers a potential treatment for steroid-refractory HLH, and long-term lung cancer control remains achievable despite this complication.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA10

胸部 X 光影像型態解讀之深度學習演算法的開發與驗證

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Development and Validation of a Deep Learning Algorithm for Interpreting Image Patterns in Chest Radiography

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Background: Chest X-rays are among the most accessible and convenient medical imaging tools, providing a quick and effective means of diagnosis. However, interpreting chest X-rays remains a complex task that demands careful judgment and substantial clinical experience. In recent years, deep learning algorithms have achieved remarkable progress in the field of image recognition. Specifically, object detection technology allows for accurate image classification and localization, showing great potential for application in chest X-ray analysis by delivering timely and reliable reference reports.

Methods: In this study, we utilized several publicly available chest X-ray datasets. A total of 22,421 CXRs were collected. After integrating and relabeling the annotations (covering nine patterns: atelectasis, calcification, cardiomegaly, opacity, nodule/mass, effusion, pneumothorax, fibrosis and fracture), and applying image preprocessing and data augmentation, we proceeded with model training with YOLOv11 for object detection, at size of 512 x 512 pixels. Additionally, we collected chest X-rays from our hospital, which were annotated by experienced experts for external validation and for comparison of accuracy between algorithm and board-certified pulmonologists.

Results: The training dataset contained 34,206 CXRs, and internal validation dataset contained 3,039 CXRs. The external validation dataset contained 659 CXRs, with ≥ 70 CXRs for each pattern. The amount of annotation bounding boxes of each CXR pattern in training dataset were shown in Figure 1. The external validation for accuracy yielded an mAP50 of 0.566 (Table 1, NMS at confidence = 0.01, IoU = 0.2). The top three patterns with the highest mAP50 accuracy were cardiomegaly, pneumothorax, and nodule/mass, while the three with the lowest accuracy were atelectasis, effusion, and calcification. Examples of predicted CXRs were shown in Figure 2a-d. CXR AI and the pulmonologist–CXR AI combination outperformed pulmonologists alone in classification accuracy (average AUC: 0.918 vs. 0.930 vs. 0.795; see Figure 3).

Conclusions: This study demonstrates that, with appropriate training, an object detection algorithm can effectively identify and localize various CXR patterns, enhancing physicians' interpretation accuracy, and offer potential clinical utility.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA11

肺結核合併縱膈小細胞神經內分泌癌：病例報告

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Pulmonary Tuberculosis accompanied by Mediastinal Small Cell Neuroendocrine Carcinoma: A Case Report

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Introduction: Pulmonary tuberculosis (TB) remains a prevalent infectious disease worldwide, often presenting with non-specific respiratory symptoms. However, the coexistence of TB and malignancy, especially small cell neuroendocrine carcinoma in the mediastinum, is rare and may complicate diagnosis and management. Differentiating between infectious and neoplastic etiologies is crucial for appropriate treatment. Here, we report a case of mediastinal small cell neuroendocrine carcinoma accompanied by pulmonary tuberculosis, highlighting the diagnostic challenge and clinical course.

Case Report: A 45-year-old male with a history of hypertension presented with progressive shortness of breath and was intubated, then admitted to the intensive care unit. Chest X-ray revealed a suspected upper mediastinal mass. Computed tomography showed multiple neck and mediastinal lymphadenopathies, initially suggesting tuberculosis. Anti-TB therapy was initiated after a positive TB PCR result. However, his symptoms failed to improve. Biopsy of the anterior mediastinal mass was subsequently performed, and histopathology confirmed small cell neuroendocrine carcinoma, grade III. The patient underwent chemotherapy with clinical stabilization and was later discharged in stable condition.

Discussion: The coexistence of pulmonary tuberculosis and small cell neuroendocrine carcinoma in the mediastinum is uncommon but clinically significant. Both conditions can mimic each other radiologically and symptomatically, delaying definitive diagnosis. Chronic inflammation caused by TB may play a role in tumorigenesis, although the mechanism remains uncertain. In this case, initial misinterpretation as TB delayed the identification of malignancy. Tissue biopsy remains the gold standard for diagnosis. Early differentiation between infectious and neoplastic etiologies is essential to avoid treatment delay and improve prognosis. Combined antimicrobial and chemotherapeutic management are often required for optimal outcomes.

Concussion: This case emphasizes the importance of considering malignancy in patients with atypical or refractory tuberculosis presentations. Timely biopsy and multidisciplinary management are essential for accurate diagnosis and effective treatment when dual pathology such as TB and neuroendocrine carcinoma coexist.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA12

咳血為初始表現的 A 型流感病毒肺炎併發呼吸衰竭：病例報告

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[1]敏盛醫院胸腔內科

Hemoptysis as an initial presentation of Influenza virus A-swH1 Pneumonia Complicated by Respiratory Failure: Case report.

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Introduction: Hemoptysis can be a sign of serious medical and many different conditions. Physicians must be alert when the patient is presented with coughing up blood. Detailed systemic review and completeness physical examination, history taking is important. Known etiologies include infectious, cardiovascular, pulmonary sources, neoplastic, bleeding disorders, and so on. In this article we present a male of respiratory failure resulting from Influenza A pneumonia initial presenting with uncommon hemoptysis was successfully treated.

Case Report: A 57-years old female with no comorbid illnesses. She had no personal history of smoking and drinking. She presents with two weeks' history of uncontrolled hemoptysis. She has no other symptoms such as shortness of breath, fever, and cough. On arrival at the ED, the patient had an exhibited tachypnea, unstable oxygen saturation and agitated requiring intubation and admitted to ICU. Chest CT disclosed pneumonitis of unknown etiology. A bronchoscopy demonstrated some white sputum from RLL and LLL, s/p bronchial washing. Cultures for bacteria and tuberculosis or fungal organisms were negative. She was initially started on broad-spectrum antibiotics. Based on the initial nasopharyngeal swabs rapid testing was negative for influenza A and B antigen, but multiplex polymerase chain reaction detected influenza A (swH1) infection. The patient with suggesting severe influenza A pneumonia as the primary diagnosis. Tamiflu plus Rapiacta therapy was necessary. Once her respiratory condition stabilized, she was extubated and transferred to an ordinary ward later. Subsequently, the patient recovered successfully and was discharged in stabilized condition with a plan for review in the outpatient.

Discussion: Influenza is an acute respiratory illness caused by infection with influenza viruses and is a common predisposing factor for pneumonia. Most patients present with fever, cough, headache, and myalgia. The diagnosis is typically confirmed using a PCR test on a nasal or throat swab. The Influenza A virus is responsible for the majority of severe pneumonia cases. In serious infections, influenza pneumonia can progress to acute respiratory distress syndrome (ARDS) and is associated with high mortality. In such cases, treatment should include both antiviral therapy and empirical antibiotics. We report a case of a middle-aged woman who presented with hemoptysis and was found to have influenza A virus infection leading to pneumonia and subsequent respiratory failure.

Concussion: Hemoptysis is a rare presentation of influenza A pneumonia. Early recognition, PCR confirmation, and timely antiviral therapy are crucial in preventing progression to respiratory failure and improving outcomes.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA13

本機部署的預訓練語言模型 Gemma3 1B 在台灣胸腔專科筆試的表現

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Evaluating Locally Deployed Gemma 3 1B on the Taiwanese Pulmologist's Board Exam

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Purpose: Artificial intelligence (AI), particularly in areas such as deep learning and neural networks, has seen increasing application in the healthcare field in recent years. However, the reliance of next-generation large language models (LLMs) on cloud-based processing raises significant concerns regarding data privacy and potential information leakage. With the emergence of locally deployable language models, this study aims to evaluate their capabilities by testing their performance on board examination questions in the field of pulmonary medicine.

Materials and Methods: We obtained pulmonary specialist examination questions and answers from the Taiwan Society of Pulmonary and Critical Care Medicine. The dataset comprised 1,200 multiple-choice questions from 2013 to 2024, of which 1,156 were text-only and 44 included both text and image components. The text-based questions were organized into a structured text file, and the corresponding images were stored separately.

For evaluation, we used Gemma 3 1B, a text-only language model developed by Google AI Studio. Known for its small size and fast inference capabilities, the model was deployed locally on a laptop with minimal GPU requirements. To estimate the expected performance under random guessing, we modeled the multiple-choice questions using a binomial distribution. Assuming four answer choices per question, the probability of a correct guess was 25%, resulting in an expected score of 25 out of 100. Using a normal approximation, the 95% confidence interval for random guessing was calculated to be between 17 and 34 correct answers.

Results: For the text-only questions, Gemma 3 1B correctly answered the following number of questions per year: 24, 24, 23, 18, 19, 27, 19, 19, 30, 22, 18, and 21. The corresponding p-values were: 0.569, 0.476, 0.593, 0.913, 0.891, 0.301, 0.909, 0.858, 0.0786, 0.681, 0.896, and 0.777, none of which were statistically significant.

Conclusions: State-of-the-art LLMs such as ChatGPT, Gemini, Claude, and Grok are primarily deployed on cloud platforms, raising privacy concerns, especially in sensitive domains such as medical examinations. In contrast, locally deployable models provide a more secure alternative by performing all computations on-device. However, despite the convenience of local deployment, Gemma 3 1B demonstrated poor performance on text-only board exam questions, with accuracy statistically indistinguishable from random guessing. These results suggest that locally deployed models like Gemma 3 1B, although promising for privacy-preserving environments, may not yet serve as viable alternatives to cloud-based LLMs in high-stakes medical applications.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA14

改良式超音波支氣管鏡引導淋巴結夾鉗活檢之診斷效能與安全性分析：台灣單一中心經驗

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Diagnostic Performance and Safety of Modified EBUS-Guided Intranodal Forceps Biopsy: A Single-Center Experience in Taiwan

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Purpose: Endobronchial ultrasound–guided transbronchial needle aspiration (EBUS-TBNA) is a well-established, minimally invasive method for sampling mediastinal lesions. The modified EBUS-guided intranodal forceps biopsy (IFB) technique enables use of standard 1.9-mm forceps without specialized equipment. This study aimed to validate the safety and diagnostic performance of the modified EBUS-IFB technique in Taiwan.

Materials and Methods: From December 2024 to September 2025, patients undergoing both EBUS-TBNA and EBUS-IFB at Taichung Veterans General Hospital were prospectively enrolled. Each lesion underwent at least two TBNA and spiral-digging attempts before forceps insertion. Diagnostic yield and complications were analyzed.

Results: A total of 104 EBUS-IFB procedures were performed, with a 98% technical success rate. Definitive diagnoses were achieved in 94.1% by IFB and 64.4% by TBNA; combining both methods increased yield to 95.2%. IFB diagnosed 93.1% of malignant lesions and 83% of re-biopsy cases. For benign disease, 76% of diagnoses were made solely by IFB. Squamous cell carcinoma showed the greatest added yield from IFB, while all small cell carcinoma cases were confirmed by both methods. No major complications occurred; transient post-procedural fever developed in 9% of patients.

Conclusions: The modified EBUS-IFB is a safe, effective, and accessible diagnostic approach for mediastinal lesions. When combined with TBNA, it provides superior diagnostic yield without additional specialized equipment, representing a practical alternative to conventional mediastinoscopy.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA15

一例罕見的鋰引起的腎性尿崩症併發呼吸衰竭

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A Rare Case of Lithium-induced Nephrogenic Diabetes Insipidus Complicated by Respiratory Failure

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Introduction: Hypernatremia can be a sign of many different conditions. Detailed systemic review and completeness physical examination, history taking is important. The initial symptoms of hypernatremia such as thirst, weakness, irritability and may progress to seizures and coma. Lithium intoxication and nephrogenic diabetes insipidus, are common risk factors for hypernatremia. In this article we present a female of Lithium resulted in nephrogenic diabetes insipidus concurrent by respiratory failure was successfully treated.

Case Report: A 62-year-old female presented to the emergency department with dyspnea and restlessness for one day. She had a history of bipolar disorder treated with lithium for 8 years. On arrival, she was tachypneic, agitated, and had unstable oxygen saturation. Laboratory results revealed pH 7.29, pCO_2 56.8 mmHg, sodium 182 mEq/L, and serum osmolality 399 mOsm/kg. Chest X-ray and brain CT were unremarkable. Due to worsening agitation and respiratory distress, she was intubated and transferred to the ICU. Marked polyuria and severe hypernatremia led to the administration of desmopressin, with good response. Although the lithium level was 0.28 mEq/L, lithium-induced nephrogenic diabetes insipidus was suspected. After stabilization, she was extubated, transferred to the general ward, and her sodium and urine output normalized. The patient gradually improved and was discharged in stable condition with outpatient follow-up.

Discussion: Lithium-induced nephrogenic diabetes insipidus (NDI) is a rare but recognized complication of long-term lithium therapy. Lithium interferes with renal tubular response to antidiuretic hormone, leading to impaired water reabsorption, polyuria, and hypernatremia. In this case, the patient's long history of lithium use, severe hypernatremia (Na 182 mEq/L), elevated osmolality, and poor response to dehydration supported the diagnosis of NDI. Although her serum lithium level was within normal range, chronic toxicity could still contribute to renal tubular dysfunction. The respiratory failure was likely secondary to hypernatremia-induced neurological impairment and agitation, leading to hypoventilation and subsequent respiratory acidosis. Prompt recognition, desmopressin trial, and supportive management were essential to correct electrolyte imbalance and prevent further complications.

Conclusion: This case highlights lithium-induced NDI as a potential cause of severe hypernatremia and secondary respiratory failure. Early recognition of lithium-related renal effects and timely management of electrolyte disturbances are crucial to reducing morbidity and improve clinical outcomes.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA16

ChatGPT 4o 與 Claude 3.5sonnet 哪一個多模態大型語言模型比較優秀?

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Which multimodal large language model performs better — ChatGPT-4o or Claude 3.5 Sonnet?

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Purpose: The latest generation of large language models (LLMs) now incorporates visual capabilities, enabling them to interpret graphics, medical images, and even videos, an essential feature for many clinical tasks. In this study, we used forest plot analysis combined with inferential statistics to evaluate the performance of ChatGPT-4o and Claude 3.5 Sonnet, aiming to provide guidance on selecting the most suitable language model for medical applications.

Materials and Methods: We obtained pulmonary specialist exam questions and answers from the Taiwan Society of Pulmonary and Critical Care Medicine. The questions were categorized into text-based and image-based sections. The dataset comprised a total of 1,100 multiple-choice questions from 2013 to 2023, including 1,059 text-only questions and 41 questions containing both text and image components. We employed GPT-4o and Claude 3.5 Sonnet, both of which are capable of processing visual inputs. The text components were analyzed using the respective APIs provided by OpenAI and Anthropic. For OpenAI's models, we used the "gpt-4o" endpoint. For Claude, we used "claude-3-5-sonnet-20240620", the latest vision-capable model released by Anthropic. Visual prompts for Claude 3.5 Sonnet were input through its official web interface, while OpenAI's models received both text and image inputs via API. All evaluations were conducted on the same day, September 3, 2024, to ensure consistency. The performance of GPT-4o and Claude 3.5 Sonnet was comparable in terms of overall accuracy. We applied forest plot analysis with inferential statistics, stratifying the results by year and question type (text-only vs. text-and-image), to further examine and compare the models' capabilities.

Results: For the text-only questions, Claude 3.5 sonnet achieved scores of 77, 77, 57, 75, 69, 69, 73, 64, 68, 73, and 79. GPT-4o with scores of 80, 77, 68, 85, 79, 78, 81, 70, 76, 76, and 78. For the combined text-and-image section, Claude 3.5 sonnet answered 1, 4, 0, 2, 1, 1, 1, 2, 2, 3, and 7, while GPT-4o scored 1, 3, 2, 1, 1, 0, 1, 2, 2, 3, and 4. For the text-only comparison, the heterogeneity was low, with $I^2 = 0.0\%$, $tau^2 = 0$, and $p = 0.9034$. The common effect model yielded an odds ratio (OR) of 1.44 [1.17; 1.76]. For the text-and-image comparison, heterogeneity remained low ($I^2 = 0.0\%$, $tau^2 = 0$, $p = 0.7509$), and the common effect model produced an OR of 0.66 [0.26; 1.62]. For the overall analysis, heterogeneity was similarly minimal ($I^2 = 0.0\%$, $tau^2 = 0$, $p = 0.8834$), with a common effect model OR of 1.38 [1.13; 1.69].

Conclusions: In this study, we found that GPT-4o significantly outperformed Claude 3.5 Sonnet in text-based tasks. However, when it came to text-and-image questions, the performance difference between the two models was not statistically significant. For multimodal tasks, statistical analysis indicates no meaningful performance gap between GPT-4o and Claude 3.5 Sonnet.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA17

HEPA 空氣清淨機增效方法對降低室內 PM2.5 濃度之效果：多場域研究

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Effectiveness of HEPA Air Cleaner Enhancing Methods in Reducing Indoor PM2.5 Levels: A Multi-site Study

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Background: High-Efficiency Particulate Air (HEPA) filter air cleaners can remove ≥99.97% of 0.3 μm fine particles and are considered a potential tool for reducing indoor particulate matter 2.5 (PM2.5) pollution. However, their efficacy may vary depending on user habits and operational practices. This study aimed to evaluate the effectiveness of HEPA air cleaner enhancing methods—including filter replacement, adequate airflow, window closure, and continuous operation—as well as HEPA-equipped ventilation systems across multiple household environments.

Methods: This study was conducted from autumn 2022 to winter 2024 across multiple households and measurement sessions. Two laser light-scattering PM2.5 sensors were used to monitor indoor and outdoor PM2.5 concentrations continuously. The effectiveness of different HEPA air cleaner usage methods and HEPA-equipped ventilation systems was evaluated. Temporal factors and inter-household differences were also analyzed to assess their influence on indoor PM2.5 levels.

Results: A total of 28,552 PM2.5 data points were recorded from five households. Table 1 and Figure 2 show that the use of HEPA filters significantly reduced indoor PM2.5 levels (daytime control vs. nighttime-HEPA: mean = 21.1 vs. 12.8 μg/m³, $p < 0.001$), indoor–outdoor PM2.5 differences (–9.6 vs. –20.1 μg/m³, $p < 0.001$), and indoor/outdoor PM2.5 ratios (0.79 vs. 0.33, $p < 0.001$). The comparison of air cleaner effectiveness across the five households is presented in Figure 3. Table 2 and Figure 4 present the subgroup analysis of different intervention methods. The air cleaner enhancing method demonstrated moderately better effectiveness compared to the baseline air cleaner (indoor/outdoor PM2.5 ratio: 0.39 vs. 0.45). The greatest reduction in indoor PM2.5 levels was observed in the group using both HEPA-equipped ventilation system and air cleaners (indoor/outdoor ratio = 0.15). The 24-hour trends of indoor and outdoor PM2.5 concentrations are illustrated in Figure 5.

Conclusions: This study demonstrated that HEPA air cleaner enhancing methods and HEPA-equipped ventilation system can effectively reduce indoor PM2.5 levels. The combination of these two types of HEPA-based devices achieved the highest air purification efficacy.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA18

汽車內二氧化碳及 PM2.5 濃度研究

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An Investigation of In-Vehicle CO2 and PM2.5 Concentrations

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Background: The influence of indoor carbon dioxide (CO2) concentration on human health is a pivotal concern, particularly in environments with limited ventilation. On the other hand, the outdoor particulate matter 2.5 (PM2.5) air pollution is also a health concern that affects vehicle passengers. This study aimed to evaluate the in-vehicle CO2 and PM2.5 concentrations.

Methods: Vehicles were categorized into two groups: air recirculation mode and fresh air mode, to evaluate the condition of CO2 retention and PM2.5 concentration during a long-distance drive. A portable CO2 sensor and a PM2.5 sensor were used to record CO2 and PM2.5 concentrations inside a vehicle. Data were collected for each driving session, including air circulation mode, driving duration, the number of passengers, CO2 and PM2.5 concentrations.

Results: This study showed that the CO2 concentrations in the group of air recirculation mode are dramatically higher than in those utilizing fresh air mode (average CO2: 1654~4972 vs. 668~969 ppm) (Table 1). Furthermore, an increase in the number of passengers correlates with a higher mean CO2 concentration and higher speed of CO2 rise (Figure 1). Conversely, in the group of fresh air mode, the CO2 range maintained at a low level (Figure 2). As for PM2.5, its level reduced rapidly in air recirculation mode, but remained no obvious change in fresh air mode (average PM2.5 = 5.4~23.3 vs. 11.4~44.9 μg/m3) (Table 2, Figure 3 and 4). The switch from air recirculation mode to fresh air mode is very effective to reduce the CO2 concentration inside a vehicle (Figure 5).

Conclusions: In conclusion, CO2 retention inside a vehicle could be severe during a long-distance drive with air recirculation mode. Whereas PM2.5 is effectively filtered by air recirculation. Intermittent fresh air ventilation during a vehicle driving is recommended to reduce CO2 retention and maintain a low PM2.5 level in-vehicle.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA19

以難治性肺炎為表現之肺部淋巴瘤：病例報告

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Non-resolving Pneumonia Revealing Extranodal Marginal Zone Lymphoma: A Case Report.

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Introduction: Pulmonary lymphoma is a rare entity, classified as primary pulmonary lymphoma (PPL) in the absence of extrapulmonary disease within three months of diagnosis, or secondary pulmonary lymphoma (SPL) when systemic involvement is present. PPL accounts for 0.4% of all lymphomas, with mucosa-associated lymphoid tissue (MALT) lymphoma as the most common subtype, whereas SPL is more often diffuse large B-cell lymphoma (DLBCL). Clinical and radiologic features are often nonspecific, and histopathological confirmation is essential for diagnosis.

Case Report: A 62-year-old male university teacher, an ex-smoker with a 20 pack-year history, was admitted with chest tightness and bilateral consolidations unresponsive to one week of levofloxacin. He reported mild exertional dyspnea, and examination revealed bilateral crackles. Chest CT showed diffuse ground-glass opacities and consolidations. Autoimmune markers were negative, and microbiologic studies, including Mycobacterium tuberculosis and Pneumocystis jirovecii PCR, were unremarkable. Bronchoalveolar lavage showed B-cell predominance (88.5%), and CT-guided biopsy confirmed low-grade B-cell lymphoma consistent with pulmonary MALT lymphoma. PET-CT revealed intense gastric uptake, and endoscopy confirmed synchronous gastric MALT lymphoma. The patient was diagnosed with extranodal marginal zone lymphoma (Ann Arbor stage IV, IPI 3, ECOG 1). Rituximab–bendamustine was initiated with tenofovir prophylaxis for chronic hepatitis B. Treatment was well tolerated except for grade I fatigue, and follow-up imaging after four cycles showed disease regression.

Discussion: This case highlights the diagnostic challenge of pulmonary lymphoma, which often mimics infection. Indolent PPL, such as MALT lymphoma, generally has excellent prognosis, whereas aggressive subtypes and SPL carry poorer outcomes. Pulmonary MALT lymphoma retains its indolent nature regardless of primary or secondary presentation. Histopathological confirmation and comprehensive staging with PET-CT and endoscopy are crucial for diagnosis. This case underscores the need to consider lymphoma in non-resolving pneumonia and supports rituximab–bendamustine as an effective therapy for advanced marginal zone lymphoma.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA20

年輕惡性肋膜間皮瘤：一例病例報告及文獻綜述

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Malignant Pleural Mesothelioma in a Young Adult: Case Report and Review of the Literature

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Introduction: Malignant pleural mesothelioma (MPM) is a rare, aggressive tumor associated with asbestos exposure, typically diagnosed in elderly patients with a median age of 74 years and a latency of 30–40 years. Young-onset MPM (<40 years) is extremely uncommon, accounting for less than 2% of cases, and is often linked to non-occupational or short-term exposures. The disease usually arises decades after exposure, and its occurrence in young adults highlights the potential role of environmental or occupational hazards and, in some cases, genetic susceptibility.

Case Report: We report a 30-year-old male soldier presenting with a 6-month history of cough, chest pain, and dyspnea. Imaging revealed right pleural effusion and lower lobe consolidation, while cytology demonstrated malignant cells. The patient had no smoking history but reported occupational asbestos exposure while working in a brake lining factory for two years during adolescence, with a latency period of only 10 years. Thoracoscopic wedge resection confirmed epithelioid mesothelioma (cT3N0M0, Stage IB). He subsequently received intrapleural cisplatin and systemic cisplatin/pemetrexed chemotherapy, which was well tolerated. Postoperative follow-up showed clinical stability and no radiographic progression.

Discussion: A literature review identified 16 young MPM cases worldwide. Compared with classic MPM, young patients had shorter latency (15 vs. 32 years), fewer reported asbestos exposures (38% vs. 80%), and more surgical interventions (31% vs. 18%). The majority were epithelioid type, associated with better prognosis. This case highlights brake linings as an underestimated source of asbestos exposure in Taiwan, where national bans were only fully implemented in 2018. Clinicians should recognize that even brief asbestos exposure in young adults may result in MPM, and pleural mesothelioma should be considered in the differential diagnosis of unexplained pleural lesions. Early detection allows timely surgical consideration and multimodality treatment, potentially improving outcomes and long-term survival in selected patients.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA21

單次胸腔內 Bevacizumab 成功控制惡性胸腔積液病例報告

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Successful Control of Malignant Pleural Effusion (MPE) with a Single Intrapleural Bevacizumab Infusion in Advanced Lung Adenocarcinoma: A Case Report

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Case Presentation：A 65-year-old non-smoking woman with a prior history of breast cancer, previously treated with paclitaxel/carboplatin, eribulin, and sacituzumab govitecan, was diagnosed with stage IVB (T2bN3M1c) lung adenocarcinoma with brain and pleural metastases. Molecular testing revealed EGFR, ALK, and ROS1 wild-type, and PD-L1 <1%. She underwent brain surgery and whole-brain radiotherapy (WBRT). Persistent malignant pleural effusion recurred despite repeated thoracenteses. A single intrapleural Bevacizumab (200 mg) was instilled after complete drainage, preceded by 1% lidocaine 10 mL for analgesia. The chest tube was clamped for 3 hours with position changes every 30 minutes, then reopened. Pleural effusion resolved completely within one week and remained absent for more than three months without additional chemotherapy. No Bevacizumab-related adverse events occurred, and the patient's ECOG performance improved from 2 to 1.

Discussion：VEGF-mediated vascular permeability contributes to the development of malignant pleural effusion. Bevacizumab inhibits VEGF and decreases capillary leakage. Previous studies reported 60–75% effusion control rates with intrapleural Bevacizumab. In our case, a single-dose Bevacizumab monotherapy achieved durable effusion control (>3 months) without systemic toxicity, suggesting potential for patients unfit for chemotherapy.

Conclusion：Single-dose intrapleural Bevacizumab monotherapy may offer a safe and effective minimally invasive option for controlling refractory malignant pleural effusion in advanced NSCLC.

Figures

Figure 1. Chest CT showing massive left pleural effusion before Bevacizumab infusion.

Figure 2. Chest X-ray demonstrating large left pleural effusion before treatment.

Figure 3. Chest X-ray three months after Bevacizumab infusion showing no recurrence.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA22

次世代基因定序在晚期非腺癌非小細胞肺癌的臨床益處

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Clinical Benefits of Next-Generation Sequencing in Advanced Non-Adenocarcinoma Non-Small Cell Lung cancer

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Background: Next-generation sequencing (NGS) has been widely utilized in lung adenocarcinoma, but its role in non-adenocarcinoma (non-ADC) non-small cell lung cancer (NSCLC) is still uncertain. This study investigates the prevalence of targetable mutations in non-ADC NSCLC and evaluates the impact of NGS testing on patient prognosis.

Materials and Methods: Patients with advanced non-adenocarcinoma NSCLC who received NGS testing at Taichung Veterans General Hospital (TCVGH) were included. NGS results defined mutations that were sensitive to mutation-targeted therapy with clinical benefits as targetable mutations. Patients were divided into two categories based on pathological histology: Group 1: squamous cell carcinoma, poorly differentiated carcinoma, lymphoepithelial carcinoma and adenoid cystic carcinoma; Group 2: Adenocarcinoma with mixed subtypes (including adenosquamous carcinoma), large cell carcinoma, sarcomatoid carcinoma.

Results: A total of 70 patients were enrolled, with 70% males and 65.7% smokers, with a median age of 63.5 years. Targetable mutations were identified in 36% (n=25) of the patients, and *EGFR* mutation accounted for the most common genetic alteration (including exon 19 deletion, L858R, exon 20 insertion 14.0%, n=10), followed by *MET* exon-14 skipping (6%, n=4). Univariate and multivariate logistic regression models were used to estimate the odds ratio (OR) of detected targetable genetic mutations. In the multivariate analysis, female (OR: 5.37, 95% CI 1.17–24.54, p = 0.03), group 2 pathological histology (OR: 6.60, 95% CI 1.90–22.92, p = 0.03), and PD-L1 expression ≥ 50% (OR: 5.38, 95% CI 1.18–24.48, p = 0.003) were significantly associated with detected targetable mutations. In the overall population, a history of mutation targeted therapy was associated with a significantly longer overall survival (18.5 months [95% CI 0.0–37.1] compared to 10.7 months [95% CI 4.01–17.4], log-rank p = 0.049).

Conclusions: In conclusion, female patients, PD-L1 expression ≥ 50%, and those with group 2 histology carry a greater likelihood of possessing targetable mutations. Detection of targetable mutations and subsequent administration of targeted therapy are associated with better outcomes.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA23

經 EBUS 導引之縱膈淋巴結冷凍切片活檢：結合 TBNA 與冷凍技術的新取樣方法

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EBUS-guided Transbronchial Mediastinal Lymph Node Cryobiopsy: A Novel Tissue Sampling Technique Combining TBNA and Cryotherapy

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Introduction: Mediastinal lymphadenopathy has diverse causes, both benign and malignant. Imaging aids detection, but accurate diagnosis requires the integration of clinical, radiologic, and pathologic findings. An ideal sampling technique strikes a balance between minimal invasiveness and maximal diagnostic yield. Endosonographic-guided procedures, such as EBUS-TBNA, EBUS-FNB, and EUS-B-FNA, have become standard diagnostic tools that are widely adopted. However, limitations in conventional fine-needle aspiration and biopsy, particularly related to low cellularity and disrupted tissue architecture, can impair diagnostic accuracy.

Methods and Rationale: To overcome these limitations, we adopted a novel approach that combines transbronchial needle aspiration (TBNA) with cryotherapy. Under EBUS guidance, a "tunnel" is first created via TBNA, through which a cryotherapy probe is inserted into the lymph node to perform **transbronchial mediastinal lymph node cryobiopsy**. We conducted a retrospective study to enroll all patients who received TBNA and cryobiopsy at Taitung MacKay Memorial Hospital from April 2024 to September 2025.

Results: Fifteen patients (9 males, 6 females; mean age 67 years, range 43–84) underwent the EBUS-guided transbronchial mediastinal cryobiopsy (TMC) in the study period. Targeted lymph nodes measured between 1.3 and 3.0 cm in their longest axis. Final diagnoses included lung cancer (n=10), sarcoidosis (n=1), and benign lesions (n=4), with benign cases showing clinical and radiologic improvement on follow-up. Among the 10 malignancies, 4 were diagnosed only via TMC, as pulmonary biopsies were either non-diagnostic (n = 3) or no lung lesion was visible (n = 1). TMC had a diagnostic yield of 90%, outperforming FNA (71%) and FNB (87%). Compared with FNA/FNB, TMC required fewer needle passes (1–2 vs. 4–6) and yielded larger, better-preserved tissue structure specimens (median tumor surface area: 50 mm² [range 20–250] vs. 9 mm² [range 1–45] for TBNA). There were no major complications, except one patient with severe obstructive lung disease and saber-sheath trachea developed transient hypoxemia, which resolved after one day of non-invasive positive pressure ventilation (NIPPV).

Conclusion: EBUS-guided transbronchial mediastinal cryobiopsy (TMC) is a feasible and safe technique that enhances diagnostic yield compared to conventional needle-based sampling methods. By providing larger, structurally preserved tissue specimens with fewer passes, TMC may offer a valuable alternative—particularly in cases where standard biopsies are non-diagnostic or when tissue architecture is critical for histopathologic analysis.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA24

Pembrolizumab 引發腎上腺功能不全，表現為巨結腸的肺腺癌患者：回顧性病例分析

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Pembrolizumab-Induced Adrenal Insufficiency Presenting as Megacolon in a Patient with Lung Adenocarcinoma: A Retrospective Case Analysis

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Introduction: The advent of immune checkpoint inhibitors, particularly pembrolizumab, has revolutionized the therapeutic landscape for non-small cell lung cancer (NSCLC), including adenocarcinoma subtypes. Despite their clinical efficacy, ICIs are associated with immune-related adverse events (irAEs) that can impact the gastrointestinal (GI) and endocrine systems.

Materials and Methods: We retrospectively analyzed the clinical course of a 76-year-old male with stage T2N3M1a lung adenocarcinoma undergoing pembrolizumab monotherapy. The patient developed gastrointestinal symptoms following 30 weeks of treatment (10 cycles). Clinical data reviewed included serum cortisol and adrenocorticotropic hormone (ACTH) levels at baseline and at symptom onset, abdominal imaging studies KUB lower gastrointestinal series, and CT scan, electrolyte panels, and treatment outcomes.

Results: The patient had no prior history of adrenal disease. Baseline laboratory tests showed normal cortisol (15.05 μg/dL) and ACTH (20.8 pg/mL). After 10 cycles of pembrolizumab, he presented with progressive abdominal distension and seven days of constipation. Imaging confirmed the presence of megacolon. Subsequent endocrine evaluation revealed significantly decreased cortisol (0.9 μg/dL), reduced ACTH (7.4 pg/mL), and hypokalemia (serum potassium 3.0 mmol/L), indicating adrenal insufficiency. Oral corticosteroid replacement with prednisolone (5 mg daily) was initiated. Within days, the patient experienced resolution of constipation and gradual regression of megacolon on follow-up imaging.

Discussion: Immune checkpoint blockade can disrupt hypothalamic-pituitary-adrenal (HPA) axis function, leading to hypophysitis or primary adrenal insufficiency. While diarrhea and colitis are well-documented irAEs associated with pembrolizumab, constipation and megacolon are rarely reported. In this case, the suppressed cortisol and ACTH levels, along with rapid symptom improvement following corticosteroid therapy, support a diagnosis of pembrolizumab-induced adrenal insufficiency. The pathophysiology may involve adrenalitis or hypophysitis-related ACTH deficiency, emphasizes the need for high clinicl suspicion, especially when atypical GI symptoms arise in patients receiving ICIs.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA25

胸腔剪力波彈性超音波合併深度學習於胸腔良性與惡性腫瘤之鑑別診斷

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Classification between Benign and Malignant Lung Lesions Using Deep Learning Model based on Thoracic Ultrasound Shear-wave Elastography

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Purpose: The study aimed to explore the performance of combining ultrasound shear-wave elastography (SWE) with deep learning (DL) model to automatically classify malignant from benign subpleural lung lesions.

Materials and methods: This study investigated two cohorts with prospectively-collected ultrasound images from adult subjects referred for lung lesions assessment between December 2017 and March 2024. Conventional thoracic ultrasound, two-dimensional shear-wave elastography and shear-wave velocity (SWV) images were analyzed. The diagnoses of the correlated images were based on the pathological and clinical results. For DL model set-up, the images were randomly split into training, validation, and testing datasets.

Results: A total of 323 subjects with 930 images (337 benign and 593 malignant) were analyzed. The DL model trained by SWE had a diagnostic performance of 77.4% accuracy, 86.6% sensitivity, and 68.2% specificity in predicting malignant lung lesions. In contrast, the DL model trained by SWV had a diagnostic performance of 77.9% accuracy, 78.6% sensitivity, and 77.2% specificity. Compared to SWE and SWV, B-mode imaging had lower accuracy (71.6%) and sensitivity (66.8%), and modest specificity (76.4%). An average ensemble of three individual DL models achieved the optimal performance with 82.1% accuracy, 83.4% sensitivity and 80.7% specificity.

Conclusions: The combination of B-mode, SWE, and SWV ultrasound images with artificial-intelligence assistance has the potential to differentiate malignant from benign subpleural lung lesions.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA26

偽裝成肺炎的肺部邊緣帶淋巴瘤

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Pulmonary Marginal Zone Lymphoma Masquerading as Pneumonia

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Abstract

Primary pulmonary marginal zone lymphoma (MZL) is an uncommon extranodal B-cell lymphoma of the lung that can mimic infectious consolidation or primary lung carcinoma. We report an 85-year-old man with a history of hypertension and dementia who presented with progressive weakness and altered consciousness. Initial chest imaging revealed right middle lobe consolidation with complete collapse, raising suspicion of malignancy versus infection. Bronchoscopy demonstrated copious whitish secretions suggestive of fungal infection; however, histopathological examination of biopsy specimens disclosed monotonous small to medium-sized lymphoid cells with lymphoepithelial lesions, immunohistochemically positive for CD20, BCL-2, CD43, and MNDA, consistent with marginal zone lymphoma. Positron emission tomography (PET) revealed FDG uptake localized to the right middle lobe without systemic spread, compatible with Ann Arbor stage IE disease. Unlike common primary lung cancers, MZL often lacks aggressive radiographic features and may be misinterpreted as pneumonia or mucus impaction. Recognition of this rare entity is essential, as treatment strategies and prognosis differ markedly from those of lung carcinoma. This case underscores the diagnostic challenges of pulmonary MZL, particularly in elderly patients with overlapping infection, and emphasizes the importance of tissue confirmation through bronchoscopy and immunohistochemistry to avoid misdiagnosis and guide appropriate management.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA27

肺癌病患使用 Denosumab 後發生顎骨壞死，臨床表現類似巨大骨轉移：病例報告

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Osteonecrosis of the Jaw Mimicking a Huge Bone Metastasis in a Lung Cancer Patient Treated with Denosumab: A Case Report

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Purpose: Denosumab is widely used in patients with cancer who have bone metastases. Common adverse events associated with its use include hypocalcemia, hypophosphatemia, bone pain, and myalgia. Among these, the most serious complication is osteonecrosis of the jaw (ONJ). This article aims to review and discuss the characteristics, incidence, and underlying risk factors of denosumab-related osteonecrosis of the jaw.

Case presentation: A 47-year-old man presented to our emergency department with a one-month history of cough productive of blood-tinged sputum. Chest X-ray revealed a nodule in the left upper lung and diffuse tiny nodules throughout both lung fields. Chest CT demonstrated a 1.8 × 1.6 cm nodule in the left upper lobe, accompanied by multiple mediastinal and supraclavicular lymphadenopathies and lung-to-lung metastases, suggestive of primary lung cancer. A whole-body bone scan revealed multiple osseous metastases involving the cervical, thoracic, and lumbar spine, rib cage, bilateral scapulae, sacrum, pelvis, and both humeri and femurs. Initial brain MRI showed no evidence of intracranial metastasis. The clinical stage was determined as cT4N3M1c, stage IVB. Histopathological examination confirmed adenocarcinoma with positive ALK immunohistochemistry. The patient received alectinib for treatment. Denosumab was administered monthly for bone metastases beginning on July 25, 2023.

On April 16, 2025, the patient underwent extraction of the #48 tooth due to chronic periodontitis. Subsequently, dental inflammation was noted during outpatient follow-up. A MRI revealed a huge new 7.5 × 2.2 × 6.0 cm ill-defined, contrast-enhancing lesion involving the right mandible and lower buccal space. Oral surgery evaluation identified osteomyelitis of the right mandibular ramus with sequestrum and abscess formation. And histopathological examination showed mixed inflammation and only mild focal dysplasia. The condition gradually improved after surgical debridement and antibiotic therapy.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA28

纖維化型間質性肺疾病呼出 VOCs 特徵：前瞻性研究結果

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Characteristics of Exhaled Volatile Organic Compounds in Fibrotic Interstitial Lung Diseases: Insights from a Prospective Cohort Study

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Purpose: Fibrotic interstitial lung diseases (F-ILDs) are a heterogeneous group of disorders marked by progressive fibrosis. Early detection is vital for improving outcomes. Exhaled volatile organic compounds (VOCs) show promise in diagnosing lung diseases, but optimizing predictive accuracy with fewer VOCs remains challenging. This study identifies VOC signatures distinguishing F-ILD patients from healthy individuals.

Materials and Methods: A prospective study included 80 F-ILD patients and 40 healthy controls. A total of 208 Breath samples were collected in triplicate, considering VOCs >20 ppbv as key features. The eXtreme Gradient Boosting (XGBoost) algorithm was applied for model training.

Results: Three VOC selection strategies were tested: (1) All 344 detected VOCs, (2) 129 VOCs with >10% of measurements >20 ppbv, and (3) 31 VOCs with >66% of measurements >20 ppbv. The accuracy for distinguishing F-ILD patients from healthy controls was 85%, 88%, and 88% for these three strategies, respectively, with corresponding AUC values of 83%, 86%, and 86%. Using only the top 20 VOCs from strategy 2 slightly reduced accuracy (85%) and AUC (82%).

Conclusions: Different VOC selection strategies can enhance classification accuracy while minimizing the number of VOCs required. Further studies with larger sample sizes are needed to validate and refine the predictive model.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA29

背景空氣對呼出 VOCs 辨識纖維化型 ILD 之影響與校正方法

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Influence of Background Air on Exhaled Volatile Organic Compounds in Differentiating Fibrotic Interstitial Lung Disease from Healthy Controls and Its Correction Strategies

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Purpose: Exhaled volatile organic compounds (VOCs) are a non-invasive biomarker source for diagnosing and predicting fibrotic interstitial lung disease (F-ILD). However, background air (BA) can introduce confounding factors, leading to false positives or negatives. This study evaluates the impact of BA and applies machine learning to filter background signals.

Materials and Methods: A prospective study included 152 F-ILD patients and 81 healthy controls. VOCs were analyzed using selected-ion flow-tube mass spectrometry. Breath samples from subjects were collected in triplicate, and VOCs exceeding 20 ppbv were considered key features. VOCs from collected BA were also obtained. The eXtreme Gradient Boosting (XGBoost) algorithm was used for model training and inference.

Results: Exhaled breath VOCs alone distinguished F-ILD patients from healthy controls with high sensitivity and accuracy. Incorporating background air VOCs further improved performance metrics, including the F1 score. However, this apparent enhancement likely reflects confounding, as ambient air samples collected at the end of the day were temporally closer to F-ILD patients' sampling than to healthy controls, potentially leading to false-positive associations between background VOCs and disease status.

Conclusions: BA could largely influence the ability of VOCs detection for distinguishing healthy participants and F-ILD patients and leads to false positive. Larger studies are needed to validate and refine the air collecting method and predictive model.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA30

Entrectinib 相關心臟毒性的個案報告

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Entrectinib-related cardiotoxicity: a case report

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Entrectinib is a potent multi-kinase inhibitor approved for the treatment of ROS1 and NTRK fusion-positive, unresectable, advanced/metastatic non-small cell lung cancer (NSCLC). Numerous adverse events have been reported; although uncommon, cardiac toxicities remain a clinically significant concern.

A 67-year-old male ex-smoker presented with a productive cough for two months was diagnosed with lung cancer, left upper lobe, adenocarcinoma, cT3N3M1c2, stage IVB, with brain and left sacroiliac joint bone metastases. ECOG performance status was 1 at baseline. Biomarker assessment showed CD74-ROS1 fusion using ACTOnco+ (ACT Genomics, Taiwan) next-generation sequencing assay. Patient underwent entrectinib as his first-line therapy. Two days after treatment initiation, the patient developed sudden onset of severe hypotension without specific symptoms. Vital signs showed temperature of 35.9°C, blood pressure 62/48 mmHg, heart rate 84 beats per minute, respiratory rate 20 breaths per minute, and saturating 91% on room air. Electrocardiography showed ST-segment elevations over precordial and inferior leads. High sensitivity troponin I was 85.9 ng/L. Under the impression of acute coronary syndrome, coronary angiography was performed but it demonstrated patent coronary arteries and normal left ventricular wall motion. Intra-aortic balloon pump support was inserted for hemodynamic support and was successfully weaned off three days later. Entrecitinib was temporarily discontinued and subsequently rechallenged one week later after the patient's clinical condition stabilized. One month later, the patient was re-admitted due to bilateral pulmonary congestions noted on chest radiography during an outpatient follow up. Echocardiography revealed newly developed left ventricular hypokinesia and a decline in ejection fraction from 57% to 44%. Entrectinib-related cardiotoxicity was suspected after consultation with cardiologist. Entrectinib was withheld. Diuretics, sodium-glucose co-transporter 2 inhibitor and mineralocorticoid receptor antagonist were prescribed for acute heart failure. Clinical condition and chest X-film improved gradually. Follow-up echocardiogram after three weeks showed improved heart function with an increase in ejection fraction from 44% to 56% and heart MRI did not show structure abnormaly. After condition stabilized, the treatment was changed to crizotinib, which was well tolerated. This case highlights the potential for early-onset cardiotoxicity associated with entrectinib, emphasizing the importance of clinical vigilance and cardiac function monitoring.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA31

前縱膈非典型類癌腫之嚴重初期併發症表現：病例系列報告

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Anterior Mediastinal Atypical Carcinoid Tumors Presenting with Severe Initial Complications: A Case Series

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Anterior mediastinal atypical carcinoid tumors are extremely rare neuroendocrine neoplasms characterized by variable biological behavior and unpredictable presentations, which can be complicated at early diagnosis. Although the overall incidence of thymic malignancies is relatively higher among East Asian populations than in Western cohorts, in-depth investigation describing the initial clinical manifestations remains limited. Here, we present two cases of anterior mediastinal atypical carcinoid tumors with distinct, life-threatening initial manifestations and educational imaging findings, highlighting the diagnostic challenges and clinical complications associated with these rare neoplasms. We retrospectively reviewed the clinical data of two Taiwanese patients diagnosed with anterior mediastinal atypical carcinoid tumors, each presenting with a unique complication in MacKay Memorial Hospital. Demographic characteristics, clinical presentation, imaging findings, histopathological features, treatment strategies, and clinical outcomes were analyzed. Literature search was employed to identify previously reported cases and current evidence regarding the epidemiology, diagnostic approaches, and management of thymic atypical carcinoid tumors. The first case showcased carcinoid crisis as a potential initial manifestation. Initially presented with unexplained distributive shock, with imaging revealed a large anterior mediastinal mass encasing the superior vena cava and ascending aorta. A carcinoid crisis was identified, and octreotide infusion enabled successful tapering of vasopressor support. Despite intensive management, subsequent episodes of tumor lysis syndrome and fungemia resulted in death. The second case described a rarely reported manifestation, spontaneous hemothorax secondary to atypical carcinoid with great vessel involvement, treated with successful surgical excision and hemothorax evacuation. These findings highlight the importance of early recognition and emergent intervention for thymic neuroendocrine tumors, which may yield diverse clinical outcomes. Further research into population-specific epidemiological patterns and optimal management strategies for complicated thymic neuroendocrine tumors will be warranted.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA32

8 週居家肺復原計劃對於肺阻塞患者的有效性：依據 6 分鐘走路測試調整運動強度

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Effectiveness of an 8-week home-based pulmonary rehabilitation program for patients with obstructive pulmonary disease: adjusting exercise intensity based on the 6-minute walk test

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Purpose: There is limited evidence regarding the optimal intensity of exercise training for patients with chronic obstructive pulmonary disease (COPD). This study aimed to investigate the effectiveness and feasibility of using the percentage of distance completed on the six-minute walk test (6MWT) as a home-based exercise modality for improving symptoms in COPD patients.

Methods: This single-center study enrolled COPD patients undergoing pulmonary rehabilitation at Mackay Hospital in Tamsui between January 2024 and June 2025. All participants were able to walk and performed towel exercises and walking training 2 to 3 times per week for 8 weeks at varying intensities (high, moderate, and low) based on their percentage of distance completed on the 6MWT (≥80%, 80%-60%, and <60%). Changes in subjective symptom scores (COPD assessment test, CAT) were compared before and after the intervention.

Results: A total of 62 patients were enrolled, with 20, 25, and 17 patients in the high-, moderate-, and low-intensity groups, respectively. The three groups were similar in age (mean ± SD: 66.9 ± 9.6, 66.9 ± 10.0, and 71.9 ± 11.8, respectively; $p = 0.291$). Initial CAT scores differed among the three groups (8.9 ± 2.4, 10.4 ± 3.8, and 12.8 ± 4.3, respectively; $p = 0.013$). After 8 weeks of training, CAT scores significantly improved, with the high-intensity group experiencing a decrease in mean CAT score from 8.9 to 6.8, a decrease of -2.1 ± 1.5 points ($p < 0.001$); the moderate-intensity group from 10.4 to 7.9, -2.4 ± 1.7 points ($p < 0.001$); and the low-intensity group from 12.8 to 8.8, -4.1 ± 2.1 points ($p < 0.001$). The minimal clinically important difference (MCID) for a change of 2 or more CAT points was 60.0%, 68.0%, and 88.2% for the high-, moderate-, and low-intensity groups, respectively. The low-intensity group showed the most significant improvement in CAT. The adverse event rate was 0.0% in all three groups.

Conclusion: COPD patients with poor 6MWT results also had poorer CAT scores, and these patients showed the most significant improvement with low-intensity pulmonary rehabilitation. Home-based pulmonary rehabilitation exercises are safe and effective for COPD patients. The 6MWT can be used as a tool to adjust exercise intensity and provide a reference for precise exercise prescription.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA33

小細胞肺癌合併副腫瘤性邊緣性腦炎之病例報告

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Small Cell Lung Cancer Presented with Paraneoplastic Limbic Encephalitis: A Case Report

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Introduction

Small Cell Lung Cancer (SCLC) is a highly aggressive neuroendocrine tumor often associated with paraneoplastic syndromes. Paraneoplastic Limbic Encephalitis (PLE) is a rare but severe, debilitating neurological complication caused by an autoimmune response targeting onconeural antigens, commonly preceding the detection of the underlying malignancy. Clinically characterized by subacute onset of short-term memory deficits, psychiatric changes, and seizures. Early differentiation from infectious or metabolic encephalitis relies on the integration of neuroimaging, cerebrospinal fluid analysis, and specific paraneoplastic antibody testing, which are essential for timely immunomodulatory therapy and improved prognosis.

Case Presentation

A 72-year-old man with hypertension and mild cognitive decline presented with a three-week history of rapidly worsening nocturnal confusion and new-onset amnesia. Brain MRI showed bilateral medial temporal lobe T2/FLAIR hyperintensities, suggestive of limbic encephalitis. Cerebrospinal fluid was unremarkable, ruling out infection and common inflammatory causes, pointing to an autoimmune or paraneoplastic origin. Serum testing revealed anti-SOX1 antibodies, confirming paraneoplastic limbic encephalitis (PLE). Imaging found a left upper lobe mass, and biopsy confirmed extensive-stage small cell lung cancer (SCLC, Stage IVB). Treatment with platinum-based chemotherapy and whole-brain radiotherapy was started promptly. The patient showed significant neurological and radiological improvement, highlighting the importance of early, aggressive anti-tumor and immunotherapy in PLE.

Discussion

This case highlights the key role of anti-SOX1 antibody testing in the early diagnosis of paraneoplastic limbic encephalitis (PLE) and in identifying hidden small cell lung cancer (SCLC). Early combined treatment with chemotherapy and immunotherapy was crucial. The patient's significant neurological and imaging improvement confirms that controlling the underlying cancer is essential for managing PLE, even in advanced stages.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA34

手術切除後 IB 期非小細胞肺癌接受輔助性化學治療之療效與臨床病理相關性分析

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Real-World Outcomes and clinicopathologic correlations of Adjuvant Chemotherapy in Resected Stage IB Non–Small Cell Lung Cancer

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Purpose: We aimed to evaluate the real-world efficacy and clinicopathologic correlations of adjuvant chemotherapy (AC) in patients with resected stage IB (pT2aN0M0) non-small cell lung cancer (NSCLC).

Materials and Methods: This retrospective cohort included patients with pathologic stage IB NSCLC (AJCC 7th and 8th editions) who underwent complete resection between 2015 and 2020. Clinicopathologic characteristics, disease-free survival (DFS), and overall survival (OS) were compared. Univariable and multivariable Cox regression identified prognostic factors. A high-risk subgroup (grade 3 or non-pure adenocarcinoma histology) was further analyzed with propensity-score matching.

Results: Among the 237 patients with stage resected stage IB NSCLC, 56 received platinum-based AC, while 181 did not. Patients receiving AC had higher proportions of grade 3 histology (86.0 % vs 47.4 %), angiolymphatic invasion (39.6 % vs 23.4 %), and tumors > 3 cm (80.4 % vs 36.5 %). Median DFS was 62.3 months in the AC group and 55.3 months in the non-AC group ($p = 0.890$); median OS was 83.8 vs 77.4 months ($p = 0.224$). Among all patients, multivariable analysis identified high-risk histology and angiolymphatic invasion as independent predictors of worse DFS, whereas age, ECOG ≥ 2, smoking, high-risk subgroup, and tumor ≥ 3.5 cm predicted worse OS, while presence of actionable genomic alterations was protective. In the propensity-matched high-risk subgroup, neither DFS nor OS differed significantly between groups, although patients with tumors ≥ 3.5 cm demonstrated significantly longer OS when treated with AC. Toxicity was manageable, and 87.5 % completed four cycles of therapy.

Conclusions: In this real-world cohort of resected stage IB NSCLC, adjuvant platinum-based chemotherapy was well tolerated but did not confer a statistically significant survival advantage in the overall population or in matched high-risk subsets, except in tumors ≥3.5 cm. Older age, smoking, poor performance, and high-risk pathology predicted worse outcomes, while actionable genomic alterations correlated with improved prognosis.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA35

支氣管鏡冷凍消融術合併支架置放成功治療轉移性肝細胞癌引起支氣管內阻塞之病例報告

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Endobronchial Obstruction Caused by Metastatic Hepatocellular Carcinoma Successfully Managed with Bronchoscopic Cryoablation and Stent Placement: A Case Report

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Introduction

Endobronchial metastasis from hepatocellular carcinoma (HCC) is an extremely rare but clinically significant manifestation of advanced disease. While the lung is the most common site for extrahepatic spread, endobronchial involvement accounts for less than 2% of pulmonary metastatic lesions. This specific form of metastasis can lead to life-threatening central airway obstruction, causing rapid clinical deterioration, severe respiratory symptoms, and potential respiratory failure. Given the typically advanced stage of underlying HCC, prompt, effective salvage intervention is critical for symptom relief and improving quality of life.

Case Presentation

A 54-year-old man with hepatocellular carcinoma (HCC) complicated by lung metastasis, chronic hepatitis B, and alcoholic liver disease presented with acute hemoptysis, chest pain, and progressive dyspnea. Bronchoscopy revealed a friable mass completely obstructing the left main bronchus, consistent with metastatic HCC. Due to the acuity of the obstruction, an urgent therapeutic bronchoscopy was indicated. The treatment strategy involved a combined interventional approach. First, the obstructing tumor mass was successfully debulked and removed using cryoablation to ensure adequate tissue resection while minimizing bleeding risk. This was immediately followed by the sequential insertion of two self-expandable metallic stents (SEMS) over a guidewire under fluoroscopic guidance to structurally maintain the airway patency. Post-procedure, the patient's respiratory status improved rapidly; he was extubated, transitioned to nasal oxygen, and discharged in stable condition with marked symptom relief.

Discussion

This case highlights the crucial role of timely recognition and aggressive interventional management for rare malignant airway obstructions. Bronchoscopic cryoablation combined with SEMS placement proved to be a highly effective, minimally invasive palliative strategy for immediate airway recanalization. This approach is recommended as a preferred modality for managing life-threatening endobronchial obstruction in patients with advanced metastatic HCC.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA36

免疫治療於胸膜間皮瘤不同組織亞型之存活效益差異：一項回溯性世代研究

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Differential Survival Outcomes with Immunotherapy Across Histologic Subtypes of Pleural Mesothelioma: A Retrospective Cohort Study

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Purpose: The prognosis of pleural mesothelioma remains poor, with conventional platinum-based chemotherapy providing limited efficacy. Immune checkpoint inhibitors (ICIs) have demonstrated promising results, and the CheckMate-743 trial established nivolumab plus ipilimumab as first-line therapy for unresectable disease. This study aimed to evaluate clinical outcomes and prognostic factors associated with immunotherapy and chemoimmunotherapy in patients with pleural mesothelioma.

Materials and Methods: We retrospectively analyzed patients with histologically confirmed pleural mesothelioma treated at Taipei Veterans General Hospital between December 2013 and April 2025. Clinical characteristics, treatment regimens, and survival outcomes were reviewed. Overall survival (OS) and progression-free survival (PFS) were estimated using the Kaplan–Meier method, and independent prognostic factors were assessed with multivariate Cox regression.

Results: Among 53 patients, 35 (66%) had epithelioid and 18 (34%) had non-epithelioid histology. Median OS and PFS were numerically longer in patients receiving immunotherapy than in those who did not receive it (OS: 25 vs. 11 months; PFS: 15 vs. 8 months; both p=0.07). In the epithelioid subgroup, immunotherapy significantly improved outcomes (OS: 76 vs. 16 months, p=0.017; PFS: not reached [NR] vs. 8 months, p=0.015), whereas benefit was limited in non-epithelioid disease. Chemoimmunotherapy further enhanced survival in the epithelioid subgroup (OS: 76 vs. 16 months; PFS: 46 vs. 8 months; both p=0.02). Multivariate analysis identified epithelioid subtype (OS HR 0.44, 95% CI 0.21-0.93, p=0.03; PFS HR 0.40, 95% CI 0.19-0.87 p=0.02) and immunotherapy (OS HR 0.47, 95% CI 0.22-0.99, p=0.05; PFS HR 0.46 95% CI 0.22-0.97, p=0.04) as independent favorable factors, whereas ECOG performance status ≥2 predicted inferior survival (OS HR 5.07 95% CI 1.09-23.56, p=0.03).

Conclusion: In this real-world cohort, immunotherapy demonstrated clinically meaningful survival benefits, particularly among patients with epithelioid pleural mesothelioma. The combination of immunotherapy with chemotherapy further improved outcomes compared with chemotherapy alone. Histologic subtype and performance status were independent prognostic determinants of survival. These findings reinforce the role of immune checkpoint inhibition as a key therapeutic component for epithelioid mesothelioma and highlight the need for prospective studies to validate its optimal integration into multimodality treatment strategies.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA37

肺腺癌譜系病灶中錳超氧化物歧化酶表現：與致癌過程及 T 分期進展之相關性聯

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Manganese Superoxide Dismutase (MnSOD) Expression across Adenocarcinoma Spectrum Lesions (ASLs) of Lung: Association with Carcinogenesis and T-status Progression

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Purpose:

Manganese superoxide dismutase (MnSOD) is a key mitochondrial antioxidant enzyme involved in oxidative stress defense and has been implicated in cancer progression. We aimed to investigate its potential role in the stepwise evolution of adenocarcinoma spectrum lesions (ASLs) of lung.

Materials and Methods:

We retrospectively analyzed 67 ASLs from 61 patients who underwent surgical resection at Taipei Hospital between 2017 and 2023, including 1 atypical adenomatous hyperplasia (AAH) and 13 adenocarcinoma in situ (AIS) as pre-invasive lesions, and 53 invasive adenocarcinomas. Normal lung tissue adjacent to pre-invasive lesions served as the reference. Immunohistochemical (IHC) staining for MnSOD followed a standardized Leica BOND-MAX protocol. Expression was semi-quantified as a pixelwise H-score (0–300) by averaging five representative tumor regions of interest per case, using ImageJ-based whole-slide image analysis (400×). Statistical tests included Mann–Whitney U / Moses extreme reactions (2 groups), Kruskal–Wallis H / Median test (≥ 3 groups), χ^2 / Linear-by-Linear Association, and Wilcoxon signed-rank. ROC analysis was used to determine optimal cut-off values distinguishing pre-invasive lesions from adenocarcinoma.

Results:

The mean MnSOD pixelwise H-score was higher in invasive than in pre-invasive ASLs (158.0 ± 26.7 vs. 144.1 ± 16.3; p = 0.066 / 0.010). ROC analysis identified 154.5 as the optimal cut-off (Youden index = 0.457; sensitivity = 0.528; specificity = 0.929; AUC = 0.728, 95% CI = 0.598–0.859; p = 0.009). In invasive adenocarcinomas, MnSOD expression increased with T status (T1: 154.1 [n = 28]; T2: 158.0 [n = 19]; T3/T4: 175.9 [n = 6]; p = 0.110 / 0.016). The median MnSOD pixelwise H-score of the 53 invasive adenocarcinomas was 155.4. The proportion of cases with MnSOD pixelwise H-score ≥ 155.4 rose stepwise (T1: 35.7%, T2: 57.9%, T3/T4: 100.0%; p = 0.005). Paired analysis showed higher MnSOD expression in pre-invasive lesions than in matched normal lung (144.1 ± 16.3 vs. 72.6 ± 16.8; p = 0.001). Overall, MnSOD expression increased progressively from normal lung to pre-invasive and invasive lesions across T status.

Conclusions:

We identified a novel association in which MnSOD expression shows a stepwise increase along the ASL spectrum and correlates with pathological T status, suggesting a role in early tumorigenesis and malignant progression. MnSOD may serve as a biomarker for identifying high-risk lesions in lung adenocarcinoma development.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA38

病例報告：氣管內脂肪瘤之診斷困難與臨床辨識：一病例報告

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Case Report: Endobronchial Lipoma Presenting as Acute Respiratory Failure: Diagnostic Challenges in a Rare Case

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Abstract:

Benign neoplasm of the endobronchial tree is quite rare, while endobronchial lipoma exceptionally uncommon. These lipomas account for only 0.1~0.5% of all pulmonary tumors. Complications are generally considered rare in individuals with airway obstruction,cough, dyspnea, recurrent pneumonia, and lobar collapse.We present the case of a 86-year-old woman diagnosed with intrathoracic lipoma, complicated by respiratory failure.

Case presentation:

An 86-year-old man with hypertension, coronary artery disease post-stent, and prior prostate surgery presented with aphasia. Initial GCS was E4V1M5, NIHSS 18, with normal labs and brain CT showing no hemorrhage or large vessel occlusion. He later developed seizures and respiratory failure requiring intubation. Chest CT revealed right lower lung consolidation with a suspected mass. VATS found a 15 cm soft-tissue tumor arising from the diaphragm, which was excised with defect repair. Pathology confirmed a lipoma. After infection control and ventilator weaning, he was extubated on ICU day 31 and discharged in stable condition.

Discussion/conclusion:

Intrathoracic or endobronchial lipomas, though benign, may remain silent until airway obstruction develops, leading to dyspnea or even respiratory failure. CT imaging is essential for early identification and surgical planning. Prompt recognition and timely surgical removal are key to preventing severe complications and improving outcomes.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA39

重度鉤端螺旋體病（Weil's disease）：一例 55 歲男性鉤端螺旋體心肌炎病例

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Severe leptospirosis (Weil's disease): A 55-year-old male case of Leptospiral Myocarditis

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Introduction

Leptospirosis is a globally prevalent zoonotic disease caused by *Leptospira* spirochetes. Severe leptospirosis (Weil's disease) is a life-threatening zoonotic infection with a mortality rate ranging from 3% to 5%. This fulminant systemic disease commonly progresses to multiple organ dysfunction, typically manifesting as acute kidney injury, hepatic failure, coagulopathy, and severe pulmonary complications, including acute respiratory distress syndrome (ARDS) and diffuse alveolar hemorrhage (DAH). Despite the widespread systemic involvement, leptospirosis-induced myocarditis, particularly when presenting with clinical and electrocardiographic findings that closely mimic ST-segment elevation myocardial infarction (STEMI), is considered a distinct and relatively rare clinical entity.

Case Presentation

A 55-year-old male, engaged in animal husbandry, presented with a 3-day history of fever, myalgia, rhabdomyolysis, AKI, and hepatitis. Given the occupational risk and rapid multi-organ progression, leptospirosis was highly suspected. Upon transfer, the patient was in septic shock, necessitating immediate vasopressor support, fluid resuscitation, and empiric intravenous antibiotics (Doxycycline and Ceftriaxone).Cardiac enzyme elevation and an electrocardiogram exhibiting ST-segment elevation strongly mimicked acute MI despite the absence of chest pain. Based on high clinical suspicion, a diagnosis of leptospirosis-induced myocarditis was made, guiding management away from cardiac catheterization. Treatment was intensified with continuous antibiotics combined with targeted immunomodulation: high-dose steroids and colchicine. The patient's hemodynamic stability rapidly improved, vasopressors were discontinued, and renal and hepatic functions gradually recovered, leading to successful ICU discharge.

Discussion

This case highlights the critical importance of recognizing leptospirosis-induced myocarditis as a potential STEMI mimic in patients with high-risk exposure and multi-organ failure. The successful outcome was achieved through prompt, combined therapy—integrating antimicrobials with aggressive immunomodulatory treatment—underscoring the need for a high index of suspicion to prevent misdiagnosis and optimize outcomes.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA40

在體外膜氧合支持下進行硬式支氣管鏡檢時，氣管支氣管支架置入治療中央氣道狹窄的療效

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Efficacy of Tracheobronchial Stenting for Central Airway Stenosis during Rigid Bronchoscopy with Extracorporeal Membrane Oxygenation Support

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Abstract

Introduction: Rigid bronchoscopy has been an invaluable tool to diagnose and manage central airway obstruction. However, the risks of inadequate ventilation and tumor bleeding still play an occult killer during the procedure. Recently, extracorporeal membrane oxygenation (ECMO) has been not only used to support patients with cardiac or respiratory failure, it has also been reported to manage difficult airway. This study reviewed the peri-operative outcomes of patients who received rigid bronchoscopy with stent insertion under ECMO support.

Materials and Methods: This is a retrospective, single center study. During 2020 to 2023, there were 12 patients receiving rigid bronchoscopy with stent insertion under ECMO support. Peri-operative outcomes and short-term survival were included.

Results: In total 12 patients, there were 11 patients under veno-venous ECMO support and one patient under veno-arterial ECMO support. All of them received dumon stent insertion successfully. The mean blood loss during surgery were 148.3ml. Although all of patients weaning from ECMO successfully after surgery, there were only half of them extubated after surgery and the in-hospital mortality were 58.3%. The main reason causing the mortality was the condition of patients with terminal cancer stage.

Conclusion: Rigid bronchoscopy with stent insertion under ECMO support seemed to be a feasible and safe procedure for surgeons to manage central airway obstruction. Further study might need to confirm the findings.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA41

肺動靜脈畸形以腦膿瘍為初次表現—個案報告

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Pulmonary arteriovenous malformation with initial presentation of brain abscess – A case report

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Background: Pulmonary arteriovenous malformation (PAVM) increases the risk for brain abscess caused by a right-to-left shunt that bypasses the pulmonary capillary bed, which usually filters septic emboli and microorganisms from venous circulation. The loss of filtration allows bacteria, often from dental or systemic sources, to enter the cerebral circulation and spread to brain parenchyma, resulting in abscess formation.

Case presentation: A 63-year-old woman was hospitalized due to headache, progressive left hemiparesis, and intermittent fever with chills for 2 weeks. A computed tomography (CT) scan of the brain showed multiple various-sized ring-enhancing lesions in the bilateral frontal lobes, left thalamus, and parietal lobe with perifocal edema and diffusion restriction. Treatment with dexamethasone and antibiotics was given due to suspected brain abscess formation and elevated intracranial pressure. The patient underwent frontal craniectomy with brain abscess removal. Pathological results showed abscess formation and the presence of gram-positive cocci in chains. Multiple examinations were conducted to identify the potential infectious sources. Bacterial growth was absent in urine and blood cultures. Chest X-film revealed a nodular lesion in the left lower lung, along with a prominent vessel extending from the pulmonary hilum to the lesion. Chest CT aortography revealed an arteriovenous malformation in the anterior segment of the left lower lobe. The feeding artery via Left A7-8 was measured 4mm in size and the drainage vein was 4.4mm in size. The patient underwent coil embolization, and the feeding arteries were completely blocked. The patient received full course of antibiotic treatment, resulting in a gradual symptom reduction and significant improvement in consciousness. The follow-up brain magnetic resonance imaging (MRI) showed a decrease in the size of the brain abscess. The patient was discharged after 8 weeks of antibiotic treatment.

Conclusions: Brain abscess may be the initial presentation of undiagnosed PAVM. Screening for PAVM is strongly recommended in patients with brain abscess when no other source could be identified. Endovascular embolization is the preferred method for treating PAVM to prevent neurological complications, such as brain abscess. Early recognition and management of PAVM is critical to prevent recurrent brain abscess and other paradoxical embolic events.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA42

以病人為核心的吸入器回收策略：提升用藥依從性並推進環境永續

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A Patient-Centered Inhaler Recycling Strategy to Improve Medication Adherence and Advance Environmental Sustainability

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Purpose: Poor inhaler adherence remains a major problem in chronic respiratory diseases. Many patients discontinue treatment early or use inhalers incorrectly, causing disease progression and repeated visits. To address this issue, we designed a recycling-based program encouraging patients to return used inhalers. The returned device served as proof of medication use and a behavioral cue for better adherence. As most inhalers are treated as general rather than medical waste, their components could be safely analyzed. This study aimed to improve adherence, reduce preventable exacerbations, and promote sustainable waste management in respiratory care.

Materials and Methods: The study implemented a three-phase program to improve inhaler shell collection and reduce waste. Phase 1 involved patient education on proper disposal. Phase 2 introduced the WaCare App, which provided adherence tracking to strengthen self-monitoring and compliance. Phase 3 partnered with pharmaceutical companies to offer small incentives and encourage continuous recycling. The recycling process included weighing and sorting inhaler parts by material. Carbon reduction was calculated using standard emission factors for plastic, aluminum, and iron to ensure accuracy. Patient feedback was also collected using questionnaires to assess satisfaction, willingness to recycle, and perceived value of recycling.

Results: From May to July 2025, a total of 180 inhalers (102 Ellipta and 78 other types) with a combined weight of 6,960 g were collected, resulting in a reduction of 13.92 kg CO_2e from plastic, 5.80 kg CO_2e from aluminum, and 0.34 kg CO_2e from iron, for a total reduction of 20.06 kg CO_2e. The recycling rates, referring to the proportion of each inhaler device that can be disassembled and reused through standard recycling processes, were 90% for Ellipta, 67% for Rapihaler, and 18% for Respimat. From May to October 2025, 100 patients completed the inhaler recycling questionnaire, with 63 included in symptom-related analyses. Participants showed high willingness to participate (9.4 ± 1.4) and strong support for hospital-led initiatives (9.6 ± 1.1), with hospitals identified as the preferred leaders (47%). Patients with higher CAT scores demonstrated greater awareness of medical waste reduction (9.7 ± 0.7 vs. 9.0 ± 1.6; $p < 0.05$). Younger patients showed higher satisfaction (9.1 ± 1.4 vs. 8.0 ± 1.6; $p < 0.001$) and stronger confidence in recycling improving adherence (9.4 ± 1.1 vs. 8.5 ± 1.7; $p < 0.01$). Promotion support and recognition of recycling benefits were the highest-scoring attitude domains.

Conclusions: The recycling-based approach enhanced patient satisfaction and adherence while reducing inhaler waste and carbon emissions. By linking patient behavior with sustainability, it provided a novel framework for monitoring medication use. This model demonstrated measurable environmental and behavioral benefits and could be extended to other chronic diseases to promote greener, patient-centered care.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA43

以初診斷[18]F-FDG PET/CT 放射組學預測小細胞肺癌早期病情進展與存活率

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Baseline [18]F-FDG PET/CT radiomics predict early progression and survival in small cell lung cancer

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Objectives: To determine whether baseline [18]F-FDG PET/CT radiomic markers of thoracic tumor burden and metabolic heterogeneity predict early progression and overall survival (OS) in patients with small cell lung cancer (SCLC) receiving first-line platinum–etoposide chemotherapy.

Materials and Methods: We retrospectively analyzed 45 patients with SCLC who underwent baseline PET/CT before chemotherapy. Radiomic features were extracted from thoracic tumor volumes, including metabolic tumor volume (MTV), total lesion glycolysis (TLG), SUV histogram parameters, and gray-level co-occurrence matrix (GLCM) metrics. Univariable and multivariable Cox regression assessed associations with progression-free survival (PFS) and OS. Receiver operating characteristic (ROC) analysis identified predictors of early progression (<6 months) and short-term mortality (<12 months).

Results: Higher logTLG was linked to shorter PFS and OS in univariable analysis. In multivariable models, logTLG independently predicted PFS (HR 2.20, 95% CI 1.12–4.30; p=0.021) and OS (HR 2.54, 95% CI 1.24–5.20; p=0.011). Age (HR 1.07 per year; p=0.007) and stage IV vs III (HR 2.46; p=0.037) were additional OS predictors. GLCM texture features were not significant. ROC analysis showed MTV (AUC 0.88) and LDH (AUC 0.74) best predicted platinum-resistant relapse, while age (AUC 0.79), stage (AUC 0.73), and SUV entropy (AUC 0.75) predicted 12-month mortality. Kaplan–Meier curves confirmed poorer survival with high logTLG, advanced stage, and older age.

Conclusions: Baseline thoracic PET/CT radiomic markers, particularly logTLG, independently predict survival in SCLC patients receiving platinum–etoposide chemotherapy. These findings underscore the clinical potential of PET/CT-derived metabolic burden for early identification of platinum resistance and for guiding individualized risk stratification.

Keywords: Small cell lung cancer; [18]F-FDG PET/CT; Radiomics; Total lesion glycolysis; Metabolic tumor volume; Prognosis

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA44

PD-L1 高表達肺腺癌合併副腫瘤性類白血病反應及 PET 骨髓彌漫性攝取但骨掃描陰性的特殊病例

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A Unique Case of PD-L1-high Lung Adenocarcinoma with Paraneoplastic Leukemoid Reaction and Diffuse PET Bone Marrow Uptake but Negative Bone Scan

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Purpose: Paraneoplastic leukemoid reaction (PLR) is a rare but serious manifestation in solid tumors, defined by extreme leukocytosis (>50,000/μL) in the absence of infection or hematologic malignancy. Lung adenocarcinoma-associated PLR is rare and may mimic marrow involvement radiographically. FDG-PET/CT may show diffuse bone marrow uptake, commonly seen after G-CSF use or in marrow infiltration, but is rarely reported in PLR. We report a unique case of lung adenocarcinoma with PLR, diffuse FDG-avid bone marrow on PET/CT, negative bone scan, and resolution of leukocytosis with treatment.

Case Report: A 62-year-old male was diagnosed with left lower lobe lung adenocarcinoma with pleural metastasis, clinical stage cT3N0M1a, stage IVA, ECOG PS 1.
Molecular testing revealed EGFR mutation was not detected, ALK/ROS1 IHC negative, PD-L1 90% (SP263). NGS (FoundationOne CDx): ERBB2 amplification, CDKN2A/B loss, HRAS Q61R, MTAP loss, TP53 splice site (c.673-2A>T). Initial WBC count was 53,720/μL, peaking at 68,010/μL**,** without evidence of infection. Bone marrow biopsy was not performed. PET/CT revealed **d**iffuse FDG uptake in bone marrow, without focal skeletal lesions. Whole-body bone scan was negative, ruling out osseous metastasis. .The patient received carboplatin/pemetrexed/pembrolizumab for 6 cycles, achieving partial response. Following treatment, leukocytosis resolved (WBC normalized to ~8,000/μL).

Conclusions: This case demonstrates a rare paraneoplastic leukemoid reaction (PLR) in NSCLC, showing diffuse bone marrow FDG uptake on PET/CT without structural metastasis. Despite mimicking bone metastasis, the negative bone scan and absence of G-CSF use or infection suggest tumor-driven cytokine-induced leukocytosis (e.g., GM-CSF, IL-6). Leukocytosis resolved after chemoimmunotherapy, supporting a paraneoplastic mechanism. The discordance between PET/CT and bone scan highlights the need to interpret imaging alongside clinical and lab data to avoid misdiagnosis and overtreatment. Recognizing this pattern is critical to distinguish PLR from metastatic disease.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA45

積極運用支氣管鏡 ± 床邊切片釐清血液腫瘤病人急性呼吸衰竭之成因

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Proactive Bronchoscopy ± Bedside Biopsy for Identifying the Etiologies of Acute Respiratory Failure in Hematologic Malignancies

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Introduction: Acute respiratory failure (ARF) is a major cause of ICU admission in patients with hematologic malignancies. Although infections are common, the etiologies are often multifactorial and difficult to determine in this fragile population. We aimed to clarify the causes of ARF through bronchoscopy with bronchoalveolar lavage and, when feasible, bedside lung biopsy in the ICU.

Methods: This single-center retrospective study included patients with hematologic malignancies admitted to the ICU at the NTU Cancer Center from 2023 to 2024 for ARF, defined as requiring invasive ventilation or high-flow nasal cannula with $FiO_2 > 50\%$.

Results: Sixty-seven patients were enrolled (median age, 63 years). The most common underlying diseases were lymphoma (23, 34.3%) and acute leukemia (23, 34.3%). At ICU admission, the PaO_2/FiO_2 ratio was >300 in 3 (4.5%), 200–300 in 24 (35.8%), 100–200 in 28 (41.8%), and <100 in 12 (17.9%) patients. ICU mortality was 61.6%.

Causes of ARF included infection (35, 52.2%), treatment-related (20, 29.8%), cancer-related (5, 7.5%), and unknown (7, 10.4%). Among infection-related cases, 14 (40%) were viral, including RSV (7), adenovirus (4), enterovirus/rhinovirus (2), influenza co-infection (1), and HHV-6 (1). Six viral cases had secondary bacterial infections. Tissue biopsy was performed in nine patients, revealing diffuse alveolar damage (2), organizing pneumonia (2), leukemic infiltration (1), aspergillosis (1), and three with undetermined pathology.

Conclusions: The etiologies of ARF in hematologic malignancy patients were heterogeneous. Viral pneumonia—including RSV—was a significant contributor. Bronchoscopy and bedside biopsy provided valuable diagnostic insights.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA46

糞便中罹癌風險關聯之副擬桿菌屬可預測台灣肺癌患者的治療預後

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Fecal Risk-associated *Parabacteroides* spp. Predicted the Outcome of Taiwan Lung Cancer Patients

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Purpose: Increasing evidence has demonstrated the association of gut dysbiosis and the the derived gut-lung axis with risk, development and treatment response of lung diseases and cancer. This study aimed to characterize risk-associated fecal microbiota and its prognostic significance in lung cancer.

Materials and Methods: Sixty lung cancer patients and 63 age and gender matched controls were included. Fecal 16s rRNA V3-V4 amplicon were sequenced to profile the gut microbiome and assess diversity, composition, and KEGG pathway. Time-dependent ROC was used to derive the cut-off of abundance for grouping risk-associated bacteria. The contribution of these candidates to overall survival (OS) was assessed with multivariable Cox regression and Kaplan–Meier curves, and additionally stratified by targeted therapy, radiotherapy, and chemotherapy.

Results: Microbial alpha diversity was lower in lung cancer than in controls, and beta diversity differed between groups (p=0.01 and 0.002, respectively). Random forest identified 26 bacteria enriched in either patients or controls. *Parabacteroides* spp. and *Veillonella dispar* showed a promising 3-year ROC performance (AUC=0.713 and 0.710, respectively). Multivariate Cox regression determined only *Parabacteroides* spp. remained associated with OS (p=0.015). Clinical characteristics did not differ significantly between the high and low *Parabacteroides* spp. groups. The Kaplan–Meier curve showed an increases abundance of *Parabacteroides* spp. associated with a poorer OS (p=0.003) and remained the same in the patients treated without targeted therapy (p=0.012), radiotherapy (p=0.002), or chemotherapy (p=0.011). Intriguingly, the patients with low *Parabacteroides* spp. abundance had a poorer OS when received radiotherapy (p=0.001) and those with high *Parabacteroides* spp. had a better OS when received targeted therapy (p=0.009). However, fecal *Parabacteroides* spp. showed no significant change before and after TKI treatment. It is noted that the abundance of *Parabacteroides* spp. was positively correlated with certain metabolic pathways such as starch and sucrose metabolism (p=0.004).

Conclusion: Our results revealed that fecal *Parabacteroides* spp. was able to predict lung cancer risk and might further serve as a prognostic and a treatment outcome biomarker in Taiwan lung cancer patients. Further investigations in a larger cohort and mechanistic studies are warranted in particular its crosstalk to various treatments and bacteria-associated pathways.

Keywords: Fecal microbiota, lung cancer risk, *Parabacteroides* spp., treatment outcome.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA47

胸壁急肋骨侵犯之假腫瘤型肺部病灶- 旅外回台患者確診為類鼻疽感染個案報告

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Pulmonary Melioidosis Mimicking Primary Lung Cancer with Chest Wall and Rib Invasion in a Returning Traveler

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Background: Melioidosis, caused by the gram-negative environmental bacterium Burkholderia pseudomallei, is endemic in Southeast Asia and northern Australia. The disease presents with a broad clinical spectrum, ranging from localized abscesses to fulminant sepsis. Pulmonary involvement is the most common manifestation but rarely appears as a tumor-like lesion with invasion of adjacent structures. Misdiagnosis as malignancy can result in unnecessary oncologic interventions and delayed antimicrobial therapy.

Case Presentation: A 49-year-old Taiwanese man residing in Cambodia presented with intermittent fever and left anterior chest pain. Upon admission t, laboratory data showed HbA1c 9.6%, albumin 2.3 g/dL, and elevated CRP (8.94 mg/dL). Chest CT revealed a 4.2×3.6 cm subpleural consolidation in the left upper lobe with central necrosis, destruction of the 4th-5th ribs, and ipsilateral hilar lymphadenopathy, compatible with a cT3N1M0 lung carcinoma. Brain MRI and bone scan excluded distant metastasis. However, blood culture grew Burkholderia spp. about 5 days later, sensitive to ceftazidime and TMP-SMX. Moreover, CT-guided biopsy demonstrated chronic inflammation and fibrosis, and culture confirmed B. pseudomallei, establishing a diagnosis of pulmonary melioidosis. The patient was initiated on intravenous ceftazidime plus oral TMP-SMX. Marked clinical and radiologic improvement was observed, with CRP decreasing to 0.72 mg/dL before discharge. He was prescribed a six-month oral eradication regimen with TMP-SMX.

Conclusion: Pulmonary melioidosis can masquerade as primary lung cancer with direct rib and chest wall invasion, posing a significant diagnostic challenge. In diabetic patients or travelers from endemic regions, clinicians should maintain a high index of suspicion, confirm diagnosis through culture, and initiate prompt stage-appropriate antimicrobial therapy to improve outcomes.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA48

虛擬支氣管鏡導航合併氣管鏡超音波導引經支氣管穿刺切片術診斷右下葉支氣管鄰近腫瘤

施慧瑄[1], 楊勝雄[1], 黃文傑[2]

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Combination of virtual bronchoscopic navigation with EBUS-TBNA in the diagnosis of a tumor adjacent to the right inferior lobar bronchus

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Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) has been frequently applied to the diagnosis of central airway lesions. But there are large or medium sized blood vessels along with the large airways and bleeding risk is increased after needle puncture. Virtual bronchoscopic navigation such as Archimedes navigation system can guide the bronchoscope to the lesion and provide information of safe points of puncture by mapping the vessel to avoid bleeding risk.

We presented an 82-year-old lady with initial presentation of blood-tinged sputum for one month. Chest CT showed a 2.3x2.2 cm lesion in RLL, adjacent to the right inferior lobar bronchus. We used Archimedes navigation system to calculate the airway path and the safe point of puncture for the EBUS-TBNA needle. We also used EBUS Doppler to confirm no active blood flow at the puncture site. Histopathological analysis confirmed adenocarcinoma of lung origin without subsequent procedural complications.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA49

加速度計測量身體活動與肺功能的關聯：英國生物樣本庫的真實世界證據

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Real-World Evidence Linking Accelerometer-Derived Physical Activity and Pulmonary Function: Insights from the UK Biobank

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Purpose: This study aimed to examine the interplay between accelerometer-derived physical activity, pulmonary function, and clinical outcomes in a large, community-based cohort.

Materials and Methods: In the UK Biobank accelerometry sub-cohort (2013–2016; n=103,625), we included participants with interpretable spirometry, valid wrist-worn accelerometer data, and complete covariates. Lung function was categorized as normal ($FEV_1 \geq 80\%$ predicted) or low ($FEV_1 < 80\%$ predicted). Physical activity was classified as "Active" or "Inactive" based on a threshold of ≥150 minutes per week of moderate-to-vigorous physical activity (MVPA). Pulmonary function indices, activity metrics, and clinical outcomes were compared across groups.

Results: Among 37,349 eligible participants, 10.5% (n = 3,916) had low FEV_1. Overall, 61.0% (n = 22,773) were Active and 28.5% (n = 10,660) were Inactive. The proportion of Inactive participants was significantly higher in the low-FEV_1 group compared with those with normal FEV_1 (41.5% vs 31.9%, $p < 0.001$). Inactive participants showed higher incidences of newly diagnosed COPD, asthma, interstitial lung disease, all-cause mortality, and hospitalization. Notably, within the low-FEV_1 stratum, inactivity was further associated with increased risks of incident ischemic stroke and myocardial infarction.

Conclusions: In this large, community-based cohort with objectively measured spirometry and accelerometry, reduced lung function and physical inactivity frequently co-occur, and their co-presence aligns with substantially worse cardiometabolic outcomes. Our findings support early identification of individuals with impaired lung function and targeted counseling to increase daily activity.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA50

血漿蛋白質體學結合機器學習於特發性肺纖維化與結締組織疾病相關間質性肺病之鑑別：前瞻性研究

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Plasma Proteomic Signatures and Machine Learning Models for Distinguishing Idiopathic Pulmonary Fibrosis from Connective Tissue Disease–Associated Interstitial Lung Disease: A Prospective Study

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Background: Idiopathic pulmonary fibrosis (IPF) is a relentlessly progressive fibrotic interstitial lung disease (ILD) with limited treatment options and poor prognosis. Distinguishing IPF from connective tissue disease–associated ILD (CTD-ILD) remains challenging due to overlapping radiologic and clinical features, and reliable blood-based biomarkers are lacking. Recent advances in high-throughput proteomics and machine learning enable multidimensional biomarker discovery for precision disease classification.

Methods: We prospectively analyzed plasma samples from Taiwanese patients with fibrotic ILDs (IPF, n = 22; CTD-ILD, n = 66) using the Olink Target 96 Inflammation panel (92 proteins). Differentially expressed proteins were identified by integrative network and pathway analyses. Diagnostic models were developed using generalized linear modeling (GLM), decision tree, and random forest algorithms. Prognostic relevance was assessed using Kaplan–Meier survival curves and multivariable Cox regression, with external validation from public ILD transcriptomic datasets.

Results: Of 92 quantified proteins, 23 showed significant intergroup differences. Four biomarkers—MMP-10, FGF-19, ADA, and TWEAK (TNFSF12)—emerged as robust discriminators between IPF and CTD-ILD. The GLM model combining FGF-19, ADA, and TWEAK achieved the highest diagnostic accuracy (AUC = 0.870; sensitivity = 0.97; specificity = 0.82), outperforming decision tree and random forest classifiers. Transcriptomic validation confirmed downregulation of TWEAK in ILD lung tissue and in TGF-β1–stimulated fibroblasts, implicating its role in canonical profibrotic pathways. Survival analysis demonstrated poorer outcomes in IPF versus CTD-ILD (log-rank $p < 0.001$), with MMP-10 predicting higher mortality (HR 2.08, $p = 0.007$) and TWEAK associated with improved survival (HR 0.04, $p < 0.001$).

Conclusion: Distinct plasma proteomic signatures effectively differentiate IPF from CTD-ILD, identifying TWEAK as both a diagnostic and prognostic biomarker. A multi-marker GLM model integrating FGF-19, ADA, and TWEAK achieved excellent diagnostic performance, underscoring the potential of plasma proteomics combined with machine learning to refine disease classification and risk stratification in fibrotic ILDs.

Keywords: Idiopathic pulmonary fibrosis; connective tissue disease–associated interstitial lung disease; plasma proteomics; biomarker discovery; machine learning; TWEAK (TNFSF12).

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA51

第 IIIB/IIIC 期不可切除之非小細胞肺癌病患接受根治性同步化學放射治療的成果與預後因子分析

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Outcomes and prognostic factors for patients with unresectable stage IIIB/IIIC non-small cell lung cancer received definitive concurrent chemoradiotherapy

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Purpose: For patients with locally advanced, unresectable stage III non–small-cell lung cancer (NSCLC), the current standard of care consists of concurrent chemoradiotherapy (CCRT). Evidences regarding the effectiveness and safety of chemoradiotherapy (CRT) in real-world clinical practice remain limited.

Patients and Methods: This single-center, observational cohort study included 102 patients diagnosed with unresectable stage IIIb and IIIc non-small-cell lung cancer (NSCLC) between January 1, 2020, and December 31, 2024, who underwent chemoradiotherapy (CRT). Baseline demographics, tumor profiles, laboratory data, treatment-related toxicities and outcomes were collected. Progression-free survival (PFS) and overall survival (OS) were analyzed by using the Kaplan–Meier method. A multivariate Cox regression model was applied for identifying prognostic factors.

Results: The median age was 67 years old. Most patients were male (68.6%), and had adenocarcinoma (63.7%) and stage IIIB (69.6%). PD-L1 ≥50% and driver gene mutations were detected in 30.5% (18/59) and 30.0% (24/80), respectively. The median radiation dose was 60 Gy, whereas 13.7% of patients received consolidation immunotherapy. With a median follow-up of 13 months, 63 patients had tumor progression and the median PFS was 15 months. (95% CI, 9.18–20.8). Besides, 18 patients died. The 12-month OS was 90.7%, and the 3-year OS was 73.7%. Treatment-related toxicities were frequent but predominantly low-grade, including pneumonitis (49.0%, G1/2/3: 26/22/2), esophagitis (48.0%, 20/29/0), dermatitis (38.2%, 25/11/3), and hematologic toxicity (16.7%, 13/4/0). By univariable analysis, patients with stage IIIC had significantly shorter PFS than IIIB (9.0 vs 24.0 months, p=0.003), and squamous histology fared worse than non-squamous (10.0 vs 20.6 months, p=0.02).

Conclusions: In stage IIIB/IIIC NSCLC patients receiving CCRT, disease stage and tumor histology were significantly associated with treatment outcome. These findings provide real-world evidence, which may help developing benchmarks for prognosis prediction and share decision making in treating locally advanced NSCLC patients.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA52

評估營養補充品與監督式運動介入對肌少症與嚴重肌少症合併慢性肺病患者之身體表現與身體組成的影響：前瞻性多中心臨床試驗

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Evaluate the effect of dietary supplement combined with supervised exercise on physical performance and body composition among patients with sarcopenia and severe sarcopenia comorbid with chronic lung diseases: A prospective, multi-center clinical trial (NCT 06280443)

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Background: Sarcopenia and severe sarcopenia are prevalent among patients with chronic lung diseases (CLDs), including asthma, COPD, and interstitial lung disease, and are associated with reduced mobility and poor outcomes. Nutritional supplementation combined with supervised exercise has been proposed to improve body composition and function, yet prospective evidence in Asian CLD populations remains limited.

Methods: This 12-week, prospective, multi-center clinical trial recruited 84 stable outpatients with CLDs from Taichung Veterans General Hospital and Taipei Medical University Hospital (April 2023–August 2024). Seventy-four participants completed the program, receiving a daily supervised walking regimen (6500 steps) and a nutritional supplement (Glucare; containing L-arginine, L-leucine, vitamin D3, and calcium lactate gluconate). Outcomes included physical performance (handgrip strength, five-time sit-to-stand, gait speed, Short Physical Performance Battery [SPPB]), body composition (SMI, body fat, BMI), pulmonary function, and serum vitamin D levels. (Clinical trial. gov: NCT 06280443)

Results: Participants had a mean age of 73.7±8.4 years; 47.3% were men. Following intervention, serum vitamin D significantly increased (27.0→31.7 ng/mL, $p<0.001$), SPPB improved (8.9→9.8, $p=0.014$), sit-to-stand time decreased (16.8→14.3 s, $p=0.036$), and gait speed increased (0.9→1.0 m/s, $p=0.051$). Abnormal proportions decreased in handgrip strength (74.3%→60.8%, $p=0.018$), sit-to-stand (78.4%→56.8%, $p=0.003$), and SPPB (54.1%→33.8%, $p=0.001$). Multivariate analysis identified significant improvements in SPPB ($\beta=0.23$, $p=0.046$) and vitamin D ($\beta=6.20$, $p<0.001$) post-intervention, whereas older age and female sex were associated with lower strength. Pulmonary function parameters (FEV1, FVC) showed no significant change.

Conclusion: Combined nutritional supplementation and structured exercise significantly improved vitamin D status and physical performance among patients with chronic lung disease–related sarcopenia. This integrated strategy is feasible and clinically beneficial, supporting its inclusion in pulmonary rehabilitation and multidisciplinary care models for CLD patients with sarcopenia.

Keywords: sarcopenia, chronic lung disease, nutrition, exercise, vitamin D, physical performance.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA53

一例疑似卵巢癌的更年期女性，最終確診為甲狀腺型 Meigs 症候群：臨床表現、影像與病理

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A Postmenopausal Woman Initially Suspected of Ovarian Cancer, Later Diagnosed with Thyroid-type Meigs Syndrome: Clinical, Radiologic, and Pathologic Correlation

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A 58-year-old postmenopausal woman (G1P1), with hypertension and no smoking history, presented with progressive shortness of breath and a massive right pleural effusion. She had a 6-month history of chest tightness, hoarseness, weight loss (4 kg), and positional discomfort. Thoracentesis drained 740 cc of yellowish-clear fluid. Pleural studies showed borderline exudate; biopsy and pleuroscopy were nonspecific.

CT imaging revealed bilateral ovarian masses (right: 8.8 × 8.0 cm; left: 3.8 × 2.6 cm) and minimal ascites. CA-125 was elevated (156.14 U/mL), while CEA and CA19-9 were normal. Meigs syndrome was suspected. She underwent bilateral salpingo-oophorectomy. Frozen section suggested struma ovarii, and final pathology confirmed struma ovarii with microfollicular adenomatous hyperplasia, Hürthle cell metaplasia, and hemorrhagic degeneration.

Postoperative recovery was smooth. Thyroid workup revealed suppressed TSH, normal free T4, and elevated thyroglobulin (115.2 ng/mL). Endocrine follow-up was arranged.

Meigs syndrome is a rare condition (1 ~ 3% of ovarian fibromas) defined by a benign ovarian tumor, ascites, and pleural effusion, mostly in postmenopausal women. It can mimic malignancy, especially when CA-125 is elevated. Imaging (CT/MRI, PET/CT) helps differentiate it from ovarian cancer, as Meigs-related tumors typically have lower SUVmax. Cytology is usually negative.

Surgical resection is curative. Post-op, CA-125 levels and effusions normalize rapidly. Prognosis is excellent. Awareness of Meigs syndrome is key to avoiding unnecessary extensive surgery and misdiagnosis when pleural effusion, ascites, pelvic mass, and elevated CA-125 coexist.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PA54

剔除 Derlin-1 基因可抑制非小細胞肺癌的細胞致癌活性及血管新生

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Knockdown of Derlin-1 Represses Cellular Oncogenic Activities and Angiogenesis in NSCLC

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Purpose: Lung cancer is the leading cause of cancer-related mortality worldwide. Recent advances in molecular profiling, targeted therapies, and immunotherapies have revolutionized NSCLC management, ushering in an era of personalized treatment with improved patient outcomes. DERL1, or Derlin-1, is a protein that is overexpressed in lung cancer, particularly NSCLC, and is considered an oncogene. It promotes cancer cell invasion and metastasis by up-regulating enzymes like MMP-2 and MMP-9 through the EGFR-ERK pathway, and its overexpression is associated with a poorer prognosis. DERL1's normal function is to help clear misfolded proteins from the endoplasmic reticulum (ER), but its overexpression in cancer is linked to cancer cell proliferation, invasion, and metastasis. However, so far, only one study (Am J Pathol. 2013 Mar;182(3):954-64.) investigated DERL1's role in NSCLC.

Materials and Methods: We integrated microarray gene expression data (GSE22138) and an independent TCGA dataset to identify derlin-1 (DERL1) as our candidate gene. We used lung cancer cell lines from 食科所生物資源保存及研究中心, including small cell lung cancer and non-small cell lung cancer. We investigate whether DERL1 regulates the oncogenesis activities in lung cancer cells. Then, we would investigate whether DERL1 alters drug resistance in lung cancer cells. We would examine whether manipulating DERL1 gene alters the resistance to chemotherapy and target therapy.

Results: We manipulated DERL1 expression with siRNA in a non-small cell lung cancer cell line. After confirming the successful knockdown of DERL1, in vitro oncogenicity and chemosensitivity were assessed. Knockdown of DERL1 repressed cell proliferation and impaired cell migration and invasion. Furthermore, non-small cell lung cancer cells with DERL1 knockdown had increased NK cell cytotoxicity and decreased angiogenesis.

Conclusions: In our vitro cellular assays, DERL1 was found to be associated with oncogenic in non-small cell lung cancer and to be a possible target for further treatment.

Airway Disease
Sleep Medicine
Interstitial Lung Disease

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OB01

長期使用吸入性抗生素與口服大環內酯類治療於非囊性纖維化支氣管擴張症之效果與安全性：一項前瞻性觀察性多中心世代研究

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Effectiveness and Safety of Long-Term Inhaled Antibiotics and Oral Macrolide Therapy in Non–Cystic Fibrosis Bronchiectasis: A Prospective Observational Multicenter Cohort Study

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Purpose: Chronic airway colonization—particularly with gram-negative bacteria (GNB), including Pseudomonas aeruginosa (PA)—is a key driver of exacerbations, symptoms, and disease progression in bronchiectasis. Long-term therapy with inhaled antibiotics or macrolides is commonly used in high-risk patients, but real-world comparative data in Asian populations remain limited.

Materials and Methods: In this prospective observational, multicenter cohort, we enrolled adults (≥20 years) with chest computed tomography (CT)–confirmed bronchiectasis, a history of GNB isolation, and high-risk features (≥2 exacerbations or ≥1 severe exacerbation in the prior 24 months, or bronchiectasis severity index (BSI) ≥9). Patients received either inhaled colistin or oral azithromycin for 3 months. The primary outcome was change in microbiological culture results. Secondary outcomes included changes in COPD Assessment Test (CAT) and modified Medical Research Council dyspnea scale (mMRC) scores, lung function, and safety.

Results: Eighty-five patients were analyzed (colistin n=51; azithromycin n=34). At baseline, the colistin group had higher symptom burden and worse lung function. At 3 months, GNB culture positivity declined more in the colistin group, with higher eradication rates (64.7% vs 29.4%, p=0.001). In the PA subgroup, eradication rates were also higher in the colistin group (33.3% vs 11.8%, p = 0.039). There were no significant between-group differences in ΔFEV_1 or ΔFVC. Symptom improvement was greater with colistin: median CAT score change −4.0 vs 0.4 (p<0.001), and more patients achieved a clinically meaningful CAT improvement ≥4 points (52.9% vs 26.5%, p=0.016). Adverse events were infrequent and mild (e.g., skin rash), with no serious treatment-related events.

Conclusion: In high-risk bronchiectasis patients with a history of GNB infection, long-term inhaled colistin was associated with greater microbiological clearance and clinically meaningful symptom improvement compared with azithromycin, while lung function remained stable in both groups. These real-world multicenter data support integrating inhaled antibiotics into bronchiectasis management in Asian settings.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OB02

臺灣重度氣喘患者小氣道功能障礙的盛行率：多中心橫斷面觀察研究

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Prevalence of Small Airway Dysfunction in Taiwanese Patients with Severe Asthma: A Multicenter Cross-Sectional Observational Study.

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Background: Small airway dysfunction (SAD) is a key component of asthma pathophysiology, but population-based data in Taiwanese patients are lacking. This study aimed to establish Taiwanese reference equations for impulse oscillometry (IOS) and evaluate the prevalence and clinical relevance of SAD

Methods: Adults who were healthy or had physician-diagnosed severe asthma for at least one year were enrolled from five hospitals in Taiwan. Participants were classified as healthy controls or severe asthma patients with or without biologic therapy. Predicted IOS values were derived from healthy subjects using sex-specific linear regression. SAD was defined as IOS indices above the upper limit of normal or X_5 below the lower limit of normal. Associations between IOS parameters and exacerbation burden were analyzed using multivariable logistic regression.

Results: A total of 508 participants were included (184 healthy controls, 190 severe asthma without biologics, 134 with biologics). Asthma groups showed significantly abnormal IOS indices versus controls (all $p < 0.001$). SAD prevalence ranged from 38.0% to 55.9%. Biologic-treated patients had higher X_5 and lower R_5, R_{20}, and R_5–R_{20} ratio despite similar symptom control. In multivariable logistic regression, older age (adjusted OR: 0.98, p=0.035), female sex (adjusted OR: 2.25, p=0.034), smoking exposure (adjusted OR: 1.59, p=0.031), and Z-score of R_5–R_{20} ratio (adjusted OR: 1.44, p=0.020) were independently associated with baseline exacerbations burden.

Conclusions: Oscillometry-defined SAD is common among Taiwanese patients with severe asthma. Patients receiving biologic therapy demonstrated lower SAD prevalence, suggesting potential reversibility of small-airway dysfunction.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OB03

抑制 4-HNE 調控的 JNK-cJun 途徑可改善 Bleomycin 誘發的肺纖維化

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Inhibition of the 4-HNE-regulated JNK/c-Jun pathway improves bleomycin-induced lung fibrosis

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Purpose: Lipid peroxidation and 4-hydroxynonenal (4-HNE) contribute to oxidative stress-related tissue damage, but their roles in pulmonary fibrosis remain unclear. We examined their involvement in bleomycin-induced pulmonary fibrosis.

Materials and Methods: Lung fibrosis model mice were used to assess collagen deposition, lipid peroxidation markers, and oxidative stress. Ferroptosis inhibitors ferrostatin-1 (Fer-1) and deferoxamine (DFO) were administered to the mice. In vitro, murine lung epithelial (MLE-12) cells were treated with bleomycin, with or without lipid peroxidation inhibitors, and analyzed for oxidative stress and apoptosis. 4-HNE expression in idiopathic pulmonary fibrosis lung tissues was assessed using immunohistochemistry.

Results: Bleomycin increased deposition of collagen and levels of 4-HNE and malondialdehyde levels while decreasing the glutathione/glutathione disulfide ratio. Fer-1 and DFO improved pulmonary function, reduced fibrosis, and restored the glutathione/glutathione disulfide ratio. In vitro, lipid peroxidation inhibition suppressed bleomycin-induced cell death and oxidative stress. Direct 4-HNE treatment induced apoptosis and lipid peroxidation, implicating 4-HNE in epithelial injury. 4-HNE upregulation was linked to increased transforming growth factor-β expression via c-Jun amino-terminal kinase/c-Jun signaling. Fer-1 and DFO mitigated these effects. Human idiopathic pulmonary fibrosis tissues exhibited elevated 4-HNE, correlating with fibrosis severity.

Conclusions: Lipid peroxidation and 4-HNE play key roles in pulmonary fibrosis progression. Their regulation of transforming growth factor-β expression suggests targeting lipid peroxidation as a potential therapeutic strategy.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OB04

重度過敏性氣喘患者使用喜瑞樂之長期緩解結果與預測因子：台灣真實世界研究

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Long-Term Remission Outcomes and Their Predictors of Omalizumab in Severe Allergic Asthma: A Real-World Data Study from Taiwan

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Purpose: Real-world evidence on long-term remission in severe allergic asthma treated with omalizumab remains limited, especially beyond 10 years. This study assessed the durability of clinical remission and its predictors in a multicenter Taiwanese cohort.

Materials and Methods: This retrospective study included adults with severe allergic asthma who initiated omalizumab between August 2008 and May 2025 and received ≥5 years of therapy. Clinical remission was defined as: (1) two-component (no maintenance oral corticosteroid [mOCS] use and no exacerbations; (2) three-component (two-component plus Asthma Control Test [ACT] ≥20; and (3) four-component (three-component plus stable lung function). Persistent clinical remission was remission maintained for >50% of treatment duration. Logistic regression identified predictors.

Results: Of 586 patients, 211 were analyzed (mean treatment duration: 8 years). Persistent two- and three-component remission occurred in 49.8% and 20.9% of patients, respectively. Comorbid gastroesophageal reflux disease (GERD) and mOCS use were negative predictors of persistent two-component remission (adjusted OR [aOR] 0.29 and 0.21), while early remission within the first year strongly predicted persistence (aOR 6.63; 95% CI 2.59–17.0, $p<0.001$). For three-component remission, COPD was a negative predictor (aOR 0.27), and remission achieved in the first two years predicted persistent remission (aOR 20.63; 95% CI 5.60–75.94, $p<0.001$).

Conclusions: Long-term omalizumab therapy achieves durable clinical remission in a substantial subset of patients with severe allergic asthma, particularly early responders with well-managed comorbidities. Early remission may predict persistent long-term benefit.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OB05

Aryl Hydrocarbon Receptor（芳香烴受體）對肺纖維化發展的調控作用

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Regulatory Role of Aryl Hydrocarbon Receptor (AhR) in Lung Fibrosis Development

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Purpose: The aryl hydrocarbon receptor (AhR) plays a regulatory role in immune and fibrotic processes. Reduced AhR expression has been observed in fibrotic lung tissue, but its specific mechanism of action remains uncertain. This study aimed to elucidate the function of AhR in pulmonary fibrosis through analyses of patient samples, bleomycin (BLM)-induced mouse models, and comprehensive gene expression profiling to identify relevant downstream pathways and therapeutic targets.

Materials and Methods: Human lung tissues and GEO datasets were analyzed to assess AhR expression. Bleomycin-induced lung fibrosis mice were treated with AhR agonists (omeprazole or leflunomide). Lung function, histology, and immunofluorescence were conducted. GSEA was performed using BEAS-2B transcriptomes (wild-type vs. AhR knockout, and control vs. BLM). Overlapping genes were analyzed by GO and pathway enrichment. X-Box binding protein 1 (XBP1) expression was validated by immunofluorescence.

Results: AhR expression was reduced in lung tissues of Idiopathic Pulmonary Fibrosis (IPF) patients, as confirmed by immunohistochemistry(Figure 1A). In bleomycin-induced lung fibrosis mice, AhR agonists improved lung function and reduced fibrosis, as shown by histology and immunofluorescence (Figure 1B–C). GSEA analysis of BEAS-2B transcriptomes revealed overlapping enriched genes related to cytokine signaling and ECM remodeling (Figure 2A–B). XBP1, a key stress-related gene, was upregulated in fibrotic lungs and suppressed by AhR agonists, as demonstrated by immunofluorescence (Figure 3A). A schematic model (Figure 3B) illustrates the proposed mechanism. These findings suggest that AhR alleviates lung fibrosis partially through regulation of XBP1

Conclusions: AhR activation mitigates fibrosis via regulation of XBP1, thereby alleviating ER stress and suppressing profibrotic signaling. These findings highlight AhR as a potential therapeutic target for pulmonary fibrosis, offering a novel mechanistic link between environmental sensing pathways and fibrotic progression. Further studies are warranted to explore the translational potential of AhR agonists in clinical settings.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OB06

生物製劑治療嚴重氣喘患者的真實世界療效: 台灣多家醫學中心經驗

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Real-world effectiveness of biologic therapy in treating severe asthma: Experience from Taiwan Airway Research Group and Education Team (TARGET) registry

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Purpose: We aim to clarify the clinical characteristics of severe asthma patients who received reimbursed biologic therapy and to elucidate the therapeutic effectiveness of different biologic agents available in Taiwan.

Materials and Methods: We conducted TARGET cohort registry from January 1, 2020 to June 20, 2025, and 171 severe asthma patients who received biologic therapy were recruited for analyses. The number of users for benralizumab, mepolizumab, omalizumab, and tezepelumab is 50, 35, 65, and 21, respectively. All the clinical parameters of study interests were documented one year prior to index date (initiation of biologic therapy), and treatment outcomes were followed for one year after biologic therapy initiation for effectiveness evaluation.

Results: Among the four biologic therapy users, the median age of biologics initiation is 54 year-old with female predominance. The median ACT score is 14 points and at least one episode of moderate to severe exacerbation for all the enrollee in the previous year before the index date. After one year treatment of biologics, blood eosinophil count reduction rate for benralizumab, mepolizumab, and omalizumab is 99.3%*, 94.0%*, and 29.6%*. Reduction of severe exacerbation for benralizumab, mepolizumab, and omalizumab is 60.9%*, 70.4%*, and 40%. The oral corticosteroids (OCS) sparing effects for benralizumab, mepolizumab, and omalizumab are 74.9%*, 67.8%*, and 46.8%*. Improved ACT(asthma control test) score is revealed by 7 points*, 6 points*, 8 points* for benralizumab, mepolizumab, and omalizumab users. The median value of FEV_1 improvements after benralizumab, mepolizumab, and omalizumab treatment is 114mL, 187mL, and 181mL, respectively. The clinical remission, composite of no exacerbation, free from OCS maintenance therapy, ACT score ≥ 20 points, for benralizumab, mepolizumab, omalizumab, and tezepelumab is 21%, 27%, 20%, 20% respectively.

Conclusions: The TARGET severe asthma registry showed real-world evidence of different biologic treatments of severe asthma in Taiwan. With biologic therapy, significant reduction of exacerbation and OCS dosage were found, with significant lung function and ACT score improvements. Our study showed a comparable clinical remission rate of different biologic agents in Taiwan as compared with other real-world studies.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OB07

台灣真實世界之嗜酸性白血球表現型嚴重氣喘病人使用肺昇朗(benralizumab)於氣喘控制與臨床緩解結果 (BEAT)

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Asthma Control and Clinical Remission over One Year of Benralizumab Real-World Use in Severe Eosinophilic Asthma Patients in Taiwan (BEAT Study)

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Purpose: This study aimed to evaluate the real-world effectiveness of benralizumab in patients with severe eosinophilic asthma under routine clinical practice in Taiwan.

Materials and Methods: This prospective, multicenter, single-arm, observational study enrolled adults with severe, uncontrolled eosinophilic asthma treated with benralizumab (Fasenra®) in routine practice. Clinical data, including ACQ-5, exacerbations, and OCS use were extracted from medical records at baseline and during 12 months of follow-up.

Results: Forty-two patients were enrolled from eight medical centers. The mean ACQ-5 score improved by −1.2 ± 1.24 at Week 8 from baseline and by -1.4 ± 1.28 at week 56 (all P<0.0001). By Week 56, 78.9% achieved clinically meaningful improvement of ACQ-5 score. Annualized acute exacerbation rates declined from 1.44 to 0.5 at Week 56 (P<0.0001). By Week 56, 42.9% achieved 100% reduction in OCS dose, and approximately 20% of patients achieved 3-component clinical remission. No treatment-related deaths were reported.

Conclusions: Benralizumab demonstrated clinical benefits in patients with severe eosinophilic asthma under routine care in Taiwan, with early and sustained improvements in asthma control and reduction of acute exacerbation rates and OCS use. These findings support the real-world effectiveness and safety of benralizumab.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OB08

連續陽壓呼吸器對呼吸中止症能量消耗、攝取、荷爾蒙調節和身體組成的效果：一項隨機試驗

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CPAP Effects on Energy Expenditure, Intake, Hormonal Regulation, and Body Composition: A Randomized Trial

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Study Objectives: Weight gain after continuous positive airway pressure (CPAP) initiation in obstructive sleep apnea (OSA) is common, but its mechanism and relevance remain unclear. This open-label randomized trial evaluated CPAP effects on energy expenditure, intake, body composition, physical activity, and appetite-regulatory hormones.

Methods: Patients with OSA were randomized (1:1) to 12-week CPAP or inactive control. The primary outcome was resting energy expenditure (REE). Secondary outcomes included dietary intake, eating behavior, fat mass (FM), fat-free mass (FFM), and activity count. Tertiary outcomes included appetite-regulatory hormones. CPAP effects were assessed as baseline-adjusted between-group differences using intention-to-treat (ITT) analysis; Per-protocol analysis (completers) served as sensitivity analysis.

Results: Of 52 randomized participants, 45 completed the study. In ITT analysis, CPAP had no effect on REE (8.6 kcal/day [95% CI: –51.5, 68.7]; P=0.774) or caloric intake (144.4 kcal/day [95% CI: –123.1, 411.9]; P=0.283). Although insignificant in morning, CPAP significantly increased evening body weight (P=0.017) and body mass index in morning and evening (P=0.040 and 0.030). CPAP also increased FFM, raised acylated ghrelin and insulin-like growth factor 1, and reduced cortisol and cognitive restraint. No changes were observed in macronutrient intake, FM, activity, insulin resistance, leptin, or neuropeptide Y. Per-protocol findings were similar.

Conclusions: CPAP-induced weight gain, probably primarily from FFM, occurred without measurable changes in REE, activity, or significant increases in caloric intake. Accompanying hormonal and behavioral changes suggest a subtle positive energy balance. This gain may not reflect adverse metabolic effects and support evaluating CPAP's metabolic impact through body composition, not weight alone.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OB09

慢性阻塞性肺病患者預後指標的預測效用：一基於六分鐘步行測試步態特徵的機器學習模型

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Modeling gait features from the 6-minute walk test to predict clinical outcomes in chronic obstructive pulmonary disease

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Purpose: Chronic obstructive pulmonary disease (COPD) is a major contributor to global morbidity and mortality. While gait impairments have been linked to adverse clinical outcomes, their prognostic relevance during the 6-minute walk test (6MWT) remains incompletely understood. This study aimed to develop a video-based gait analysis system combined with machine learning models to predict hospitalization and mortality risk in patients with COPD.

Materials and Methods: We conducted an observational study at a tertiary hospital in Taiwan from 2019 to 2022, enrolling COPD patients from a national pay-for-performance program who underwent baseline 6MWT. Gait videos were processed using OpenCV and YOLOv7 to extract step length and gait speed parameters. Multiple machine learning classifiers, including Random Forest, XGBoost, AdaBoost, and Decision Tree, were trained with sequential feature selection to predict one-year mortality or COPD-related hospitalization. Model performance was evaluated using five-fold stratified cross-validation and assessed across multiple metrics.

Results: One hundred three COPD patients were enrolled. This cohort consisted predominantly of elderly men with a mean age of 73.2 years and exhibited nearly equal numbers of favorable and unfavorable one-year clinical outcomes. Gait-based models demonstrated strong predictive performance, with Random Forest achieving an accuracy of 0.833, an AUROC of 0.813, and an F1 score of 0.842. These results were comparable to those from 6MWD-based models, though Random Forest exhibited higher specificity and precision, highlighting the added prognostic value of gait features.

Conclusions: By leveraging gait characteristics extracted from the early phase of the 6MWT, we developed and validated multiple machine learning models for predicting clinical outcomes in COPD. The Random Forest classifier delivered the best overall performance, effectively balancing precision and recall. Our approach, performance-wise comparable to 6MWD yet offering improved specificity and precision, provides clinicians with a practical prognostic tool that can be seamlessly integrated into the routinely administered 6MWT.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB01

支氣管擴張症的身體組成和非結核分枝桿菌肺病：性別差異研究

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Body Composition and non-tuberculous mycobacteria lung disease in Bronchiectasis: A Study of Sex-Based Differences

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Purpose: Lady Windermere syndrome, a form of NTM-LD characterized by nodular bronchiectasis in slim, older females, suggests a significant link between sex-specific body composition of bronchiectasis and NTM-LD. However, there is a scarcity of research exploring these sex-based differences. This study aimed to analyze specific sex characteristics, particularly those related to body composition, in patients with bronchiectasis and NTM-LD.

Methods: From January 2017 to June 2020, subjects with diagnosis of bronchiectasis, confirmed by chest computed tomography (CT), were enrolled. Muscle mass was quantified using muscle area of single slice of chest CT at the first lumbar vertebrae, corrected by height squared (L1MI). Subjects were categorized into normal and low L1MI groups based on sex-specific criteria. Low BMI was defined as BMI less than 18.5 kg/m^2.

Results: Of the 198 enrolled subjects, 67 were male (33.8%) and 131 were female (66.2%). The male cohort was significantly older and had a higher mean BMI than the female cohort. Males also had a higher prevalence of comorbidities, including chronic obstructive pulmonary disease (37.3% vs. 12.2%, $p < 0.001$), cardiovascular disease (29.9% vs. 13.7%, $p = 0.008$), chronic kidney disease (13.4% vs. 3.1%, $p = 0.012$), and diabetes mellitus (25.4% vs. 12.2%, $p = 0.026$). Bronchiectasis severity was greater in males than females. While not statistically significant, the prevalence of NTM-LD tended to be higher in females than males (13.7% vs. 4.5%, $p = 0.052$). A separate analysis of the female cohort revealed a significantly higher prevalence of low BMI in patients with NTM-LD compared to those without NTM (38.9% vs. 14.2%, $p = 0.018$). Furthermore, L1MI values tended to be lower in females with NTM-LD than in non-NTM females (29.4 ± 3.5 cm^2/m^2 vs. 31.6 ± 4.6 cm^2/m^2, $p = 0.051$). Due to an extremely small sample size in the male subgroup (n=3), no significant differences were found between NTM-LD and non-NTM males.

Conclusions: Females had more risk of concomitant NTM-LD than males. Female NTM-LD phenotype is characterized by a muscle wasting profile. This highlights the importance of sex-specific management approaches for bronchiectasis with NTM-LD, although the limitations of the male subgroup data require confirmation from larger studies.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB02

性別對中重度阻塞型睡眠呼吸中止症患者腎功能影響之探討

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Gender differences in renal function impairment among patients with moderate to severe obstructive sleep apnea

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Purpose Obstructive sleep apnea (OSA) has been associated with chronic kidney disease due to intermittent hypoxia and systemic inflammation. However, whether renal function impairment differs between men and women with moderate to severe OSA remains unclear. This study explores gender-related differences in estimated glomerular filtration rate (eGFR) and other renal function markers in patients with moderate to severe OSA.

Methods In this cross-sectional study, patients aged 18 years and older who underwent overnight polysomnography and morning blood pressure measurement were included. OSA moderate to severe severity was classified based on the apnea-hypopnea index (AHI) as follows: moderate (15–29.9 events/h), and severe (≥30 events/h).

Results 135 women and 291 men were enrolled into the analysis. Women seemed older than men (60.1 ± 14.8 y vs 55.6 ± 14.1 y, P = 0.002). Men had an increased AHI than did women (42.9 ± 21.1 events/h vs 36.5 ± 17.9 events/h, P = 0.002). Men with moderate to severe obstructive sleep apnea exhibited significantly higher serum creatinine (1.3 ± 1.7 mg/dL vs 0.9 ± 1.1 mg/dL, P = 0.003) and uric acid levels (7.3 ± 6.7 mg/dL vs 5.3 ± 1.3 mg/dL, P = 0.032) and lower eGFR (77.1 ± 22.7 mL/min/1.73m^2 vs 84.4 ± 22.2 mL/min/1.73m^2, P = 0.008) compared to women.

Conclusion Male patients with moderate to severe OSA demonstrated significantly worse renal function compared to female patients, as indicated by higher serum creatinine and uric acid levels and lower eGFR. These findings suggest that gender may play a role in the renal consequences of OSA, and highlight the importance of considering sex-specific risk profiles in the management of OSA-related kidney dysfunction.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB03

成人阻塞性睡眠呼吸中止症嚴重程度與高血壓之關聯性

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The relationship between obstructive sleep apnea severity and hypertension in adults

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Purpose According to the 2022 American Heart Association guidelines, hypertension in adults is defined as a systolic blood pressure (SBP) ≥130 mmHg or a diastolic blood pressure (DBP) ≥80 mmHg. Sleep disorders are increasingly prevalent worldwide, with obstructive sleep apnea (OSA) being one of the most common. OSA is characterized by intermittent airway obstruction during sleep, leading to episodes of nocturnal hypoxemia. This condition can activate the sympathetic nervous system and contribute to systemic inflammation. This study aimed to investigate the relationship between OSA and hypertension in a sleep clinic population.

Methods In this cross-sectional study, patients aged 18 years and older who underwent overnight polysomnography and blood pressure measurement upon awakening were included. OSA severity was classified based on the apnea-hypopnea index (AHI): normal (<5 events/h), mild (5–14.9 events/h), moderate (15–29.9 events/h), and severe (≥30 events/h). Hypertension was defined as SBP ≥130 mmHg or DBP ≥80 mmHg.

Results A total of 597 participants (350 men and 247 women) were included in the analysis. The mean age was 54.4 ± 15.8 years, and the mean body mass index (BMI) was 26.5 ± 5.0 kg/m². The average AHI, nadir nocturnal oxygen saturation, and total time with oxygen saturation < 90% were 31.6 ± 22.7 events/h, 81.5% ± 8.6%, and 24.7 ± 49.7 minutes, respectively. The average sleep efficiency was 72.1% ± 16.8%, and the mean fasting blood glucose was 104.6 ± 29.2 mg/dL. After adjusting for covariates, age, BMI, AHI, and fasting blood glucose were found to be independent risk factors for hypertension. Moreover, hypertension was closely associated with the severity of OSA.

Conclusion Hypertension is significantly associated with the severity of obstructive sleep apnea. Early identification and management of OSA may be important in preventing and controlling hypertension.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB04

年輕族群睡眠低血氧與心血管代謝風險概況之關聯

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Sleep Hypoxia and Cardiometabolic Risk Profiles in a Young Adult Population

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Purpose Sleep disorders are increasingly prevalent among young adults, with sleep apnea (SA) being one of the most common. SA is characterized by intermittent airway obstruction during sleep, leading to episodes of nocturnal hypoxemia. This condition can activate the sympathetic nervous system and contribute to systemic inflammation and insulin resistance. This study aimed to investigate the association between sleep-related hypoxia and cardiometabolic risk profiles in a young adult population.

Methods In this cross-sectional study, participants aged 18–49 years who visited a sleep clinic in central Taiwan were recruited. All participants underwent overnight polysomnography (PSG), followed by biochemical testing the next morning. SA severity was classified based on the apnea-hypopnea index (AHI): normal (<5 events/hour), mild (5–14.9 events/hour), moderate (15–29.9 events/hour), and severe (≥30 events/hour). Cardiometabolic parameters were compared between patients with moderate to severe SA and those with normal to mild SA.

Results A total of 218 participants (121 men and 97 women) were included in the analysis. The mean age was 37.6 ± 8.6 years, and the mean body mass index (BMI) was 27.3 ± 5.4 kg/m². Compared to those with normal to mild SA, participants with moderate to severe SA had significantly higher AHI (38.0 ± 20.0 vs. 7.4 ± 3.7 events/hour, $P < 0.001$), longer cumulative hypoxia time during sleep (29.0 ± 57.8 vs. 3.6 ± 13.2 minutes, $P < 0.001$), and lower nadir nocturnal oxygen saturation (79.3% ± 8.7% vs. 88.8% ± 5.0%, $P < 0.001$). They also exhibited higher systolic (127.4 ± 18.3 mmHg vs. 111.9 ± 12.0 mmHg, $P < 0.001$) and diastolic blood pressure (81.8 ± 14.1 mmHg vs. 71.1 ± 12.4 mmHg, $P < 0.001$). Furthermore, elevated levels of triglycerides (171.3 ± 130.9 mg/dL vs. 109.1 ± 98.4 mg/dL, $P = 0.001$), fasting blood glucose (101.6 ± 23.4 mg/dL vs. 91.9 ± 20.1 mg/dL, $P = 0.01$), and HbA1c (5.9% ± 0.9% vs. 5.3% ± 0.3%, $P < 0.001$) were observed in the moderate to severe SA group.

Conclusions Sleep-related hypoxia is associated with adverse cardiometabolic profiles in young adults. Early identification and timely intervention may help reduce long-term health risks in this population.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB05

環境與季節因素對自發性縱膈氣腫及椎管內氣腫的影響

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Impact of Environmental and Seasonal Factors on Spontaneous Pneumomediastinum with and without Pneumorrhachis

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Purpose: Spontaneous pneumomediastinum (SPM) with pneumorrhachis is rare but generally benign and self-limiting. However, the impact of environmental and seasonal factors on SPM remains unclear. This study investigated their influence on SPM onset and clinical outcomes.

Materials and Methods: This retrospective study analyzed medical records of SPM patients over 12 years. Clinical features and outcomes were compared between patients with and without pneumorrhachis. A case-crossover design was employed to examine the short-term associations between SPM incidence and environmental factors, with conditional logistic regression applied for analysis.

Results: A total of 70 consecutive patients were identified, with 9 classified as SPM with pneumorrhachis and 61 as SPM without pneumorrhachis. While both groups were predominantly managed with hospitalization, those with pneumorrhachis had longer hospital stays (median: 7 vs. 3 days, p= 0.002) and were more often associated with severe-grade SPM and identifiable triggers (p< 0.001 and p= 0.009, respectively). No significant environmental differences were found between groups. Seasonally, SPM incidence was higher in autumn and winter (p< 0.001), aligning with air pollutant levels. Linear regression analysis showed that standardized β coefficients for $PM_{2.5}$ (β= 1.15 and β= 1.18, respectively) were significantly higher in autumn and winter, indicating that $PM_{2.5}$ was independently associated with SPM onset in these seasons.

Conclusions: Despite more triggers and longer hospitalization, pneumorrhachis patients had a similarly benign course. Additionally, SPM exhibited seasonal clustering, with a higher incidence in autumn and winter. The link between elevated $PM_{2.5}$ levels and SPM onset suggests air pollution may be a contributing factor.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB06

台灣口服類固醇副作用所造成醫療負擔之模型分析

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Modelling the healthcare burden of oral corticosteroid use in Taiwan

Objectives

In Taiwan, restrictions imposed by the National Health Insurance Administration (NHIA) lead to more frequent use of oral corticosteroids (OCS) for severe asthma (SA) management compared to other countries. These limitations persist despite the well-established risks of long-term and cumulative OCS exposure, including increased morbidity and mortality. There is a need to reevaluate OCS use in SA to mitigate associated health risks.

Methods

A health-state transition model was developed to estimate the burden of OCS complications in Taiwan. The model included the three most clinically significant OCS complications based on morbidity and mortality as distinct health states – type 2 diabetes mellitus, cardiovascular disease, and osteoporosis. Additional complications were captured through a per-cycle risk approach. Model inputs were derived from published literature (e.g., real-world studies), official government data (e.g., NHIA), and data from comparable markets (e.g. Germany) where Taiwan-specific data was unavailable. The reported outcomes included direct healthcare costs of OCS complications in SA patients, at a population and per-patient basis, over a lifetime horizon accounting for life expectancy.

Results

The average daily OCS dose for Taiwanese patients was 12.79 mg, which is higher than reported in other markets (Germany, France, and Spain). The total cost to the healthcare system based on this 'current OCS usage' was USD 3,368,877,756 greater than the 'no OCS usage', which translates to an incremental cost of USD 15,167 per patient over a lifetime.

Conclusions

The results demonstrate a substantial economic burden associated with OCS use in the management of SA in Taiwan. These findings support the potential value of revising NHIA restrictions around OCS alternatives to align with international treatment guidelines. Such policy changes could enhance patient outcomes, reduce the overall economic impact, and improve the efficiency of healthcare resource utilization in Taiwan.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB07

鼻腔手術之成功正面影響對於合併慢性鼻竇炎和嚴重阻塞性睡眠呼吸中止症及內科治療無效患者

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Successful positive health impact of nasal surgery in comorbid difficult-to-treat chronic rhinosinusitis and severe obstructive sleep apnea with failed adequate response to medical therapy

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Case Description and Summary: A 56-year-old woman with diabetes, allergic rhinitis, and COPD (GOLD I, group A) presented with disruptive sleep, loud snoring, and witnessed apneas for 4 years, worsening nasal obstruction over the past 2 years. ESS score was 8, BMI 30, and neck circumference 37 cm. Examination revealed lateral peritonsillar narrowing, MPS 2, and grade 2 tonsillar hypertrophy. Naso-laryngoscopy and sinus CT demonstrated inferior turbinate hypertrophy, retained secretions in both maxillary and ethmoid sinuses, and circumferential narrowing of the retropharyngeal lumen at the soft palate level. Initial AHI was 45/h, ODI 52/h, and snoring index 255. CPAP at 8 cmH_2O reduced AHI to 15 but was poorly tolerated. After failed medical therapy, she underwent bilateral pan-sinusotomy, stereotactic paranasal sinus washing with biopsy, and partial inferior turbinectomy. Histology showed chronic inflammation. Postoperatively, AHI improved to 5, ODI to 7, and CPAP comfort markedly increased.

Discussion: Coexisting chronic rhinosinusitis (CRS) and obstructive sleep apnea (OSA) have interrelated pathophysiology. Chronic allergen exposure leads to nasal mucosal congestion, secretion retention, and nasal passage narrowing, which impair nasal mechanoreceptors and upper airway muscle tone, promoting nocturnal hypoxia and inflammation. This perpetuates OSA severity, CRS activity, and CPAP intolerance. Nasal surgery serves as a salvage option to enlarge nasal passages, improve air flow and oxygenation, enhance CPAP tolerance, and reduce AHI and ODI.

Conclusion: For patients with co-morbid CRS-OSA, and CPAP intolerance, targeted nasal or upper airway surgery should be considered to relieve obstruction, enhance airflow, improve sleep quality, daytime function, cardiopulmonary health, and overall quality of life.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB08

Mepolizumab 與 Benralizumab 於重度嗜酸性球氣喘治療之療效比較：回溯性世代研究

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Comparative efficacy of mepolizumab and benralizumab in the management of severe eosinophilc asthma: a retrospective cohort study

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Purpose:

The aim of this real-world study was to compare the efficacy and clinical remission rates of mepolizumab and benralizumab in patients with severe eosinophilic asthma.

Materials and Methods:

This retrospective study was conducted at two tertiary hospitals in Taiwan from January 2018 to June 2024. Patients with severe asthma who received ≥12 months of continuous treatment with mepolizumab or benralizumab were included. Lung function, exacerbation rates, ACT scores, blood eosinophils, and remission status were assessed at baseline and after 12 months.

Results:

A total of 60 patients were included, of whom 34 received mepolizumab and 26 received benralizumab for severe asthma control. After 12 months, pulmonary function significantly improved in the benralizumab group (FEV1%: 61.6% → 69.5%; ΔFEV1%+7.87, P=0.001). Both groups showed marked eosinophil reductions (mepolizumab: –487.1/μL; benralizumab: –520.3/μL; both P<0.001). Clinical remission rates were comparable (44.1% in the mepolizumab and 30.8% in the benralizumab group), as were reductions in exacerbations, ACT score improvements, and steroid discontinuation.

Conclusions:

Mepolizumab and benralizumab achieved similar efficacy in asthma control, remission, and exacerbation reduction. However, benralizumab demonstrated greater improvement in lung function.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB09

應用深度學習結合雙時點資料預測台灣健檢族群肺功能變化與氣流阻塞

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A Large-Scale Cohort Investigation into Deep Learning–Based Prediction of Lung Function Decline and Airflow Obstruction in a Taiwanese Health-Screening Cohort

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Purpose: Chronic obstructive pulmonary disease (COPD) often evolves years before spirometric obstruction is detected. Scalable methods to anticipate lung function decline and future airflow obstruction in healthy populations are needed. We developed deep learning models to predict these changes using routinely collected variables from a health-screening program in Taiwan.

Methods: We analyzed 63,537 visits from 16,851 adults, with each participant contributing two consecutive visits. Model inputs comprised Visit-1 and Visit-2 routine data (demographics, anthropometrics, lifestyle factors, medical history, and laboratory biomarkers) and Visit-1 spirometry. Targets were the change in lung function from Visit-1 to Visit-2 (ΔFEV_1, ΔFVC) and airflow obstruction at Visit-2 ($FEV_1/FVC < 0.70$). Preprocessing included imputation, standardization, one-hot encoding, outlier handling, data augmentation, and class balancing (SMOTE). We compared Conv1D CNN, LSTM, GRU, BiLSTM, BiGRU, Transformer, and linear/logistic baselines for joint regression (changes in FEV_1 and FVC) and classification (Visit-2 obstruction). Performance was assessed with R^2, MAE/MSE, and accuracy, precision, recall, F1, and AUROC. Prespecified subgroup analyses stratified participants by age.

Results: In the overall cohort, the models accurately predicted Visit-2 obstruction and its change: GRU achieved the strongest regression performance ($R^2 \approx 0.737$ for both FEV_1 and FVC), BiGRU yielded the highest AUROC (0.856) for classifying Visit-2 obstruction, and CNN demonstrated the highest precision (≈99.7%). In adults <60 years, GRU led regression ($R^2 \approx 0.725$) and CNN attained the top AUROC (0.870), while BiLSTM delivered the best F1/recall. Among adults ≥60 years, performance declined across models; CNN provided the highest regression R^2 (≈0.463 for FVC), BiLSTM achieved the best overall classification accuracy (~90.5%), and the Transformer reached the highest AUROC (0.740).

Conclusions: Two-visit screening sequences enable accurate forecasting of lung function decline and the emergence of airflow obstruction in a Taiwanese health-screening cohort. Sequential models (GRU/LSTM) excel for continuous lung-function prediction, while BiGRU/CNN—and, in older adults, BiLSTM/Transformer—offer complementary strengths for risk classification. Age-tailored model selection may facilitate earlier identification of COPD risk.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB10

台灣非囊性纖維化支氣管擴張症的年齡分層表型與臨床結局：來自台灣支氣管擴張症研究合作組織 (TBARC) 的數據分析

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Age-stratified phenotypes and outcomes of non-cystic fibrosis bronchiectasis in Taiwan: Data from Taiwan Bronchiectasis Research Collaboration (TBARC)

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Background: Age-related phenotypes of non-cystic fibrosis bronchiectasis (NCFB) in Asian populations remain under-characterized. We aimed to compare clinical features across age strata in the Taiwan Bronchiectasis Research Collaboration (TBARC) cohort.

Methods: We performed a cross-sectional analysis of participants in the Taiwan Bronchiectasis Research Collaboration (TBARC) registry, stratified by current age: <50 years (n=126), 50–69 years (n=1,049), and ≥70 years (n=1,578). Between strata, we compared demographics, symptoms, comorbidities, spirometry, microbiology, and medications. We also evaluated longitudinal lung function decline, rates of acute exacerbations and hospitalizations, and overall survival.

Results: Among 2,793 patients, older groups (≥70 years group) had greater comorbidity and symptom burden, as well as lower baseline spirometry, with higher frequencies of bacterial pneumonia and P. aeruginosa isolation. Notably—and contrary to expectation—the <50-year group exhibited a steeper annual FEV_1 decline than other two groups. Despite fewer comorbidities and comparable severity scores and key etiologies, the <50-year group had exacerbation and hospitalization rates like those of patients aged 70 years or older. The 50–69-year group showed intermediate profiles across domains.

Conclusion: In this nationwide Taiwanese cohort, advancing age captured baseline comorbidity and lung-function levels, but younger adults demonstrated more rapid lung function decline and similar acute-care utilization to the oldest patients. These findings support age-tailored risk stratification that does not assume lower risk in younger adults and highlight the need for early monitoring and targeted preventive strategies in Asian NCFB, particularly among younger patients.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB11

第二型發炎氣喘與小氣道功能：以 IOS 對 Fluticasone furoate/Vilanterol 治療之評估

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Type 2 Inflammation and Small Airway Function: IOS-Based Evaluation of Fluticasone furoate/vilanterol in Asthmatics

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Background:

Small airway dysfunction (SAD) contributes substantially to asthma morbidity but is not fully captured by conventional spirometry. Impulse oscillometry (IOS) provides a sensitive assessment of distal airway function. Fluticasone furoate/vilanterol (Relvar Ellipta 100 μg) is widely used for asthma control, but data on its effect on IOS-derived indices, when stratified by type 2 (T2) inflammation, remain limited. This study aimed to evaluate whether Relvar Ellipta 100 μg improves small airway function, as assessed by impulse oscillometry (IOS).

Materials and Methods:

We conducted a retrospective study of adult asthmatics treated with Relvar Ellipta 100 μg once daily for 12 months. Patients were stratified by baseline blood eosinophil counts into high (≥300 cells/μL) and low (<300 cells/μL) groups. Spirometry and IOS parameters (R5, R20, R5–R20, AX, Fres, X5) were assessed at baseline and follow-up.

Results:

A total of 113 patients were included. Relvar 100 improved conventional spirometric measures (FEV_1, FVC) in both eosinophil groups. Notably, significant improvements in small airway indices (R5, R20, AX) were observed across all patients. However, other parameters more specific to distal airway function (R5–R20: 0.086 ± 0.08 to 0.065 ± 0.07, p = 0.022; Frex: 16.2 ± 0.57 to 14.8 ± 0.56, p = 0.035) improved significantly only in the low-eosinophil group (<300 cells/μL). These findings suggest that SAD in eosinophilic asthma may be less responsive to standard ICS/LABA dosing, whereas patients with lower T2 inflammation achieved marked benefit.

Conclusions:

Relvar Ellipta 100 μg enhances both large and small airway function, with distinct responses according to eosinophil status. Improvement in distal IOS parameters predominantly in low-eosinophil patients highlights the differential role of T2 inflammation in small airway responsiveness. Higher ICS doses or add-on therapies may be required to optimize outcomes in eosinophilic asthma.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB12

嚴重過敏性氣喘患者接受三年喜瑞樂治療後達持續臨床緩解的盛行率及其預測因子-臺灣多中心回溯性研究

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Prevalence and predictors of sustained clinical remission in three-year omalizumab treatment among patients with severe allergic asthma – a multi-center retrospective study in Taiwan

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Purpose: Severe allergic asthma (SAA) poses a substantial disease burden. While omalizumab has demonstrated efficacy as a biologic therapy, real-world evidence on long-term sustained clinical remission (CR) remains limited. This study aimed to investigate the prevalence, longitudinal patterns, and predictors of CR over three years among Taiwanese patients with SAA receiving continuous omalizumab therapy.

Materials and Methods: This multi-center retrospective study included 340 patients with SAA treated with omalizumab, followed annually for three years. CR was defined as achieving asthma control (based on the asthma control test, ACT), being free from maintenance oral corticosteroids (mOCS-free), and experiencing no exacerbations (no AE). CR status was assessed at each annual time point. Logistic regression models identified baseline and follow-up predictors for sustained CR, defined as persistent CR across all three years.

Results: At year 1, 27.4% (93/340) achieved CR; at year 2, 29.4% (100/340); and at year 3, 33.2% (113/340). Over the three-year period, 52.1% (177/340) never achieved CR, 35.3% (120/340) achieved intermittent CR (≥1 year), and 12.6% (43/340) achieved sustained CR. Multivariate analysis identified patients with an ACT score >20 at year 1 as a significant predictor for sustained CR (adjusted OR 1.33, p=0.0449). Although absence of mOCS use at baseline or month 4 and a history of food/drug allergy were associated with higher odds of sustained CR in univariate analysis, these factors did not remain significant in multivariate models.

Conclusions: Approximately one-third of SAA patients achieved CR after three years of omalizumab, and a small subset sustained remission. Early achievement of good asthma control predicted sustained remission, highlighting the importance of early response monitoring.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB13

無高碳酸血症嚴重肺阻塞患者-及早使用家用非侵襲性呼吸器之觀察性研究

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Early Use of Home-Based Noninvasive Ventilation in Stable Severe COPD Without Hypercapnia: A Prospective Observational Study

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Background:

The role of noninvasive ventilation (NIV) in stable, non-hypercapnic COPD remains unclear. This study assessed whether early initiation of home-based NIV could improve functional outcomes.

Methods:

In this prospective, single-center study, patients with severe COPD without hypercapnia received home-based NIV for at least 6 hours nightly over 3 months, in addition to standard therapy. The primary endpoint was change in six-minute walk distance (6MWD); secondary outcomes included spirometry, arterial blood gases, and patient-reported measures (COPD Assessment Test [CAT], Modified Medical Research Council [mMRC] scale).

Results:

Fourteen patients were enrolled, and nine completed follow-up (mean age 73.7 years; BMI 23.2 kg/m²). Lung function, arterial blood gases, CAT, and mMRC scores did not change significantly. However, 6MWD improved from 274.1 m at baseline to 325.3 m at 3 months ($p = 0.013$), surpassing the minimal clinically important difference of 30 m. The percentage of predicted 6MWD also increased significantly ($p = 0.015$).

Conclusions:

Early home-based NIV, even at relatively low pressures, significantly improved exercise capacity in stable, non-hypercapnic severe COPD patients, without altering lung function or gas exchange. These findings suggest a potential role for early NIV initiation in this population, meriting confirmation in larger controlled studies.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB14

嗜酸性與非嗜酸性慢性阻塞性肺疾病急性惡化在後續心血管事件中的比較

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Eosinophilic Versus Non-Eosinophilic Acute Exacerbations of COPD and Subsequent Cardiovascular Event

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Background: Acute exacerbations of COPD (AE-COPD) are associated with increased cardiovascular risk, but whether this risk differs between eosinophilic and non-eosinophilic AE-COPD remains unclear.

Research Question: Is eosinophilic AE-COPD associated with a lower risk of major adverse cardiovascular events (MACE) ?

Study Design and Methods: We conducted a retrospective cohort study using the TriNetX Analytics Network. Patients aged ≥40 years with AE-COPD between January 1, 2022, and December 31, 2024, were included. Eosinophilic AE-COPD was defined as blood eosinophil count ≥300/μL within three days before to one day after the event. The primary outcome was the one-year risk of MACE (heart failure, reduced left ventricular ejection fraction, acute myocardial infarction, cerebral infarction, cardiac arrest, and arrhythmia). Propensity score matching (1:1) was performed, and Cox proportional hazards models and Kaplan–Meier analyses were used. Sensitivity analyses included negative/positive control outcomes, alternative eosinophil cut-off definitions, and landmark analyses.

Results: A total of 143,517 patients were included (33,761 eosinophilic and 109,756 non-eosinophilic AE-COPD). After matching, 33,756 patients were retained in each group. During one-year follow-up, non-eosinophilic AE-COPD was associated with a higher risk of MACE compared with eosinophilic AE-COPD (5,967 vs 5,160 events; HR, 1.22; 95% CI, 1.17–1.26; P<0.001). Kaplan–Meier analysis confirmed higher MACE-free survival in eosinophilic AE-COPD (log-rank P<0.001). Eosinophilic AE-COPD was also associated with reduced risks of heart failure, acute myocardial infarction, stroke, arrhythmia, and all-cause mortality. Findings were consistent across sensitivity analyses, including alternative eosinophil thresholds and landmark time windows.

Interpretation: Eosinophilic AE-COPD was associated with a significantly lower risk of MACE compared with non-eosinophilic AE-COPD. Blood eosinophil count at the time of exacerbation may serve as a valuable biomarker for stratifying not only pulmonary outcomes but also long-term cardiovascular risk in COPD.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB15

三分鐘步行測試（3MWT）為檢測纖維化間質性肺病患者運動性低氧血症實用替代方法：一項前瞻性真實世界研究

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Three-Minute Walk Test (3MWT) as a Practical Alternative for Detecting Exertional Hypoxemia in Fibrotic Interstitial Lung Disease: A prospective Real-World Cohort Study

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Purpose: Fibrotic interstitial lung disease (F-ILD) carries high mortality, underscoring the need for early functional assessment. The six-minute walk test (6MWT) is standard but limited by time and space requirements. The three-minute walk test (3MWT) may offer a simpler alternative, though its validity in F-ILD is uncertain. We evaluate the correlation of 3MWT with 6MWT and pulmonary function tests (PFTs), and its predictive value for exertional desaturation.

Materials and Methods: In this prospective study, 92 patients with multidisciplinary team (MDT)–confirmed F-ILD were enrolled between January 1 and December 31, 2024. All participants underwent the 3MWT, 6MWT, PFTs, and clinical assessments, including Gender–Age–Physiology (GAP) score, modified Medical Research Council (mMRC) scale, and Charlson Comorbidity Index (CCI). Correlations were examined using Spearman's rho, and agreement between 3MWT and 6MWT oxygenation parameters was evaluated with Bland–Altman plots.

Results: Among the 92 patients, 19.6% had idiopathic pulmonary fibrosis and 50% had connective tissue disease–associated ILD. Strong correlations were observed between the 3MWT and 6MWT for resting SpO_2 ($r = 0.664$), nadir SpO_2 ($r = 0.716$), and ΔSpO_2 ($r = 0.686$) (all $p < 0.001$). Patients with 6MWT nadir $SpO_2 < 90\%$ also demonstrated significantly lower nadir SpO_2 and greater ΔSpO_2 during the 3MWT. Receiver operating characteristic (ROC) analysis showed that 3MWT nadir SpO_2 and ΔSpO_2 effectively predicted desaturation during the 6MWT (AUC: 0.84 and 0.85, respectively).

Conclusions: The 3MWT demonstrates strong correlation with the 6MWT and reliably detects exertional desaturation in patients with F-ILD. A $\Delta SpO_2 > 4.5\%$ during the 3MWT effectively identifies patients at risk of oxygen impairment, supporting its use as a practical alternative to the 6MWT.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB16

職業性氣喘之門診篩檢：臺灣職業肺病監測計畫 (T-SWORD)

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Screening for Occupational Asthma in Outpatient Settings: Results from Taiwan Surveillance of Work-related and Occupational Respiratory Disease Program (T-SWORD)

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Purpose: Occupational asthma (OA) remained substantially underdiagnosed in busy outpatient settings. Delayed recognition perpetuated workplace exposures and worsened clinical outcomes. The study aimed to develop a rapid, structured screening questionnaire to facilitate early detection.

Materials and Methods: A prospective cross-sectional multicenter study was conducted between April and September 2025, enrolling adults with clinically diagnosed asthma from four institutions across Taiwan. All participants underwent initial screening using the newly developed Six-item Occupation-related Respiratory Exposure Screen Tool (SORT), addressing work-related symptom patterns and workplace exposure history. Participants with positive responses to any SORT item were classified as possible OA and advanced to comprehensive second-stage evaluation including detailed structured interviews, allergen testing, spirometry, and peak expiratory flow rate measurements. Suspected OA cases were eventually identified through consensus evaluation by two board-certified occupational medicine specialists.

Results: Among 294 individuals screened by SORT with mean age 48.9 years and 60.2% female, 167 patients (56.8%) were identified with possible OA and 30 (10.2%) further with suspected OA. Information technology workers comprised the largest overall occupational group (30.4%), while pharmaceutical workers represented the highest proportion among suspected OA cases (31.8%). The item concerning workplace exposure yielded the highest overall positive response rate at 41.8%, while the question about respiratory symptoms among workplace colleagues demonstrated the highest positive predictive value of 37.0% (95% confidence interval 18.8%-55.3%) for suspected OA prediction. Positive predictive values for cumulative scores of ≥1 and ≥2 were 18.0% and 23.1%, respectively. Sensitivity and specificity parameters cannot be derived from current results and warranted further investigations.

Conclusions: SORT practically identified OA within the challenging context of a busy outpatient setting, demonstrating an acceptable positive predictive value. Integration of inquiries regarding both work-related symptom patterns and specific workplace exposure assessment is prerequisite to expedite OA recognition and specialist referral.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB17

以真實世界病患吸氣波型結合體外氣膠沉積分析建立肺部藥物劑量與氣喘控制之預測模型

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Integrating real-world inhalation profiles with *in vitro* aerosol deposition analysis to predict lung dose and asthma control outcomes

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Purpose: By integrating acoustic flow monitoring of at-home dry powder inhaler (DPI) use with *in vitro* aerodynamic testing, this study aimed to develop a physiologically relevant model for predicting DPI performance under actual use conditions on asthma patients.

Materials and Methods: In a 12-week study, inhalation flow profiles from 107 adult asthma patients using the Symbicort Turbuhaler® were continuously recorded with a home-based acoustic device. Key parameters, including peak inspiratory flow (PIF), inhaled volume, and rise time, were extracted. A Box-Behnken design (BBD) was conducted to evaluate the effects of these factors (PIF 20-100 L/min, inhaled volume 0.5-2 L, rise time 0-3 s) on *in-vitro* budesonide deposition using a Next Generation Impactor coupled with an upper airway cast and a breathing simulator. The resulting data was used to establish predictive models linking inhalation parameters to emitted and lung doses (ED and LD). These models were then applied to each patient's inhalation profiles obtained during Turbuhaler use to estimate individual LD and correlate them with Asthma Control Test (ACT) scores.

Results: BBD analysis identified PIF ($p < 0.001$) and inhaled volume ($p = 0.025$) as major determinants of the ED, while rise time showed a minor effect ($p = 0.069$). For LD, PIF ($p < 0.001$) and rise time ($p = 0.015$) were the dominant factors, whereas inhaled volume had a limited influence ($p = 0.077$). These findings indicated that PIF primarily governs powder dispersion and total dose release, whereas rise time modulates airflow acceleration, influencing particle deposition in the lungs. The final regression model showed strong predictive accuracy ($R^2 = 0.89$), showing that profiles with PIF > 60 L/min and rise time < 1 s achieved markedly higher LD. Across 107 patients, predicted monthly LD correlated positively with improvements in ACT scores ($r = 0.62$, $p < 0.01$). Patients consistently reaching PIF > 60 L/min exhibited a mean ACT increase of 4.2 points, and those with LD > 3000 µg/month had significantly reduced odds of ACT deterioration (odds ratio = 0.36, 95% CI 0.13–0.96, $p = 0.042$).

Conclusions: This study developed an *in vitro* predictive model that integrated real-world inhalation profiles to estimate DPI performance and clinical outcomes. LD showed a strong correlation with ACT scores, while PIF and inhaled volume were identified as key factors affecting powder dispersion and delivery efficiency. This approach offers a basis for optimizing inhaler usage and individualized patient training, supporting the advancement of personalized inhalation therapy.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB18

慢性腎臟病對慢性阻塞性肺病患者生存率的影響

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EFFECT OF CHRONIC KIDNEY DISEASE ON SURVIVAL IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Background: Chronic obstructive pulmonary disease (COPD) is a common respiratory disease associated with several comorbidities. Although chronic kidney disease (CKD) has been recognized as one such comorbidity, the effect of CKD on survival in patients with COPD remains uncertain. This study investigated the clinical impact of CKD in patients with COPD, accounting for clinically characteristics and 6-minute walking test (6MWT) results.

Materials and Methods: Patients with COPD who completed the 6MWT and a 3-year follow-up were retroactively enrolled in the study. Data on clinical information, 6MWT parameters, and outcomes were collected and analyzed.

Results: Among the 141 patients with COPD enrolled, 33 (23.4%) had comorbid CKD. Patients with CKD were significantly older and more likely to experience heart failure, mortality, and FEV1 decline than patients without CKD. Multivariate analysis revealed that 6-minute walking distance < 350 m (odds ratio [OR]: 3.65, 95% confidence interval [CI]: 1.05–12.06, $p = 0.041$) and CKD (OR: 4.66, 95% CI: 1.30–16.76, $p = 0.018$) were independent risk factors for mortality.

Conclusions: Comorbid CKD was associated with an increased mortality rate and rapid FEV1 decline in patients with COPD. Patients with COPD and comorbid CKD may require intensive monitoring during treatment.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB19

伴隨或不伴隨肺功能下降的 COPD 患者之間 VDR/VDBP 基因多型性與血液中維他命 D 水平的關聯性

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The association of VDR/VDBP gene polymorphisms with blood vitamin D levels between COPD patients with or without lung function decline

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Objective: Vitamin D deficiency may be a risk factor for accelerated lung function decline in patients with chronic obstructive pulmonary disease (COPD). The impact of vitamin D supplementation on exacerbation frequency and respiratory muscle strength appears to be positive. However, it remains unclear which specific patient populations would derive the most benefit from such supplementation. Our research was designed to investigate the association among VDR/VDBP gene polymorphisms, blood vitamin D levels, and lung function decline in COPD patients receiving regular treatment.

Subjects and Methods: A total 94 COPD patients (≥ 20 years old) was enrolled for this study. After extraction of genomic DNA from blood samples, we performed the genotyping assay to analysis the distribution of VDR/VDBP gene polymorphisms in COPD patients with or without lung function decline (≤40 ml/year and ≥0 ml/year). After RNA extraction, *VDR* mRNA expression was analyzed by real-time PCR assay. The plasma level of 25(OH)D and VDBP protein were measured by ELISA kits.

Results: In VDR gene, there was significant difference in allele and genotype frequencies of rs7975232 between COPD patients with and without lung function decline. In allele mode, A allele of rs7975232 was associated with reduced risk for lung function decline in patients with COPD. However, other 6 selected SNPs in VDR and VDBP gene did not differ significantly in genotype frequencies, and risk for lung function decline was not associated with these frequencies in the comparison of the non-decline and decline groups. Though no statistically significant differences in the levels of total 25(OH)D between different genotypes of 7 selected SNPs in VDR and VDBP gene were observed, some SNPs seem to be associated with the levels of total 25(OH)D.

Conclusion: Our results indicated that VDR rs7975232 was associated with the risk for lung function decline. However, no significant association of 7 selected SNPs with the levels of total 25(OH)D was found. In the future, further researches should include a larger number of participants in each group to ensure sufficient power.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB20

系統性硬化症相關間質性肺病合併肺動脈高壓：病例報告

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Systemic Sclerosis-Associated Interstitial Lung Disease with Pulmonary Arterial Hypertension: A Case Report

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Purpose: To report a case of systemic sclerosis (SSc) in a 51-year-old woman complicated by both interstitial lung disease (ILD) and pulmonary arterial hypertension (PAH), and to describe the diagnostic evaluation and management for respiratory distress.

Materials and Methods: A 51-year-old woman with a history of connective tissue disease (initially managed as systemic lupus erythematosus in 2017, later fulfilling criteria for systemic sclerosis in 2023) presented with progressive exertional dyspnea. She took nintedanib for SSc- ILD related progressive fibrosis and deteriorating lung function. Clinical examination showed signs of pulmonary hypertension (loud P2, cyanosis, leg edema) alongside classic SSc features (sclerodactyly, digital ulcers, Raynaud's phenomenon). She was admitted on April 30, 2025, due to progressive dyspnea and orthopnea.

Results: High-Resolution Computed Tomography (HRCT) demonstrated peripheral, bibasilar reticulation and ground-glass opacities with subpleural sparing, consistent with a fibrotic nonspecific interstitial pneumonia pattern of SSc-ILD. Transthoracic echocardiography showed an elevated pulmonary artery systolic pressure of approximately 45 mmHg. Right heart catheterization (RHC) confirmed pre-capillary pulmonary hypertension with a mean pulmonary arterial pressure of 35 mmHg and normal pulmonary capillary wedge pressure. The diagnosis was SSc-associated ILD with concurrent PAH. Dyspnea was improving under nitroglycerin infusion. Sildenafil was prescribed for SSc related PAH. Dyspnea was much improving under sildenafil. Besides, severe diarrhea occurred under nintedanib 150mg and improved after adjusting dose to 100mg.

Conclusions: This case illustrates the potential for superimposed PAH in patients with SSc-ILD, contributing to worsening dyspnea. Early recognition and confirmation of PAH through appropriate imaging and hemodynamic assessment are crucial. Timely initiation of PAH-targeted therapy, combined with optimized treatment for SSc-ILD, can improve symptoms and outcomes.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB21

多基因風險分數與慢性阻塞性肺病及臨床預後之關聯:來自台灣精準醫療計畫

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Association of Polygenic Risk Scores With Chronic Obstructive Pulmonary Disease and Clinical Outcomes in Taiwanese Populations: Insights From the Taiwan Precision Medicine Initiative (TPMI) Cohort

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Purpose: Chronic obstructive pulmonary disease (COPD) is a multifactorial disorder influenced by both genetic susceptibility and environmental exposures. This study aimed to investigate the associations between polygenic risk scores (PGS) and COPD diagnosis, spirometric parameters, and clinical outcomes using genomic and clinical data from the Taiwan Precision Medicine Initiative (TPMI).

Materials and Methods: We conducted a 1:4 age- and sex-matched case–control study using the TPMI database. COPD cases (n=385) were defined by physician diagnosis and post-bronchodilator $FEV_1/FVC < 70\%$, while controls (n=1,540) were non-smokers without COPD and with normal pulmonary function. Data collected between October 2010 and December 2024 were analyzed. Three PGS related to lung function traits (PGS001801, PGS001782, PGS001787) were evaluated. Logistic regression and multivariable models adjusted for age, sex, and comorbidities were used to assess PGS associations with COPD and clinical outcomes.

Results: COPD patients were significantly older (76.44 ± 12.46 vs. 71.96 ± 12.55 years, $p<0.0001$) and predominantly male (77.66% vs. 55.06%, $p<0.0001$). They had significantly higher rates of hypertension (75.32% vs. 63.96%), diabetes (52.73% vs. 42.08%), hyperlipidemia (62.08% vs. 51.56%), chronic kidney disease (54.81% vs. 38.57%), and cerebrovascular disease (44.42% vs. 31.3%) (all $p<0.01$). COPD cases showed significantly impaired pulmonary function with lower FEV_1 (1.72 ± 0.65 vs. 2.21 ± 0.79 L, $p<0.0001$), similar FVC (2.78 ± 0.9 vs. 2.79 ± 0.99 L, $p=0.8019$), and markedly reduced FEV_1/FVC ratio (61.15 ± 8.52% vs. 79.61 ± 6.17%, $p<0.0001$). All three PGS showed significant differences between cases and controls: PGS001801 (2.2187 ± 1.4426 vs. 1.6826 ± 1.3677, $p<0.0001$), PGS001782 (-1.0045 ± 0.171 vs. -1.0459 ± 0.1664, $p<0.0001$), and PGS001787 (-0.9068 ± 0.1708 vs. -0.9426 ± 0.1644, $p=0.0002$).

Conclusions: Polygenic risk scores derived from lung function and traits were significantly associated with COPD susceptibility in the Taiwanese population, even after adjustment for age, sex, and comorbidities. The associations between PGS and COPD risk, combined with their relationships to pulmonary function parameters, suggest that genetic factors play an important role in COPD pathogenesis. Integrating PGS with clinical risk factors may enhance COPD risk prediction and enable earlier identification of high-risk individuals. Further studies are warranted to explore gene–environment interactions, prospective risk prediction, and the clinical utility of PGS-based stratification toward precision respiratory medicine in the Taiwanese population.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB22

血清生長標記物與慢性阻塞性肺疾病急性惡化風險之關聯：為期一年的前瞻性研究

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Association Between Serum Growth Markers and Risk of Acute Exacerbation in Chronic Obstructive Pulmonary Disease: A One-Year Prospective Study

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Background: Chronic obstructive pulmonary disease (COPD) is characterized by persistent airflow limitation associated with enhanced chronic airway inflammation. Growth factors implicated in COPD's inflammatory processes may serve as biomarkers for disease progression and exacerbation risk. This study evaluated the relationship between serum growth factors and COPD exacerbations over one year.

Methods: Serum levels of eleven growth factors, including brain-derived neurotrophic factor (BDNF), leukemia inhibitory factor (LIF), fibroblast growth factor-2 (FGF-2), vascular endothelial growth factor (VEGF), nerve growth factor (NGF), epidermal growth factor (EGF), and stem cell factor (SCF), were measured in COPD patients at baseline. Participants were followed prospectively for one year, and associations be-tween these biomarkers and acute exacerbations (AE) and frequent acute exacerba-tions (Frequent AE) were assessed using statistical analyses and receiver operating characteristic (ROC) curves.

Results: Among the study population, 42 patients experienced at least one AE within the follow-up period. Lower serum FGF-2 levels were significantly associated with in-creased AE risk (adjusted odds ratio significant after covariate adjustment). ROC analysis identified FGF-2 ≤9.12 pg/mL as a potential signal of AE (AUC=0.614, sensitivi-ty=64.3%, specificity=57.1%, P=0.032). For Frequent AE, eight patients experienced multiple exacerbations and exhibited significantly lower levels of NGF, EGF, FGF-2, and LIF. After adjustment, NGF remained significantly predictive; NGF ≤25.23 pg/mL demonstrated strong discriminatory power for Frequent AE (AUC=0.797, P<0.001). However, interpretations are limited by the small Frequent AE subgroup.

Conclusions: Serum growth factors, particularly FGF-2 and NGF, are associated with COPD exacerbation risk. Lower serum FGF-2 may indicate a higher likelihood of acute exacerbations, while lower NGF strongly predicts frequent exacerbations. Larger studies and longer follow-ups are needed to confirm these biomarkers' predictive utility.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB23

血液透析患者體液狀態與小氣道功能障礙之關聯性研究

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Association Between Fluid Volume Status and Small Airway Dysfunction in Haemodialysis Patients

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Purpose: This study aimed to examine whether fluid overload contributes to small airway dysfunction and dyspnoea in patients with end-stage kidney disease (ESKD) undergoing haemodialysis, and whether impulse oscillometry (IOS) can sensitively detect dialysis-related changes in airway mechanics.

Materials and Methods: Fifty-four haemodialysis patients underwent pre- and post-dialysis assessments including modified Medical Research Council (mMRC) dyspnoea scale, spirometry, IOS and bioimpedance analysis.

Results: After dialysis, patients with mMRC ≥ 2 decreased from 31.5% to 18.5% ($P = 0.001$). IOS parameters, including respiratory impedance (Z_5), total (R_5) and small airway resistance (R_5–R_{20}), and reactance area (AX), significantly decreased, while spirometry indices showed no change. Improvements in R_5–R_{20} and AX correlated negatively with pre-dialysis extracellular water to total body water (ECW/TBW) ratio ($r \approx -0.3$, $P < 0.05$), suggesting that a higher ECW/TBW ratio, which reflects fluid overload, may contribute to small airway dysfunction. Patients with severe dyspnoea demonstrated evidence of small airway dysfunction at baseline.

Conclusions: Fluid overload contributes to small airway dysfunction and dyspnoea in ESKD undergoing haemodialysis. IOS provides a sensitive, effort-independent tool to assess airway changes related to fluid status.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB24

黴菌過敏對肺阻塞病患臨床預後的影響-一個多中心的前瞻性世代研究

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The Prognostic Impact of Fungal Allergy on patients with COPD- a Prospective multicenter Cohort Study

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Purpose: We aim to characterize the epidemiology and clinical impact of fungal allergy in patients with chronic obstructive pulmonary disease (COPD).

Materials and Methods: This prospective cohort study was conducted at two university-affiliated hospitals in northern Taiwan and one in southern Taiwan. All participants had spirometry- diagnosed COPD at time of recruitment and were followed up for at least one year. Ten serum allergen-specific IgE levels were quantified using the ImmunoCap fluorescent enzyme immunoassay (Thermo Fisher Scientific, Waltham, MA, USA). Results ≥ 0.35 kUA/L were considered positive to the corresponding allergen. The primary outcome was severe acute exacerbation (AE) of COPD within one year after enrollment; the secondary outcome was rapid lung function decline during the same period, defined as a ≥ 60ml decrease in FEV_1. Logistic regression was used to estimate the odds ratios (ORs) for the association between each covariate and the study outcomes.

Results: A total of 337 patients were included (mean age, 72 years); 88% were men, and mean FEV_1 was 66.5% predicted. Allergy to *Candida albicans* was most common (15.7%), followed by *Fusarium proliferatum* (7.1%), *Aspergillus fumigatus* (6.5%) and *Penicillium chrysogenum* (6.2%). In univariate analyses, allergy to *F. proliferatum* (odds ratio, OR:3.35 95% CI: 1.44-7.77, p=0.005) and *P. chrysogenum* (OR:2.97, 95% CI:1.21-7.28, p=0.017) was significantly associated with severe acute exacerbation of COPD. *A. fumigatus* showed a borderline significant trend for association (OR:2.22, 95% CI:0.91-5.39, p=0.079). A composite "fungal allergy model" incorporating these three allergens in an either approach was significantly associated with COPD severe AE (adjusted OR, 2.91; 95% CI 1.33-6.39, p=0.008). For rapid lung function decline, the fungal-allergy model showed a trend toward association (adjusted OR 1.48; 95%CI 0.70-3.11, p=0.305).

Conclusions: In this large, multicenter Taiwanese cohort, a substantial proportion of COPD patients demonstrated sensitization to fungal allergens. Fungal allergy, - defined as allergy to either *Fusarium. proliferatum*, *Penicillium. chrysogenum* and *Aspergillus. fumigatus*- demonstrated prognostic value for predicting severe acute exacerbations of COPD.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB25

氣喘控制的數位行為分析：行為模型於數位管理平台中的應用

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Digital Behavioral Analytics for Asthma Control: Applying Behavioral Modeling in a Digital Management Platform

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Background: Asthma remains a global health challenge, with many patients experiencing poor control despite standard therapies. Emerging evidence indicates that medication-use behaviors and adjustment patterns are closely linked to asthma outcomes. Recent studies show that such behavioral dynamics can be mathematically modeled to yield clinically meaningful indicators.

Objective: We developed a digital asthma management platform that engages patients in daily self-management through automated reminders and interactive feedback. The system records medication-use behaviors and adherence patterns, while Asthma Control Test (ACT) scores collected during visits allow continuous monitoring of symptom control.

Materials and Methods: Using a control-theoretic framework, we modeled patient behavior as a proportional–integral (PI) feedback process, where Kp represents immediate responsiveness and Ki reflects cumulative adaptation. Patient-specific PI parameters were derived from longitudinal medication-use data. Clustering of (Kp, Ki) identified behavioral phenotypes associated with asthma control.

Datasets and Results: Two datasets were analyzed: smart inhaler cohorts from MacKay Memorial Hospital and AAMOS-00, and data from our digital management platform, which provided equivalent behavioral information without smart inhalers. The PI-based model reproduced prior findings—patients with low Kp and Ki showed poorer control, while higher responsiveness and adaptation predicted better ACT outcomes. Model performance was consistent across datasets, supporting generalizability. **Conclusions:** Behavioral dynamics quantified through PI parameters enable personalized asthma management. This digital framework identifies patients with insufficient self-regulation, supporting early and targeted intervention in routine care.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB26

六個月的疾病穩定度是預測一年疾病控制的關鍵指標

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Short-Term Disease Stability as a Predictor of Long-Term Control in COPD

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Background: Disease stability (DS) represents a multidimensional indicator of disease control in chronic obstructive pulmonary disease (COPD). Although post-hoc analysis from major clinical trials have highlighted its prognostic importance, real-world evidence remains limited. We aimed to characterize COPD disease stability and identify factors predictive of long-term stability.

Methods: This retrospective multicenter study enrolled COPD patients from Taichung Veterans General Hospital, Asia University Hospital, Chung Shan Medical University Hospital, and Cheng-Ching General Hospital between January 2016 and December 2023. DS was defined as the absence of moderate/severe exacerbation, < 2-point worsening from baseline CAT score, and <100 mL decline in post-bronchodilator FEV_1.

Results: Among 905 screened patients, 250 with complete 6- and 12-month pulmonary function and CAT data were included. Overall, 114 patients (45.6%) achieved 6-month DS, and 94 (37.6%) maintained stability at 12 months. Among those who achieved early DS, 68.4% (78/114) remained stable at one year, whereas only 11.8% (16/136) of initially unstable patients transitioned to DS at 12 months (Figure 1 and 2). Baseline characteristics associated with 12-month DS included higher BMI, fewer prior exacerbations, lower reliever use, GOLD 2023 ABE classification, and 6-month DS status (Table 1). When stratified by GOLD ABE group, Groups A, B, and E achieved 12-month DS in 34.5%, 57.0%, and 21.2%, respectively (Figure 3). After multivariable adjustment, 6-month DS remained the sole independent predictor (aOR 12.516, 95% CI 6.298–24.874, p<0.001) of 12-month DS (Table 2). Analysis of determinants of early DS showed that presence of malignancy (aOR 0.412, p = 0.048), prior AE (aOR 0.291, p < 0.001), and higher reliever use (≥3 canisters/year; aOR 0.445, p = 0.007) were associated with a significantly lower likelihood of achieving 6-month stability (Table 3).

Conclusion: Absence of baseline exacerbation and early disease stability at 6 months may serve as practical predictors for sustained long-term stability in COPD.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB27

SF-36生活品質作為評估特發性肺纖維化患者長期預後的獨立預後因素：一項前瞻性隊列研究

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36-Item Short Form Survey as an independent prognostic factor in evaluation of long term outcomes in patients with idiopathic pulmonary fibrosis: A prospective cohort study.

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Purpose: Patient-reported outcome measures (PROMs) are repeatable, non-invasive, standardized questionnaires that can assess patients from multiple dimensions. Currently, there are many PROM modalities commonly used for IPF; however, a prevalent limitation is that most fail to establish correlation with traditional prognostic indicators (such as pulmonary function tests and six-minute walk test). This study utilizes the SF-36 to assess patients' quality of life and attempts to integrate it with existing objective tools.

Materials and Methods: This prospective cohort study utilizing interstitial lung disease (ILD) prospective registry with an enrollment period from December 28, 2018, to December 31, 2022. Patients diagnosed with idiopathic pulmonary fibrosis (IPF), connective tissue disease-associated interstitial lung disease (CTD-ILD), interstitial pneumonia with autoimmune features (IPAF), and idiopathic interstitial pneumonia (IIP). Patient demographics and clinical characteristics were documented. Pulmonary function parameters, Gender-Age-Physiology (GAP) Score, and six-minute walk test (6MWT) were recorded. The 36-Item Short Form Health Survey (SF-36) was administered to assess health-related quality of life from mental and physical dimensions. Correlation analyses were performed to examine the relationship between SF-36 domain scores and traditional objective prognostic indicators including pulmonary function parameters and 6MWT results.

Results: We enrolled a total of 245 patients, of whom 73 patients (30.7%) had IPF, and UIP pattern accounted for 176 patients (73.9%). In the risk factor analysis, univariate modeling showed that male gender, smoking, UIP pattern, lower FVC, and lower SF-36 scores were associated with higher mortality. In the multivariate model analysis, lower SF-36 was the only indicator associated with higher mortality. Furthermore, patients presenting with SF-36 scores below 57 points in combination with GAP scores exceeding 3 points demonstrated the worst survival outcomes.

Conclusions: SF-36 serves as a valuable independent predictor of mortality in ILD patients and enhances prognostic accuracy when combined with GAP scores.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB28

間質性肺疾病患者之住院、感染及血管併發症之真實世界證據分析

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Real-World Evidence on Hospitalization, Infection, and Vascular Outcomes Among Interstitial Lung Disease

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Background and Objective:

Interstitial lung diseases (ILDs) consist of idiopathic pulmonary fibrosis (IPF) and non-IPF ILDs. While pulmonary complications in IPF are relatively well-studied, there is a need for research on non-IPF ILDs, including connective tissue disease-associated ILDs (CTD-ILDs), and non-pulmonary outcomes of ILDs. We compare hospitalization, infection, and pulmonary/cardiac vascular event outcomes in patients with various ILDs.

Methods:

We used data from 82 healthcare organizations between 2014 and 2023 on the TriNetX Research Network. In addition to IPF, we included patients with rheumatoid arthritis (RA)-ILD, systemic sclerosis (SSc)-ILD, myositis-ILD, hypersensitivity pneumonitis (HP) and pulmonary sarcoidosis. We employed propensity score matching (PSM) and assessed outcomes, including hospitalization, infection, and cardiac events within one year of diagnosis.

Results:

A total of 66,771 patients met the inclusion criteria, with 15,228 diagnosed with IPF and 51,543 with non-IPF ILDs. Anti-fibrotic agents were used in 30.4% of IPF patients. IPF patients had higher risks of hospitalization, cytomegalovirus disease, aspergillosis, pulmonary vascular event compared to those with non-IPF ILDs. Within CTD-ILDs, RA-ILD was associated with increased risks of sepsis, bacteremia, and pneumonia, while SSc-ILD had higher risks of pulmonary vascular event. Myositis-ILD showed elevated risks of hospitalization and mortality compared to RA-ILD, whereas patients with HP and pulmonary sarcoidosis had a lower risk of hospitalization, risk of infection and cardiac events than those with RA-ILD.

Conclusions:

We identified distinct risk profiles across ILD subtypes, with increased infection risks in RA-ILD and heightened pulmonary vascular and cardiac event risks in SSc-ILD and IPF. These findings emphasize the need for targeted surveillance/management strategies for different ILD subtypes.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB29

評估接受一年抗纖維化治療之 IPF 患者的疾病進展決定因子

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Evaluating Progression Determinants in IPF Patients Under One-Year Antifibrotic Treatment

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Purpose: Idiopathic Pulmonary Fibrosis (IPF) is a chronic, progressive, and ultimately fatal interstitial lung disease of unknown etiology. The 2022 Progressive Pulmonary Fibrosis (PPF) guidelines exclude IPF cases without a defined underlying cause. However, the applicability of these criteria for assessing IPF progression and predicting patient outcomes remains uncertain. This study aimed to evaluate the relevance of PPF criteria in IPF patients receiving one year of antifibrotic therapy and to examine their association with long-term mortality.

Materials and Methods: In this prospective observational cohort, 119 IPF patients treated with antifibrotic agents reimbursed by the National Health Insurance between 2010 and 2022 were enrolled. Disease progression was defined by worsening respiratory symptoms, decline in pulmonary function, and radiologic deterioration on high-resolution computed tomography (HRCT). Patients with incomplete follow-up (n = 11) or missing data (n = 18) were excluded. A total of 90 patients were analyzed and followed for a mean duration of 38.3 months. Multivariate Cox proportional hazards models were used to identify independent predictors of mortality.

Results: After one year of antifibrotic therapy, 55.6% of IPF patients met the PPF progression criteria, and 28.9% died within three years of follow-up. The majority of progression events were identified by lung function decline (90%) and HRCT worsening (86.7%). Patients in the progressive group had significantly higher 3-year mortality compared to the non-progressive group (41.0% vs. 22.4%, p = 0.041). However, in multivariate Cox analysis adjusted for age, sex, and body mass index (BMI), the PPF criteria were not independent predictors of mortality. Instead, lower BMI and a high GAP score (>4) emerged as significant independent predictors of 3-year mortality.

Conclusions: Low BMI and high GAP scores were strongly associated with increased mortality in IPF patients, whereas the PPF criteria did not independently predict survival outcomes. These findings suggest that traditional risk stratification tools such as BMI and GAP score may provide more robust prognostic value in IPF than PPF criteria alone. Further research is warranted to refine progression assessment frameworks and integrate reliable prognostic markers into individualized treatment strategies.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB30

慢性嗜伊紅性肺炎惡化之個案報告

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Case report of acute exacerbation of chronic eosinophilic pneumonia

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Introduction: Chronic eosinophilic pneumonia (CEP) is a rare disorder characterized by marked infiltration of eosinophils within lung tissue or bronchoalveolar lavage fluid. The clinical course is typically subacute to chronic, with symptoms persisting for weeks to months, including cough, progressive dyspnea, fatigue, and weight loss. CEP occurs predominantly in women and nonsmokers, and is frequently associated with asthma or other atopic conditions. Radiologically, the hallmark finding is bilateral pulmonary infiltrates with a characteristic peripheral predominance. Diagnosis relies on the demonstration of significant eosinophilia in peripheral blood or bronchoalveolar lavage, after exclusion of secondary causes. The disease shows a dramatic response to systemic corticosteroid therapy; however, relapse is common, necessitating long-term clinical follow-up.

Case description: A 61-year-old male ex-smoker with a remote history of eosinophilic pneumonia treated with corticosteroids and anti–IL-5 biologic therapy (benralizumab) presented with a 2-week history of productive cough and exertional dyspnea. Laboratory tests showed eosinophilia. High-resolution computed tomography (HRCT) demonstrated focal bronchiectasis with peripheral consolidations and pleural thickening in both upper lobes, along with opacification and traction bronchiectasis in the right upper lobe (RUL) and left lower lobe (LLL). Bronchoalveolar lavage yielded neutrophil-predominant fluid. A video-assisted thoracoscopic surgery (VATS) wedge resection of the LLL was performed, and histopathology confirmed bronchiolitis obliterans organizing pneumonia (BOOP) with active, immature fibrosis and mixed inflammatory infiltrate containing neutrophils, histiocytes, eosinophils, and plasma cells. The patient responded to a prolonged tapering course of systemic glucocorticoids with gradual clinical and radiologic improvement.

Discussion: We discuss the differential diagnosis of CEP, highlight the typical pathological findings of CEP and organizing pneumonia (OP), and review the treatment response to benralizumab in CEP.

Conclusions: This case highlights CEP ay present with histopathologic features of organizing pneumonia and typically shows a favorable response to corticosteroid therapy.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB31

台灣青少年囊性纖維化的延遲診斷：在無篩檢、低盛行率族群中早期辨識的臨床線索

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Delayed Diagnosis of Cystic Fibrosis in a Taiwanese Adolescent: Clinical Clues for Earlier Recognition in Non-screened Populations with Low Prevalence

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Cystic fibrosis (CF) is a genetic disorder inherited in an autosomal recessive manner, resulting from mutations in the cystic fibrosis transmembrane conductance regulator (CFTR) gene. This gene is essential for regulating ion transport and maintaining the balance of water and electrolytes in various organs. CF is more common in Caucasians but is considered rare in Asia. While most cases are diagnosed in infancy, often through newborn screening, individuals with unusual clinical signs may be diagnosed later in adolescence or adulthood. In Taiwan, however, newborn screening for CF is not conducted, and due to its rarity, the condition is often overlooked. As a result, even when symptoms are typical, the diagnosis may not be made in infancy. This report describes the case of an adolescent diagnosed with cystic fibrosis and the treatment they received in Taiwan, Southern Asia.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB32

高症狀負擔肺阻塞患者住院之相關危險因素

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Risk factors associated with hospitalization in patients with high symptom burden chronic obstructive pulmonary disease

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Purpose: This study aimed to investigate risk factors for high symptom burden among adults hospitalized for acute exacerbations of chronic obstructive pulmonary disease (AE-COPD). These factors could inform future evidence-based risk stratification models to guide interventions and improve outcomes.

Methods: This single-center, retrospective, observational analysis enrolled patients with high symptom burden (COPD assessment test, CAT, ≥ 10) and moderate-to-severe dyspnea (modified medical research council, mMRC, ≥ 2) admitted to Mackay Hospital in Tamsui between September 2024 and August 2025. The analysis assessed the impact of ten core variables, including physiologic status (age, sex, BMI, FEV1%, handgrip strength), clinical factors (comorbidities), treatment adherence (regular follow-up visits, Morisky medication adherence scale (MMAS-4), home exercise), and inhaler techniques (In-Check evaluation), on the occurrence of acute hospitalization within the previous 12 months.

Results: Out of 167 patients, 42 met the study inclusion criteria; of these, 18 had a history of AE-COPD hospitalization and 24 did not. Compared with non-hospitalizations, patients hospitalized for AE-COPD were more likely to have a lower BMI (21.05 ± 2.21 vs 23.36 ± 3.59; $p = 0.009$) and a reduced FEV1% (38.39 ± 9.47 vs 46.42 ± 13.91; $p = 0.027$). Furthermore, patients hospitalized for AE-COPD had poorer handgrip strength ($p = 0.027$) and less home exercise ($p = 0.002$).

Conclusions: Our results suggest that acute hospitalizations in COPD patients with a high symptom burden are primarily associated with decreased physical activities. We recommend precise risk stratification and personalized, comprehensive treatment for patients with severe lung function decline and underweight to reduce the risk of future acute exacerbations and readmissions.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB33

結合 GAP 指數與肺活量變化之特發性肺纖維化預後分層研究：前瞻性多中心觀察研究

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Bridging the GAP: Prognostic Stratification by Longitudinal FVC Changes in Idiopathic Pulmonary Fibrosis – A Prospective Multicenter Observational Study

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Background: Idiopathic pulmonary fibrosis (IPF) carries a poor prognosis despite antifibrotic therapy. The Gender–Age–Physiology (GAP) index provides baseline risk assessment but may not capture early disease trajectories. This study evaluated whether incorporating early forced vital capacity (FVC) changes with GAP score improves mortality prediction.

Methods: In this prospective multicenter study (2018–2023) across four Taiwan hospitals, patients with IPF receiving reimbursed antifibrotics were enrolled. Those who died within six months, lost follow-up, or lacked 1-year pulmonary function data were excluded. Two-year mortality was assessed. A decision tree stratified risk using baseline demographics, GAP score, and 1-year FVC change (Δ1YFVC%). Survival was analyzed by Kaplan–Meier and Cox regression.

Results: A total of 156 patients were included (median age 77 years; 23.7% female; median baseline predicted FVC 73.5%). 23 patients (14.7%) died within two years. The survival tree was split by GAP (<5 vs ≥5) and Δ1YFVC%. Four strata emerged: Model 1, GAP <5 with Δ1YFVC% ≥–10.5%; Model 2, GAP <5 with Δ1YFVC% <–10.5%; Model 3, GAP ≥5 with Δ1YFVC% ≥1.5%; and Model 4, GAP ≥5 with Δ1YFVC% <1.5%. GAP score and Δ1YFVC% <–10.5% independently predicted mortality (adjusted HR 1.46, $p = 0.008$; adjusted HR 3.30, $p = 0.010$, respectively). Combined Models 2 and 4 had poorer survival in Kaplan–Meier analysis (*log-rank* $p < 0.0001$).

Conclusion: Δ1YFVC% is a robust predictor of two-year mortality in IPF. Integrating GAP score with Δ1YFVC% offers a simple but precise tool for early identification of high-risk patients.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB34

藉由脈衝震盪呼吸檢查評估間質性肺病患者小氣道功能障礙

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Diagnostic Performance of Impulse Oscillometry in Detecting Small Airway Dysfunction among Patients with Interstitial Lung Disease

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Purpose:

Small airway dysfunction (SAD) is increasingly recognized in patients with interstitial lung disease (ILD), but its detection remains challenging. Impulse oscillometry (IOS) provides noninvasive measures of airway resistance and reactance, such as R5–R20, X5, Fres, and AX, which have been used to evaluate SAD in obstructive airway diseases. However, optimal cut-off values and diagnostic performance in ILD populations remain unclear.

Methods:

We retrospectively evaluate the ILD patients who underwent both pulmonary function testing (PFT) and IOS between November 2021 and October 2023 in Taichung Veterans General Hospital. IOS indices were analyzed for their correlation with PFT and diagnostic performance using ROC analysis.

Results:

This study enrolls 114 patients. Among them, 42(36.8%) patients had FEF25–75% < 65%. Those with FEF25–75% < 65% had lower BMI, FVC, and FEV1/FVC, and demonstrated significantly higher R5–R20 (0.13 vs. 0.09, p = 0.004), AX (1.16 vs. 0.69, p = 0.007), and more negative X5 values (–0.17 vs. –0.13, p = 0.033)(Table 1). ROC analysis for IOS parameters revealed moderate diagnostic accuracy for SAD: R5–R20 > 0.10 (AUC = 0.66, 95% CI 0.57–0.75), AX > 0.93 (AUC = 0.66, 95% CI 0.56–0.74) and X5 ≤ –0.15 (AUC = 0.62, 95% CI 0.52–0.71) (Table 2 and Figure 1) There were no significant differences were found between these IOS parameters.

Conclusion:

IOS indices, particularly R5–R20, AX, and X5, demonstrated fair performance in detecting small airway dysfunction in ILD patients. The optimal cut-off values differ from those established in other population, suggesting disease-specific thresholds may be needed. IOS may serve as an additional adjunctive tool for evaluating airway involvement in ILD.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB35

一分鐘坐站測試與六分鐘步行測試之動態分析進行間質性肺病預後評估：前瞻性世代研究

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Dynamic Prognostic Assessment in Interstitial Lung Disease Using Repeated 1-Minute Sit-to-Stand and 6-Minute Walk Tests: A Prospective Cohort Study with Time-Dependent Modeling

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Purpose:

Functional tests such as the six-minute walk test (6MWT) are established prognostic markers in interstitial lung disease (ILD), but their longitudinal value and integration with the one-minute sit-to-stand test (1MSTS) remain unclear. This study evaluated whether repeated assessments analyzed with time-dependent modeling enhance mortality prediction in ILD.

Methods:

This is a prospective cohort registry with the patient been diagnosed with ILD by multidisciplinary discussion from December 2018 and December 2024, with follow-up through April 2025. Only patients with at least one documented record of both the 1MSTS and six-minute walk test (6MWT) were included. Baseline and longitudinal functional parameters were analyzed using multivariable and time-dependent Cox regression models. Model performance was evaluated using Harrell's concordance index (C-index)

Results:

During follow-up, 30 deaths (9.3%) occurred. Baseline 1MSTS, 6MWD, FEV_1/FVC, and digital clubbing independently predicted mortality (C-index = 0.862). Time-dependent modeling identified a relative decline in 6MWD as an additional independent predictor (HR = 3.15, 95% CI 1.23–8.06, p = 0.017). Patients with poor baseline 6MWD (<490 m) and subsequent decline had the highest 5-year mortality (33.9%), while those with stable performance showed excellent survival.

Conclusion:

Integrating repeated functional measures into time-dependent Cox models improves prognostic accuracy in ILD. Longitudinal 6MWD decline adds dynamic value beyond baseline assessment, supporting individualized risk stratification and patient-centered care.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB36

SGRQ 問卷作為評估特發性肺纖維化患者長期預後的獨立預後因素：一項前瞻性隊列研究

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St. George's Respiratory Questionnaire as an independent prognostic factor in evaluation of long-term outcomes in patients with idiopathic pulmonary fibrosis: A prospective cohort study

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Purpose: The St. George's Respiratory Questionnaire (SGRQ) was originally developed to assess health-related quality of life (HRQoL) in patients with chronic obstructive pulmonary disease (COPD). It is divided into three domains: Symptoms, Activity, and Impacts, and provides a total score. However, recent studies have shown that the SGRQ has also been applied to the assessment of HRQoL in pulmonary fibrosis diseases particularly idiopathic pulmonary fibrosis (IPF), as it effectively captures aspects such as breathlessness, activity limitation, and psychological burden experienced by patients. The aim of this study is to exam the role of SGRQ scores in the assessment of long-term outcome in patients with IPF.

Materials and Methods: We included patients with ILD who had their diagnoses of idiopathic pulmonary fibrosis (IPF) and non-IPF etiology such as connective tissue disease-associated interstitial lung disease (CTD-ILD), interstitial pneumonia with autoimmune features (IPAF), and idiopathic interstitial pneumonia (IIP) confirmed through MDD from December 2018 to December 2022 and conducted follow-up assessments until December 31th, 2024. Age, gender, smoking status, usual interstitial pneumonia (UIP) pattern, St. George's Respiratory Questionnaire (SGRQ) score , gender–age–physiology (GAP) score and pulmonary function test parameters were recorded at baseline and used as mortality predictors in a multivariate Cox regression model.

Results: A total of 245 patients were enrolled, included 73 patients (29.8%) diagnosed with idiopathic pulmonary fibrosis (IPF). Usual interstitial pneumonia (UIP) was observed in 177 patients (72.2%), with definite UIP in 55.4%. Median follow-up was 3.1 years (IQR 2.1-4.6), and overall mortality at 5 years was 38.4%. Median SGRQ total scores were higher in IPF patients (47 vs. 29.5; $p<0.001$), indicating poorer health-related quality of life. In multivariate analyses, a SGRQ total score >34 points independently predicted mortality. Patients with high SGRQ (>34 points) had significantly lower survival rates (34.3%) compared to those with lower scores (72.7%, $p<0.001$).

Conclusions: The SGRQ score was a significant mortality predictor for both IPF and non-IPF patients regardless of GAP scores, with a cutoff value of SGRQ score higher than 34 points showed a significantly worsened outcome.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB37

人工智慧軟體協助定量電腦斷層分析比較 Nintedanib 與 Pirfenidone 治療對肺部影像變化差異：一年追蹤研究

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Artificial Intelligence assisted Comparing Lung Imaging Changes Between Nintedanib and Pirfenidone Using Quantitative CT Analysis: A One-Year Follow-Up Study

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Purpose: Nintedanib and pirfenidone demonstrate distinct mechanisms of action. This study aimed to determine whether Artificial Intelligence assisted quantitative CT texture analysis could reveal differential pulmonary parenchymal alteration between the two agents.

Materials and Methods: Idiopathic pulmonary fibrosis (IPF) or progressive pulmonary fibrosis (PPF) patients taking either nintedanib or pirfenidone were identified retrospectively from Kaohsiung Veterans General Hospital. Patients with pre-treatment high-resolution computed tomography (HRCT) and one-year follow-up imaging were included. Quantitative lung texture analysis was performed using Aview software to assess normal lung volume, emphysema, consolidation, ground glass opacity, reticular pattern, and honeycomb changes in absolute volume and percentage.

Results: A total of 37 patients received nintedanib (n=23, including 9 IPF and 14 PPF) or pirfenidone (n=14, all IPF). At one year, median absolute FVC decline showed no significant difference between groups (nintedanib: -30 mL; pirfenidone: -35 mL; p>0.05). Quantitative lung texture analysis demonstrated significantly superior normal lung volume preservation with nintedanib (median +20.2%, IQR: -6.5% to 48.7%) compared with pirfenidone (median -11.4%, IQR: -31.2% to 1.7%), representing a 31.6% between group difference (p=0.024, Mann-Whitney U test).

Conclusions: Despite similar FVC decline, nintedanib demonstrated superior normal lung volume preservation compared to pirfenidone at one year. Artificial Intelligence assisted texture analysis may provide additional insights beyond spirometry in monitoring antifibrotic therapy.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB38

利用宏基因體次世代定序鑑別免疫相關肺炎與感染性肺炎之診斷價值：病例報告

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Diagnostic Utility of Metagenomic Next-Generation Sequencing in Differentiating Immune-Related Pneumonitis from Infectious Pneumonia: A Case Report

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Introduction

Immune checkpoint inhibitors (ICIs) frequently cause serious immune-related adverse events (irAEs), notably immune-related pneumonitis (irP), which carries high morbidity and mortality. Differentiating irP from infectious pneumonia is challenging due to overlapping clinical and radiological presentations, while standard microbiological tests are often slow or inconclusive. Metagenomic next-generation sequencing (mNGS) offers a valuable, hypothesis-free approach for the rapid detection of pathogens.

Case Presentation

A 71-year-old man with metastatic non–small cell lung cancer on anti–PD-1 therapy developed acute dyspnea, fever, and shock. CT showed bilateral consolidations with ground-glass opacities. Despite broad-spectrum antibiotics, he progressed to severe ARDS requiring mechanical ventilation and VV-ECMO. mNGS of BAL fluid detected no pathogens, supporting a diagnosis of immune-related pneumonitis (irP). High-dose corticosteroids were started, leading to rapid improvement in oxygenation and imaging within 48 hours. He was weaned off VV-ECMO and extubated after two weeks, achieving marked recovery.

Discussion

This case dramatically illustrates the pivotal role of mNGS in the diagnostic algorithm for differentiating irP from infectious pneumonia in critically ill patients receiving ICI therapy. The rapid, unbiased exclusion of microbial pathogens by mNGS was the critical factor enabling the timely initiation of life-saving corticosteroid therapy This differential diagnosis averted prolonged empirical antibiotic use and minimized treatment delays in the context of progressive ARDS. Consequently, mNGS serves as an essential adjunct diagnostic tool, facilitating early, targeted management crucial for improving patient outcomes.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB39

內皮細胞焦亡與中性球黏附在博萊黴素誘導之肺部發炎與纖維化中的關聯性

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Endothelial Pyroptosis Promotes Neutrophil Adhesion in Bleomycin-Induced Pulmonary Inflammation and Fibrosis

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Objective:

Pulmonary fibrosis is a progressive disease characterized by chronic inflammation, ultimately leading to irreversible scarring of lung tissue. Current therapies mainly target fibrotic pathways, such as the antifibrotic agents nintedanib and pirfenidone. In bleomycin-induced lung fibrosis models, neutrophils are known to play a critical pathogenic role; however, anti-neutrophil strategies remain underexplored. To address this gap, the present study investigates the association between endothelial pyroptosis, neutrophil adhesion, lung inflammation, and fibrosis in bleomycin-induced models. Furthermore, it evaluates the effects of disulfiram on neutrophil-driven responses, focusing on pyroptosis-related endothelial dysfunction.

Methods:

Male C57BL/6 mice were intratracheally injected with bleomycin (1.5 U/kg). Disulfiram was administered via oral gavage at 50 mg/kg daily, five days per week, starting 24 hours post-bleomycin instillation. Lung histopathology, chemokine receptor expression, and regulatory signaling pathways were analyzed at 7 and 14 days after bleomycin administration.

Results:

Histological analysis demonstrated that disulfiram markedly attenuated lung inflammation and fibrosis, as evidenced by hematoxylin and eosin (H&E) staining and reduced Ashcroft scores. Disulfiram treatment significantly decreased N-terminal gasdermin D (N-GSDMD) expression and downregulated key inflammatory and adhesion markers, including lymphocyte antigen 6G, myeloperoxidase, phosphorylated NF-κB, vascular cell adhesion molecule 1 (VCAM-1), and intercellular adhesion molecule 1 (ICAM-1). In human pulmonary microvascular endothelial cells, disulfiram inhibited pyroptosis activation, thereby mitigating endothelial injury and neutrophil adhesion, accompanied by reduced expression of N-GSDMD, VCAM-1, and CD31.

Conclusions:

Disulfiram alleviates bleomycin-induced lung inflammation and fibrosis by modulating endothelial pyroptosis-associated neutrophilic inflammation and adhesion. These findings suggest that targeting endothelial pyroptosis may represent a promising therapeutic approach for pulmonary fibrosis.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB40

探討肺泡表面張力素中的脂類變化對肺泡巨噬細胞的免疫功能以及慢性阻塞性肺病的影響

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Investigating the Change of Pulmonary Lipids on Alveolar Macrophage Immune Function and its Impact on Chronic Obstructive Pulmonary Disease

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Purpose: The surfactant lipid composition and lipid-regulatory function of alveolar macrophages are altered in patients with COPD. This study aimed to investigate changes in surfactant lipid composition and alveolar macrophage function, and to elucidate how oxidized lipids influence their immune and metabolic responses.

Materials and Methods: AMs and surfactant lipids from bronchoalveolar lavage (BAL) samples of COPD and non-COPD subjects were analyzed using LC-MS–based lipidomics and flow cytometry to assess surfactant lipid composition and cytokine production. Single-cell RNA sequencing (scRNA-seq) was performed to characterize cellular heterogeneity within alveolar macrophages. THP-1 macrophage cell lines were treated with saturated (DPPC), unsaturated (DHA), or oxidized (oxLDL) lipids, with or without cigarette smoke extract stimulation. In addition, ER-targeting curcumin-loaded nanoparticles were applied to alveolar macrophages to attenuate oxidative stress and restore cellular homeostasis.

Results: COPD patients exhibited decreased total surfactant lipids and DHA-containing phospholipids, along with an increased proportion of foamy alveolar macrophages expressing IL-1β and CD36. scRNA-seq revealed distinct alveolar macrophage subpopulations between COPD and non-COPD subjects, particularly an enrichment of lipid-associated macrophages in the COPD group. Treatment with oxidized lipids increased ROS generation and inflammatory cytokine production in THP-1 macrophages, whereas ER-targeting curcumin-loaded nanoparticles effectively reversed these effects.

Conclusions: Oxidized surfactant lipids drive AM dysfunction and inflammation in COPD through the induction of oxidative and ER stress. ER-targeting curcumin nanoparticles effectively restore AM homeostasis and attenuate lung injury.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB41

阻塞性睡眠呼吸中止症患者循環外泌體介導的衰老會透過 miR-145-5p/GLB1 訊號軸導致心血管疾病

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Circulating exosome-mediated senescence in patients with obstructive sleep apnea contributes to cardiovascular disease through miR-145-5p/GLB1 axis

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Purpose: Obstructive sleep apnea (OSA) is characterized by intermittent hypoxemia with re-oxygenation (IHR) injury and sleep fragmentation, leading to overt oxidative stress and endothelial dysfunction. We hypothesized that plasma-derived exosomes from OSA patients may contribute to cardiovascular disease (CVD) through augmenting endothelial injury by inhibiting microRNA(miR)-145-5p and up-regulating senescence-associated genes.

Material and Methods: Exosomes and peripheral blood mononuclear cells (PBMCs) from 27 OSA patients with CVD, 51 OSA patients without CVD, and 15 subjects with primary snoring (PS) were assessed. Human umbilical vein endothelial cell (HUVECs) culture model under IHR stimuli was applied to test biological functions of exosomes, miR-145-5p and senescence-associated genes.

Results: Senescence-associated genes, including CDKN2A (p16), CDKN1A (p21) and galactosidase β 1 (GLB1), of PBMCs and their release from HUVECs in response to stimuli with plasma-derived exosomes were both up-regulated in OSA patients versus PS subjects, and further up-regulated in OSA patients with CVD versus those without CVD, while miR-145-5p gene expression and telomere length were both down-regulated. Plasma-derived exosomes from OSA patients with CVD induced increased senescence-associated β-galactosidase activity and IL6/TP53 gene expression versus PS subjects. Dual-luciferase reporter assay revealed that miR-145-5p negatively regulated GLB1 in a direct manner. In vitro miR-145-5p mimic transfection in HUVECs reversed IHR-induced reactive oxygen species production, cell apoptosis, and senescence, including p16, p21, and GLB1 expressions.

Conclusions: These findings demonstrated that exosome-mediated miR-145-5p inhibition via targeting GLB1 contributes to CVD in OSA patients, through inducing senescence, oxidative stress and apoptosis of endothelium, and thereby presented new possibilities for therapeutic intervention.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB42

全基因體次世代定序辨識出長鏈非編碼核醣核酸 RMRP/AZIN1-AS1/LUCAT1 透過調控細胞自噬和第二型發炎反應來影響慢性阻塞性肺病的頻繁惡化

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Next generation sequencing reveals RMRP/AZIN1-AS1/LUCAT1 as autophagy and type 2 inflammation-regulating long non-coding RNAs for chronic obstructive pulmonary disease with frequent exacerbation

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Purpose: COPD shows progressive and irreversible airflow obstruction and is often associated with both neutrophilic and type 2 (T2) inflammation. Long non-coding RNAs (lncRNAs) have been extensively reported to play critical roles in various disease, but little is known about the role of lncRNAs in the pathogenesis of frequent exacerbation phenotype in COPD.

Material and Methods: High-throughput next generation sequencing analysis was performed to identify differentially expressed mRNAs and lncRNAs in peripheral blood mononuclear cells (PBMCs) from 21 COPD patients with T2 inflammation (COPD T2), 27 COPD patients without T2 inflammation (COPD non-T2), and 12 healthy subjects (HS). Candidate lncRNAs were validated in a larger size of 47 COPD non-T2 patients, 33 COPD T2 patients, and 12 HS by RT-PCR method.

Results: A total of 180/41/115 differentially expressed lncRNAs and 144/44/112 differentially expressed mRNAs were identified (reads>0.3 transcripts per million, fold change >2 or <0.5, $p<0.05$) by comparing NGS profiles between COPD T2 and COPD non-T2, between COPD non-T2 and HS, and between COPD T2 and HS groups. Enriched Kyoto Encyclopedia of Genes and Genomes (KEGG) pathways of the union included NF-kappa B signaling, cytokine-cytokine receptor interaction, IL-17 signaling, TNF-α signaling, and NOD-like receptor signaling. In the validation cohort, COPD T2 patients had higher blood eosinophil counts, higher serum total IgE levels, higher CAT/mMRC dyspnea scores, and more frequent total/mild/moderate exacerbation events than either COPD non-T2 patients or HS. LncRNA AZIN1-AS1, lncRNA RMRP, IL17RB, GP1BB, and CTNNB1 were all up-regulated in COPD T2, while lncRNA LUCAT1 and miR-15b-5p were down-regulated. In vitro experiments demonstrated that both lncRNA RMRP and AZIN1-AS1 knock-down reversed cigarette smoke extract plus house dust mite-induced overt oxidative stress and apoptosis in monocytic THP-1/normal healthy bronchial epithelial cells through inhibiting autophagy hyperactivity and T2 inflammation, respectively, while lncRNA LUCAT1 overexpression reversed CSE plus HDM-induced oxidative stress, late apoptosis, and cell necrosis.

Conclusions: LncRNA AZIN1-AS1, RMRP, and LUCAT1 are potential biomarkers and therapeutic targets for COPD with T2 inflammation and frequent exacerbation phenotype.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB43

晚期肺腺癌患者使用 Osimertinib 引發的囊狀肺病

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Osimertinib-Induced Cystic Lung Disease in a Patient with Advanced-stage Lung Adenocarcinoma: A Case Report

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Introduction: Epidermal growth factor receptor (EGFR) tyrosine kinase inhibitor (TKI) had been proved the treatment efficacy in advanced-stage non-small cell lung cancer (NSCLC) patients. Third generation EGFR-TKI Osimertinib, had been widely used as first line or second line treatment. Despite the good treatment effect, there are about 1.1-4.9% patients developing interstitial lung disease (ILD) by using the different generation of EGFR-TKI.[1] Common pattern of EGFR-TKI induced ILD including nonspecific interstitial pneumonia (NSIP), organizing pneumonia (OP), diffuse alveolar damage (DAD), hypersensitivity pneumonitis (HP), and simple pulmonary eosinophilia.[2] Cystic lung disease had never been reported in Osimertinib induced ILD. Here, we reported a 51 years old male with advanced stage lung adenocarcinoma with sensitizing EGFR mutation, diffuse ground glass opacity (GGO) mixed cystic lung lesion developing after 3 months Osimertinib treatment and partial improving after ceasing the EFGR-TKI treatment.

Case presentation: A 51-year-old male never smoker with medical history of hypertension patient presented with a 6-month dry cough. Physical examination showed bilateral crackles without wheezing. Chest X-ray and computerized tomography revealed a right lower lung 3.7cm mass with multiple nodular densities and alveolar opacities in bilateral lungs, and enlarged lymphadenopathy in bilateral hilar, mediastinal and right supraclavicular regions, and pleural effusion. Brain Magnetic resonance imaging also found multiple nodules in bilateral cerebral hemispheres and bilateral cerebellum. Lung adenocarcinoma was diagnosed by the bronchoscopy-guided biopsy, and the clinical staging was T4N3M1c, stage IVB. Multiplex PCR showed found the EGFR exon 19 deletion. Therefore, the patient received Osimertinib 80mg daily for the lung cancer treatment. The lung nodules and pleural effusion were partially regressed after 3 weeks Osimertinib treatment, and left upper lung predominant GGO and cystic like lung lesion were noted after 3 months Osimertinib treatment, and EGFR-TKI induced pneumonitis was suspected. Since there was no dyspnea but only mild dry cough, and pulmonary spirometry showed mild restrictive ventilatory defect and normal diffusion capacity, Osimertinib was kept using 80mg per day based on the clinical benefit. Bronchial alveolar lavage was performed, differential count of WBC revealed macrophage predominant, and there was no evidence of virus, PJP, fungus, mycobacteria and bacteria infection based on the traditional culture and PCR-based test, and the cytology did not found malignant cells or inclusion body.

Conclusion: Osimertinib induced ILD should be kept in mind. In our case, there was diffuse ground glass opacity (GGO) mixed cystic lung lesion after Osimertinib treatment, which was rarely mentioned in the previous case reports.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB44

驗證攜帶式手錶在睡眠呼吸中止症的準確性

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VALIDATION OF CONSUMER WEARABLE TECHNOLOGY TO ASSESSSLEEP APNEA RISK

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Introduction: Consumer sleep-tracking technologies are becoming ubiquitous with emergence of wearable devices. Recent biosensing advancement shows capability in measuring peripheral oxygen saturation (SpO2) that unlocks the potential of consumer wearables to serve as proxy for polysomnography (PSG). The use of wearable devices may address the emerging problem and help assess risk of undiagnosed sleep apnea. This study examines the efficacy in determining risk of sleep apnea using a commercially available wrist based device.

Method: Polysomnography (PSG): Clinical studies were performed at the sleep laboratories at Chang Gung Memorial Hospital (CGMH) in Taiwan. Physiological signals recorded and scoring of the PSG data following the AASM guidelines. Wearable device: Garmin Fenix 5X Plus watch was also instrumented on the participants' non-dominant wrist to log raw photoplethysmography (PPG) and accelerometer signals during the entire time. The processed SpO2 data and accelerometer data were then used to detect sleep apnea events throughout entire test period by a proprietary algorithm developed by Garmin. Study Subjects: Patients who were referred to the sleep clinics at CGMH in Taiwan due to suspicion of sleep disordered breathing were recruited to participate in the study. Informed consents were acquired, and clinical overnight sleep tests were performed on over 288 patients in total.

Results: The AHI of the cohort is 22.3 /h (5.2 to 71.7). The linear regression analysis shows a strong correlation between ODI's and the automatic detector (R2 = 0.76, Figure 4). The sum of squared error in detector's ODI with wearable sensor data is 7.2 referring to the scored ODI. The coefficient of determination (R2) between clinical AHI and detector ODI of the cohort is 0.67. In terms of the detector's performance in classifying AHI ≥ 15 cases (Figure), the overall accuracy is 91% with a sensitivity and specificity of 83% and 95%, respectively. Given the number of negative cases (AHI < 15) is less than the number of positive ones (68 vs. 102), calculation of F1-score is necessary with the outcome of 0.86.

Conclusions: As was observed in this study, through the use of accelerometry and pulse oximetry, the wearable device and algorithm are capable of assessing users' risks for SDB by detecting oxygen desaturation events. This device ability to capture these desaturation events and identify patients with moderate/high severity for sleep apnea (AHI ≥ 15) with enough sensitivity and specificity. The advancement of this research will help people identify SDB in its infancy, thus leading to the enrichment of lives and lower healthcare costs

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB45

以本院成人氣喘病人為對象之生物製劑真實世界療效與超級反應者預測因子分析

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Real-World Effectiveness of Biologics in Adult Asthma and Predictors of Super-Responders: A Retrospective Cohort from a Tertiary Center

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Background: For adults with uncontrolled asthma, biologics targeting IgE or type-2 inflammation (omalizumab, mepolizumab, dupilumab, tezepelumab) improve exacerbations and lung function in trials, yet real-world responses vary widely across phenotypes and baseline severity. Identifying "super-responders" (SRs) who achieve large lung-function gains could help prioritize high-value treatment and resource allocation. However, evidence from routine care is limited by heterogeneous populations, missing patient-reported outcomes, and treatment selection bias. We therefore quantified 12-month effectiveness in a tertiary-care cohort and developed a pragmatic, baseline-only SR prediction model applicable at the time of biologic initiation.

Methods: Retrospective cohort of adults starting a biologic at a tertiary center. Baseline was the closest value within −180 to 0 days; follow-up 12±3 months. Paired changes were tested with paired t/Wilcoxon. Eosinophils and total IgE were analyzed on the log scale with geometric mean ratios (GMRs). SR was prespecified as ≥15% FEV1 increase. To limit overfitting, a Firth-penalized logistic model pooled all biologics with four predictors: age per 10 years, baseline FEV1% per 10 percentage points, eosinophils per doubling (log2), and any inhalant sensitization (class ≥3). Sensitivity analyses used a 12±1.5-month window and alternative endpoints.

Results: Seventy-one patients had paired spirometry (omalizumab 46; mepolizumab 22). Lung function improved: FEV1 +0.14 L (95% CI 0.06–0.21; p<0.001p and FEV1% +7.56 percentage points (4.57–11.00; p<0.001); FEV1/FVC was unchanged. ACT increased by +3.50 (2.50–4.50; p<0.001). Eosinophils declined overall (GMR 0.39; 0.27–0.57; p<0.001). Total IgE showed no overall change (GMR 1.18; 0.95–1.48; p=-.137); drug-stratified patterns were consistent with pharmacology. SR proportion: 18/69 (26.1%). In multivariable analysis (complete cases n=66; events=18), lower baseline FEV1% independently enriched for SR (adjusted OR 0.66 per 10 pp; 95% CI 0.45–0.89). Age, eosinophils (per doubling), and inhalant sensitization were not significant. Findings were directionally consistent in sensitivity checks.

Conclusion: In real-world practice, biologics produced clinically meaningful 12-month gains in lung function and symptoms; approximately 26.1% achieved SR. Lower baseline FEV1% is a robust, pragmatic enrichment factor for SR at the time of biologic initiation, whereas baseline eosinophils and allergen sensitization showed non-significant or imprecise associations. Prospective validation incorporating patient-reported outcomes and exacerbations is warranted.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB46

低覺醒閾值與阻塞型睡眠呼吸中止症患者之主要不良心血管事件：傾向分數配對之世代研究

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Low arousal threshold and major adverse cardiovascular events in patients with obstructive sleep Apnea: a propensity-score-matched cohort study

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Purpose: Obstructive sleep apnea (OSA) is associated with cardiovascular diseases and mortality. A low arousal threshold (ArTH), which involves early arousal and termination of respiratory events, results in shorter apnea duration and less severe oxygen desaturation. The present study explored whether a low ArTH predicts cardiovascular outcomes more accurately in patients with OSA than the apnea-hypopnea index does.

Materials and Methods: We analyzed the clinical outcomes of 5165 patients with OSA with a ArTH who underwent overnight polysomnography (PSG). Cardiovascular risk profiles and outcomes were assessed, specifically, the incidence of hypertension (HTN), diabetes mellitus, hyperlipidemia, and MACEs (major adverse cardiovascular events). Propensity score matching was conducted to control for clinical characteristics and cardiovascular risk factors.

Results: The patients in the low ArTH group with a BMI < 25 kg/m² had substantially lower oxygen desaturation index scores, arousal index scores, hypoxemic duration, HTN rates, and hyperlipidemia prevalence than those in the non-low ArTH group did. Although the patients with a low ArTH also had a substantially lower incidence of CAD, the association between a low ArTH and CAD did not reach significance after propensity score matching for patient characteristics and cardiovascular risk factors.

Conclusions: A low ArTH in patients with OSA is associated with a distinct cardiovascular risk profile characterized by reduced risk factors and hypoxemic severity. However, the absence of significant differences in MACEs between patients with a low ArTH and those without suggests that a low ArTH may not predict survival outcomes or MACEs in patients with OSA.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB47

以葉克膜治療難治性氣喘急性發作合併急性呼吸衰竭：3 例報告

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Extracorporeal membrane oxygenation for refractory asthma exacerbations with acute respiratory failure: report of 3 cases

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Background: Status asthmaticus is a life-threatening condition characterized by refractory respiratory failure that is unresponsive to standard therapies. Nevertheless, extracorporeal membrane oxygenation (ECMO) has increasingly been used as an alternative treatment modality for patients with near-fatal asthamticus. Here, we report three cases of severe asthma exacerbations who were successfully treated by ECMO at the Tamsui MacKay Memorial Hospital between November 2023 and August 2024.

Cases: Three male patients, aged 21-55 years, with diagnosed with refractory asthma exacerbations on admission. Non-adherence to daily controller medications was documented, and all patients had a history of active or passive smoking. Baseline IgE levels among them ranged from 384.2 to 5125.0 IU/ml. The asthma exacerbations occurred across different seasons-summer, autumn, and winter. All patients received mechanical ventilation (MV) and further venous/venous ECMO therapy. MV duration ranged from 9.4 to 32.6 days and ECMO ranged from 5.8 to 11.5 days. After ECMO initiation, PaO_2, $PaCO_2$, and pH values, as well as respiratory rate, fraction of inspired oxygen (FiO_2), peak inspiratory pressure (PIP), and mean airway pressure, all improved. All the patients survived to hospital discharge. Spirometry performed after hospitalization showed FEV_1 (% predicted) ranged from 59% to 76%, and $FEF_{25\%–75\%}$ (% predicted) from 32% to 56%.

Conclusions: ECMO provides adjunctive pulmonary support in asthmatic patients experiencing life-threatening bronchospasm. It is an effective strategy for improving survival and reducing complications.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB48

源自阻塞性睡眠呼吸中止症患者血漿的外泌體會透過 miR-181b-5p-TNF-α 訊號軸導致心血管疾病

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Plasma-derived exosomes from patients with obstructive sleep apnea contribute to cardiovascular disease through miR-181b-5p-TNF-α signaling

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Purpose: This study aimed to determine whether plasma exosomes may contribute to cardiovascular disease (CVD) in obstructive sleep apnea (OSA) through mediating tumor necrosis factor-alpha (TNF-α) via specific microRNA (miR).

Material and Methods: Inflammation-related 84 microRNA panel PCR profiling analysis was performed in a discovery cohort of 6 primary snoring (PS) subjects without CVD and 30 OSA patient with CVD. Candidate miR, TNF-α, and cell junction/vasoconstriction-related genes were validated in an independent cohort of 14 PS subjects without CVD, 34 OSA patients without CVD, and 38 OSA patients with CVD. In vitro gene transfection model under intermittent hypoxia stimuli was applied to test the effect of the candidate miR-TNF-α axis on endothelial dysfunction.

Results: Fifteen differentially expressed miRNAs associated with OSA were identified in plasma exosomes from the discovery cohort via panel PCR. In the independent validation cohort, *TNF-α* gene expression of peripheral blood mononuclear cells and the release of TNF-α in human umbilical vein endothelial cells (HUVECs) to plasma exosomes stimuli were both increased in OSA patients versus PS subjects, and further increased in those with CVD, while miR-181b-5p gene expression and cell viability were both decreased. Plasma exosomes from OSA patients reduced cell junction-related gene expressions, while elevated vasoconstriction-related gene expression and endothelial permeability versus PS subjects. In vitro miR-181b-5p mimic transfection in HUVECs reversed intermittent hypoxia with re-oxygenation-induced cell junction disruption, apoptosis, oxidized low density lipoprotein uptake, angiogenesis, and aberrant *TNF-α/OCLN/CTNNB1/GJA1/NOS3/AGTR1/ACE* gene expressions.

Conclusions: Exosome miR-181b inhibition via targeting TNF-α contributes to the development of endothelial dysfunction and CVD in OSA, and may be a novel diagnostic and therapeutic target.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB49

探討特定基因多型性對特發性肺纖維化病人之臨床與預後效應 – 研究期中分析結果

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Exploring the clinical and prognostic impact of specific single nucleotide polymorphisms in patients with idiopathic pulmonary fibrosis - results from the interim analysis

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Background: Idiopathic pulmonary fibrosis (IPF) causes progressive and irreversible fibrotic destruction of the lungs, leading to respiratory dysfunction, impaired quality of life, and reduced survival. Some patients may experience acute exacerbation that is frequently fatal. Recent studies have highlighted the potential effects of specific single nucleotide polymorphisms (SNPs) of certain genes on the susceptibility and prognosis of IPF. However, ethnic differences do exist, and local data about the genetic variations of IPF patients in Taiwan are limited.

Purpose: We aimed to investigate the clinical and prognostic impact of specific SNPs on IPF patients.

Material and Methods: Peripheral blood mononuclear cells (PBMC) were isolated from IPF patients following formal informed consent. SNPs of PBMC were genotyped using qPCR. Comparative reference was made to the genomic database of Taiwan Biobank. Relationship between specific SNP polymorphism and cumulative probabilities of adverse outcomes was analyzed.

Results: Among the 95 IPF patients (86 males, 9 females) enrolled so far, the minor T allele of *MUC5B* rs35705950 was detected in 12 (12%), markedly lower than reported in individuals of European ancestry. Contrary to prior studies, T allele carriers showed worse survival (P=0.03), faster FVC decline (P=0.02), and a trend toward accelerated D_{LCO} decline (P=0.075). Presence of the T allele was associated with an enhanced risk of early (< 2 years after diagnosis) death (OR, 5.2; 95% CI, 1.06-25.47; P=0.042). Additionally, the minor A allele of *AKAP13* rs62025270 was absent from all participants. These findings significantly differed from those reported in European countries. Furthermore, consistent with prior studies, the presence of the C allele at *TERT* rs2853676 and *TOLLIP* rs3750920 was associated with a trend toward reduced survival. No association has been found so far between these SNPs and the risk of acute exacerbation during the follow-ups.

Conclusions: Interim analysis of our current study suggests that the genetic profile of IPF patients in Taiwan may differ from that of individuals of European ancestry. Specific SNPs, notably *MUC5B* rs35705950, carry prognostic significance. We anticipate that subsequent exploration into these findings will deepen our understanding of the genetic landscape of Taiwan's IPF patients and support more precise, personalized approaches to diagnosis and treatment.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB50

特發性肺纖維化於實證醫學指引時代之流行病學與治療趨勢變化：全國性人口研究

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Shifting trends in the epidemiology and management of idiopathic pulmonary fibrosis in the era of evidence-based guidelines: a nationwide population study

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Background: Advances in the understanding of idiopathic pulmonary fibrosis (IPF) and international cooperation have led to the publication and subsequent updates of international practice guidelines. The impact of these guidelines, especially significant updates occurring after 2011, on IPF epidemiology and clinical practices remains relatively unexplored.

Purpose: We aimed to investigate the impact of evidence-based guidelines on the epidemiology and therapeutic management of IPF in Taiwan.

Methods: This retrospective nationwide population-based study utilized the Whole-Population Datafiles (WPD) of Taiwan's National Health Insurance Research Database that contained basic demographics, complete claim data, and causes of death for all insured persons. We refined the code-based definition to identify IPF cases from the WPD between 2011 and 2019. Independent validation confirmed the high accuracy of this definition. We analyzed the annual standardized rates of IPF incidence, prevalence, overall and IPF-specific all-cause mortality. Additionally, we examined trends in the prescription of selected medications and the proportions of patients with respiratory failure receiving invasive (IMV) and non-invasive (NIV) mechanical ventilation.

Results: We included 4,359 incident cases of IPF. From 2011 to 2019, the annual standardized incidence rates increased from 1.66 (95% confidence interval [CI], 1.36–1.97) to 11.35 (95% CI, 10.65–12.04) per 100,000 standard population, and the annual standardized prevalence rates increased from 1.98 (95% CI, 1.65–2.31) to 27.25 (95% CI, 26.17–28.33) per 100,000 standard population. The standardized IPF-specific all-cause mortality and respiratory failure rates remained stable. Male and older patients received IPF diagnoses more frequently, and experienced higher mortality rates, compared to their female and younger counterparts. Most deaths were attributed to respiratory causes, without significant seasonal variation. Changing trends in the management of IPF mirrored with the evolving guideline recommendations, and showed diminishing roles of immunosuppressants, growing usage of antifibrotics, and NIV usage surpassing IMV.

Conclusions: Our findings reflected the longitudinal impact of the recently evolving guideline recommendations on IPF epidemiology and real-world management.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB51

使用抑肺纖(Nintedanib)治療系統性硬化症相關間質性肺病或特發性肺纖維化患者五年的預後分析

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5-Year Outcomes in Nintedanib-Treated Patients With Systemic Sclerosis associated interstitial lung disease or Idiopathic Pulmonary Fibrosis

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Purpose: Systemic sclerosis-associated interstitial lung disease (SSc-ILD) and idiopathic pulmonary fibrosis (IPF) are progressive fibrosing lung diseases with high morbidity and mortality. Nintedanib, an antifibrotic agent, is approved for both diseases based on clinical trials showing slowing decline in lung function. However, direct comparisons of long-term outcomes between nintedanib-treated SSc-ILD and IPF patients are lacking. We aimed to evaluate 5-year mortality and major complications in these two populations using real-world data.

Materials and Methods: We identified SSc-ILD and IPF patients receiving nintedanib treatment in the TriNetX Global Network (analysis date September 9, 2025). Cohorts were defined by ICD-10 diagnoses for SSc-ILD or IPF and exposure to nintedanib. Propensity score matching (1:1) was performed on demographics and comorbidities. Outcomes including all-cause death, sepsis, hypertension, present of cancer, weight loss and common nintedanib-related adverse events were analyzed over 5 years from nintedanib initiation. Hazard ratios (HRs) and 95% confidence intervals (CIs) for SSc-ILD versus IPF patients were estimated using Cox survival analysis.

Results: The matched cohort included 464 SSc-ILD and 464 IPF patients on nintedanib treatment. Among all patients, the mean age was 63 years and 66% were female. Over 5 years, SSc-ILD patients had lower death rate 6.9% (HR 0.51, 95% CI 0.33–0.78), 15.9% (HR 0.60, 95% CI 0.44–0.80), 18.5% (HR 0.56, 95% CI 0.43–0.74) than 12.9%, 23.9%, 28.4% of IPF patients during 1 year, 3 years, 5 years follow up. SSc-ILD patients also had significantly lower hazards of sepsis 4.6% (HR 0.45, 95% CI 0.25–0.78), 8.1% (HR 0.40, 95% CI 0.26–0.61), 8.4% (HR 0.39, 95% CI 0.26–0.59), and nintedanib-related adverse events including diarrhea (HR: 0.61, 0.51, 0.48), hepatitis (HR: 0.28, 0.40, 0.41), renal insufficiency (HR: 0.50, 0.40, 0.38) during 1 year, 3 years, 5 years follow up and nausea/vomiting (HR: 0.64, 0.54) during 3 years, 5 years follow up compared to matched IPF patients.

Conclusions: In this real-world analysis, nintedanib-treated SSc-ILD patients demonstrated better 5-year survival and lower incidence of severe infections and treatment-related gastrointestinal, hepatic and renal adverse events than their IPF counterparts. These findings highlight important clinical differences between SSc-ILD and IPF in the nintedanib therapy and underscore the need for tailored side effect management strategies.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB52

經鼻持續性正壓呼吸輔助器遞送霧化藥物於新生兒之體外傳輸效率評估

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Evaluation of *In Vitro* Delivery Efficiency of Nebulized Medication Delivered via Nasal Continuous Positive Airway Pressure in Neonates

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Purpose: This study aimed to investigate inline aerosol drug delivery during neonatal non-invasive positive pressure ventilation (NIPPV) and to optimize pulmonary delivery efficiency using response surface methodology. A NIPPV ventilation was used to assess the delivery efficiency of inline nebulized aerosols in an *in vitro* neonatal setting.

Materials and Methods: Budesonide and nebulizer (Pocket Air, Microbase Ltd) were used as the model drug and device, respectively. A NIPPV ventilator (SLE6000) coupled with a humidifier and nasal prongs was connected to a 3D-prineted neonatal nasopharyngeal airway cast. The nebulizer was tested at two positions: before the humidifier and between the inspiratory circuit and nasal prongs. For each nebulizer position, a three-level, three-factor Box-Behnken design (BBD) was applied to evaluate the effects of peak inspiratory pressure (PIP; 16, 20, 24 cmH2O), respiratory rate (RR; 20, 30, 40 bpm), and inspiratory time (Ti; 0.3, 0.4, 0.5 sec) on aerosol delivery. The response variables included upper airway dose (UAD) and lung dose (LD).

Results: Placing the nebulizer before the humidifier resulted in a higher LD (5.5-7.6%) and a lower UAD (1.2%-4.1%) compared with LD (2.2%-5.3%) and UAD (9.0%-21.8%) when the nebulizer was placed between the inspiratory circuit and nasal prongs. An increase in PIP led to a significant rise in UAD (p = 0.0338), while none of the tested ventilator parameters significantly affected the overall LD at either nebulizer position. When the nebulizer was positioned before the humidifier, the coded coefficient of -0.3318 (on a normalized scale of -1 to +1, corresponding to PIP 16–24 cmH_2O) indicated that lower PIP tended to enhance LD. In contrast, when the nebulizer was placed between the inspiratory circuit and nasal prongs, a shorter Ti was associated with higher LD, with a coded coefficient of −0.3183 (Ti 0.3-0.5 sec).

Conclusions: This study developed a neonatal respiratory model combined with a BBD to assess aerosol delivery under NIPPV. The results indicated that appropriate adjustment of ventilator settings and nebulizer position improved pulmonary drug delivery *in vitro* and may support more effective inhalation therapy in neonates with respiratory distress.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB53

異體造血幹細胞移植後非閉塞性細支氣管炎型阻塞性氣道變化之回溯性分析

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Non-bronchiolitis obliterans syndrome Obstructive Pulmonary Changes After Allogeneic Hematopoietic Stem Cell Transplantation: A Retrospective Analysis of Risk Factors and Radiologic Features

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Introduction: Bronchiolitis obliterans syndrome (BOS) is a well-recognized pulmonary manifestation of chronic graft-versus-host disease (cGVHD) after allogeneic hematopoietic stem cell transplantation (allo-HSCT). However, its diagnosis is often delayed due to insidious progression. Notably, some patients develop new onset early airway obstruction that does not fulfill BOS diagnostic criteria. The clinical significance and natural course of this subgroup remain unclear.

Methods: We enrolled 557 patients who underwent their allo-HSCT at the National Taiwan University Hospital and National Taiwan University Cancer Center between 2017 and 2022. Participants with BOS (n=47) were excluded. BOS was defined according to the 2014 National Institutes of Health (NIH) consensus criteria for cGVHD. The study aimed to determine the incidence, risk factors, and imaging characteristics of new-onset early airway obstruction, and to characterize airflow changes in patients who did not meet the NIH criteria for BOS. Early airway obstruction was defined as a residual volume to total lung capacity ratio (RV/TLC) greater than 40% or a forced expiratory volume in one second to forced vital capacity ratio (FEV_1/FVC) less than 70%, with a preserved FEV_1 of more than 75% of the predicted value.

Results: Totally, 510 participants were analyzed. New-onset early obstruction occurred in 44 patients (8.6%). Among the 44 patients, the median age at allo-HSCT was 58 [49-65] years old. 45.5% of the participants were male. 20.5% had acute lymphoblastic leukemia, and 43.2% had acute myeloid leukemia. The median FEV_1/FVC before allo-HSCT was 81.3 [76.1-83.8]%, and the median RV/TLC was 36.5 [32.8-39.5]%. During the follow-up, the median FEV_1 was 95 [84-102]% of the predicted value, and the median RV/TLC was 45 [42-51]%. Among 32 patients with CT at BOS diagnosis, 9.4% had bronchial wall thickening, 28.1% bronchiectasis, and 9.4% air-trapping. In multivariable logistic regression model, reduced-intensity stem cell transplantation showed a trend toward an increased risk of new-onset early obstruction (adjusted OR 2.17, 95% CI: 0.99–4.74, P=0.051)

Conclusion: BOS is a significant late complication after allo-HSCT. Notably, a subset of patients develop early airflow obstruction without meeting the NIH BOS criteria. The clinical significance of this early obstructive pattern remains uncertain, highlighting the need for close monitoring and further investigation.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB54

間歇性缺氧抑制抑制嗜中性白血球胞外陷阱的產生:從人體到動物實驗驗證

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Intermittent Hypoxia Inhibits Neutrophil Extracellular Traps Formation

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Purpose:

Obstructive sleep apnea (OSA) was featured by intermittent hypoxia (IH) and reported to confer a higher risk for poor infection outcomes, suggestive of defective immunity in affected individuals. Netosis is an important antimicrobial mechanism in which neutrophils release decondensed chromatin to form neutrophil extracellular traps (NETs) that capture and kill invading pathogens. This study aimed to evaluate whether netosis is inhibited by IH.

Materials and Methods:

Neutrophils in peripheral venous blood of OSA patients and controls were isolated, which were treated with IH (1%O2 for 35 mins and 21% for 25 mins per cycle x3 cycles) or normoxia (21%) and later subjected to PMA (phorbol 12-myristate 13-acetate) to induce NETosis. C57BL6/J mice are subjected either to IH treatment 8 hours a day for 3 weeks, which allows fluctuation of O2 between 5.7%-21% per 90 seconds or normoxia. Neutrophils were isolated from bone marrow and treated with IH or normoxia and later subjected to PMA. Cell viability was evaluated by MTT assay. Netosis was measured by immunofluorescence based on confocal microscopy. The level of MPO-DNA Complex was measured by ELISA. Another subset of mice received surgery (cecal ligation and puncture) to induce sepsis. Netosis in blood was evaluated as well as survival.

Results:

Netosis was suppressed by IH in OSA patients as shown on flow cytometry and MPO-DNA complex in supernatant. But cell viability was unaffected after 3 cycles (3-hour) IH. 3-week IHI treatment in mice demonstrated similar results. After inducing sepsis, IH-treated mice showed higher mortality, more bacteria burden in blood, but lower MPO-DNA Complex level in blood.

Conclusions: Netosis was suppressed by IH, which may underlie poor outcomes while confronting sepsis.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB55

脈衝震盪肺功能檢查輔助診斷肥胖氣喘病人：一項橫斷式初步研究

惠群

澄清醫院中港分院內科部胸腔內科

Diagnostic utility of impulse oscillometry as an adjunct to spirometry in obese asthma: a cross-sectional study

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Purpose:

Spirometry (FEV1/FVC) is often clinically ambiguous in obese patients (BMI ≥30 kg/m²), leading to potential misdiagnosis. We aimed to evaluate impulse oscillometry (IOS) as an auxiliary tool to improve diagnostic accuracy by comparing obese asthma and obese non-asthmatic controls.

Materials and Methods:

We conducted a cross-sectional study of 120 patients with chronic cough, stratified into four groups: G1 (Obese & Asthma, n=25), G2 (Obese & no Asthma, n=26), G3 (No obese & Asthma, n=40), and G4 (No obese & no Asthma, n=29). Spirometry and IOS parameters were compared. Receiver Operating Characteristic (ROC) analysis was performed exclusively within the obese cohort (G1 vs. G2) to assess the diagnostic utility of FDR, Fres, and AX.

Results:

The 4-group comparison confirmed an additive effect of obesity and asthma on IOS parameters; G1 showed the worst FDR (0.16 ± 0.09) and AX (1.57 ± 0.96). In the obese cohort ROC analysis, both FEV1/FVC (AUC: 0.743, p=0.003) and IOS parameters (Fres/FDR AUC: 0.707, p=0.011; AX AUC: 0.700, p=0.014) were significant predictors. FEV1/FVC (cutoff <76.5) and Fres (cutoff >16.345) both exhibited high sensitivity (92.3% and 92.0%, respectively), identifying nearly all asthma patients. However, FEV1/FVC demonstrated poor specificity (52.0%). In contrast, FDR (cutoff >0.165) provided high specificity (80.8%), effectively distinguishing true positives from false positives.

Conclusions:

Obesity and asthma exert independent and additive detrimental effects on small airway function. In obese patients, FEV1/FVC is a sensitive screening tool, but its low specificity (52.0%) creates a high risk of overdiagnosis. More importantly, IOS provides clinically relevant cutoffs to aid diagnosis within the obese population. Our findings demonstrate that IOS plays a critical auxiliary role: Fres (>16.345 Hz) offers comparable sensitivity to FEV1/FVC for screening, while FDR (>0.165 kPa/(L/s)) provides the high specificity needed for diagnostic confirmation. Utilizing IOS (FDR) as an adjunct test can significantly reduce the misdiagnosis of asthma in obese individuals.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB56

利用空氣-液體介面之細胞培養系統探討支氣管擴張症患者纖毛化上皮分化異常及其臨床重要性

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Using Airway Epithelial Air–Liquid Interface Culture to Investigate Abnormal Ciliated Cell Differentiation and Its Clinical Significance in Bronchiectasis

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Purpose: Bronchiectasis is characterized by defective ciliated cell differentiation and mucociliary dysfunction, yet the underlying epithelial remodeling in humans remains poorly defined. To address this gap, we established a patient-derived air–liquid interface (ALI) culture model using bronchial epithelial cells obtained via bronchoscopy, enabling direct characterization of structural, functional, and transcriptional alterations that drive epithelial dysfunction in bronchiectasis.

Materials and Methods: A prospective cohort study was conducted involving patients with bronchiectasis who underwent flexible bronchoscopy. Ciliated epithelial cells were collected using sterile cytology brushes from lesion sites, defined as bronchiectasis regions identified on high-resolution computed tomography, and from non-lesion sites, defined as normal-appearing bronchial regions. Each patient contributed one sample per site. Collected cells were cultured under an ALI system to induce differentiation into basal, goblet, and ciliated cells. Scanning electron microscopy (SEM) and volume electron microscopy (Volume EM) assessed ciliary ultrastructure, while super-resolution confocal imaging (Lattice SIM) evaluated apical organization. High-speed video microscopy (HSVM) with ImageJ quantified ciliary beat frequency, fluorescent bead tracking with Imaris analyzed mucociliary clearance, and transepithelial electrical resistance (TEER) measurements evaluated barrier integrity. Quantitative PCR (qPCR) profiled key epithelial differentiation markers.

Results: All collected samples successfully expanded and differentiated into well-structured ALI epithelia by day 28. Compared with non-lesion cultures, lesion-derived epithelia exhibited disorganized ciliary arrays, irregular orientation, and reduced ciliary density on SEM and Lattice SIM imaging. Functionally, HSVM revealed a significant increase in ciliary beat frequency in lesion-derived cells, likely reflecting a compensatory drive to enhance mucus clearance. Correspondingly, mucociliary transport was faster but less coordinated, indicating inefficient directional flow despite accelerated ciliary motion. TEER analysis showed that non-lesion epithelia established stable barrier function (~400–500 $\Omega \cdot cm^2$ by day 4), whereas lesion-derived cultures displayed delayed and fluctuating maturation, with transient resistance peaks around days nine to eleven, suggesting instability in epithelial integrity. Gene expression profiling revealed temporal upregulation of *FOXJ1* and *TUBB4B* (ciliogenesis), transient surges in *MUC5AC* and *MUC5B* (secretory activation), reduced *KRT5* (basal cell depletion), and induction of *CPT1A* (metabolic adaptation).

Conclusions: Using patient-derived ALI cultures, we identified a shifted differentiation trajectory in bronchial epithelia from patients with bronchiectasis, characterized by structural disarray, hyperactive yet uncoordinated ciliary motion, impaired barrier integrity, and metabolic reprogramming. These findings imply dysregulated epithelial remodeling as a central mechanism and potential regenerative target in bronchiectasis.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB57

探討骨塑型蛋白 10 在肺纖維化微環境中的保護調控機制

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Exploring the protection effect of bone morphogenetic protein 10 and its functional implications within the fibrotic lung microenvironment

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Purpose: Bone morphogenetic protein 10 (BMP10), predominantly synthesized in the right atrium and secreted into the circulation, plays a crucial role in cardiac development, preventing cardiomyocyte apoptosis and fibrosis, and maintaining overall cardiac function. However, its potential role and underlying mechanisms in mitigating pulmonary fibrosis remain largely unexplored.

Materials and Methods: Pulmonary fibrosis was induced in male C57BL/6 mice by intratracheal administration of bleomycin (BLM). Recombinant BMP10 was delivered intraperitoneally once daily, five days per week, for two weeks. Concurrently, human alveolar epithelial adenocarcinoma cells (A549), pulmonary microvascular endothelial cells (HPMECs), and pulmonary fibroblasts (WI-38) were employed as in vitro models to examine the effects of BMP10 on BLM-induced alterations in the cellular microenvironment.

Results: Masson's trichrome staining demonstrated substantial collagen deposition in the lungs of BLM-treated mice, which was markedly reduced following BMP10 treatment, indicating attenuation of fibrosis. Immunohistochemical staining and Western blot analyses revealed that BLM exposure upregulated collagen I, α-SMA, and vimentin expression while downregulating VE-cadherin and E-cadherin—alterations that were effectively reversed by BMP10. Similarly, immunofluorescence staining and Western blotting of BLM-stimulated A549, HPMEC, and WI-38 cells showed increased protein expression of epithelial-mesenchymal transformation (EMT), endothelial-mesenchymal transition (EndoMT) and fibroblast-to-myofibroblast differentiation (FMD), all of which were significantly suppressed by BMP10 treatment.

Conclusions: BMP10 significantly attenuates BLM-induced pulmonary fibrosis by inhibiting EMT, EndoMT, and FMD. Elucidating the signaling pathways and molecular mechanisms underlying BMP10's anti-fibrotic effects may identify novel therapeutic targets for pulmonary fibrosis.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB58

慢性阻塞性肺病患者心血管事件發生率及風險因子：先導性世代研究

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Incidence and Risk Factors of Cardiovascular Events in Patients with Chronic Obstructive Pulmonary Disease: A Pilot Cohort Study

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Background: Cardiovascular risk is a key concern in patients with chronic obstructive pulmonary disease (COPD), especially given emerging evidence of potential cardiovascular benefits of triple therapy. This pilot study aimed to investigate the prevalence of cardiovascular risk factors and the incidence of cardiovascular events among patients with COPD.

Method: This single-center, retrospective pilot cohort study enrolled 409 patients with COPD participating in Taiwan's National Health Insurance pay-for-performance program. Three-year follow-up medical records, including all emergency department (ED) visits and hospitalizations, were reviewed. Demographics—including age, sex, and smoking status—along with the prevalence of cardiovascular risk factors and incidence of cardiovascular events were recorded. "Cardiovascular risk factors" included hypertension (HTN), diabetes mellitus (DM), hyperlipidemia (HLD), coronary artery disease (CAD), heart failure (CHF), and prior ischemic stroke. Acute exacerbations of COPD were defined according to the Rome Proposal criteria (2021). "Cardiovascular events" were defined as hospitalizations due to angiographically confirmed CAD, neurologist-confirmed ischemic stroke, or acute decompensated non-ischemic heart failure (ADHF).

Results: Among 409 patients, 61 (15%) were lost to follow-up and 14 (3.4%) died within three years. Acute exacerbations occurred in 83 patients (20.3%), resulting in ED visits or hospitalizations; these patients were more often classified as GOLD group E at baseline (47.0% vs 17.8%) and had higher prevalence of cardiovascular risk factors than those without exacerbations, including HTN (62.7% vs 50.3%), HLD (36.1% vs 32.2%), DM (26.5% vs 21.5%), CAD (26.5% vs 17.5%), stroke (4.8% vs 3.4%), and CHF (10.8% vs 8.6%).

Hospitalizations or ED visits due to CAD, stroke, and ADHF occurred in 14 (3.4%), 8 (2.0%), and 12 (2.9%) patients, respectively. Patients admitted for CAD were more often GOLD group E at baseline compared with those admitted for other reasons (50.0% vs 22.8%), whereas those with stroke or ADHF were mostly GOLD group B (75.0% vs 49.4% and 75.0% vs 49.1%). Cardiovascular risk factors were more prevalent among patients with these events.

Conclusions: Patients with acute exacerbations of COPD or hospitalizations for CAD or ADHF tend to have a higher burden of cardiovascular risk factors. Further studies using matched cohorts are warranted to evaluate the impact of cardiovascular risk factors on COPD outcomes and the effect of COPD treatment on cardiovascular outcomes.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB59

吸入型類固醇粒徑大小在氣喘病人之臨床與安全性結果：隨機對照試驗之統合分析

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Clinical and Safety Outcomes of Inhaled Corticosteroid Particle Sizes in Asthma Patients: A Meta-Analysis of Randomized Controlled Trials

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Background and Purpose: Inhaled corticosteroids (ICS) are the cornerstone of asthma management, effectively reducing severe exacerbations and asthma-related mortality. Beyond pharmacokinetic and pharmacodynamic properties, formulation characteristics—particularly particle size—may influence clinical outcomes. This study aimed to evaluate the efficacy and safety of ICS with different particle sizes in asthma patients.

Methods: We systematically searched PubMed, Cochrane, and Embase from inception to July 2025 without language restrictions using terms related to asthma, ICS, particle size, ciclesonide (CIC), fluticasone propionate (FP), beclomethasone dipropionate/formoterol fumarate (BD/FF), and budesonide/formoterol fumarate (Bud/FF). Eligible randomized controlled trials (RCTs) compared CIC vs. FP (extra-fine vs. fine particle size) in monotherapy and BD/FF vs. Bud/FF in combination therapy, with particle size as the main differentiating factor. Outcomes included lung function, Asthma Quality of Life Questionnaire (AQLQ), and safety profiles. Studies on other diseases, ongoing trials, or duplicate publications were excluded. Two independent reviewers performed study selection, data extraction, and risk-of-bias assessment using Cochrane RoB 2.0. Random-effects meta-analyses were conducted with RevMan, presenting results as standardized mean differences (SMD) or risk ratios (RR). Heterogeneity was assessed with I^2, and subgroup and sensitivity analyses were performed.

Results: Of 531 records screened, 8 RCTs met the inclusion criteria, enrolling adolescents and adults with varying asthma severity and ICS doses. Overall risk of bias was rated as “some concern,” mainly due to selective reporting. Compared with fine particle ICS, extra-fine ICS showed a statistically significant improvement in FEV_1 change from baseline (SMD: -0.86, 95% CI: -1.29 to -0.44, I^2=97%). No significant differences were observed in AQLQ scores (SMD: -0.46, 95% CI: -1.60 to 0.67, I^2=99%) or safety outcomes, including nasopharyngitis (RR: 1.22, 95% CI: 0.73–2.03, I^2=0%), upper respiratory tract infection (RR: 1.04, 95% CI: 0.69–1.57, I^2=0%), pharyngolaryngeal pain (RR: 1.52, 95% CI: 0.93–2.46, I^2=0%), and bronchitis (RR: 1.22, 95% CI: 0.73–2.03, I^2=0%). Subgroup analyses yielded consistent results.

Conclusions: Extra-fine particle ICS may provide greater improvement in lung function (FEV_1), while asthma control and safety outcomes appear comparable to fine particle formulations. Further researches are warranted to validate these findings.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB60

探討淋巴血管平滑肌增生症的基因變異及臨床表現

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Lymphangioleiomyomatosis (LAM): Toward a More Concrete Diagnostic Algorithm intergrating Genotype and Phenotype

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Purpose: Lymphangioleiomyomatosis (LAM) is a rare cystic lung disease (CLD) that often poses diagnostic challenges among patients presenting with diffuse pulmonary cysts. This study aimed to develop an integrated diagnostic model combining clinical, radiologic, genetic, and biomarker data to improve diagnostic accuracy for LAM.

Materials and Methods: Between May 2024 and August 2025, 128 patients with computed tomography–confirmed diffuse CLD were prospectively enrolled. Clinical data, spirometry, and radiologic findings, including pneumothorax, chylothorax, and renal angiomyolipoma (AML), were recorded. Blood and saliva samples underwent next-generation sequencing (NGS) for TSC1, TSC2, and FLCN mutations, and serum VEGF-D, KL-6, SP-A, and SP-D levels were measured. Two analytic steps were performed: (1) evaluation of VEGF-D as an independent biomarker among pathologic or genetic LAM using ROC analysis; and (2) development of an integrated diagnostic model incorporating VEGF-D ≥ 800 pg/mL, AML, and chylothorax, with multivariable logistic regression to identify additional predictors.

Results: This prospective cohort (mean age 47.7 ± 11.7 years, 90.6% women) included 42 patients with TSC-LAM, 58 with sporadic LAM, 3 with Birt-Hogg-Dubé syndrome, and 25 with other/undefined CLD. LAM patients had higher FEV_1 (87.8 [71.7–99.9]% vs. 62.2 [50.4–84.1]%, $p = 0.0002$) and DLCO (78.9 [56.0–90.3]% vs. 48.0 [32.6–79.8]%, $p = 0.013$) than non-LAM. Median VEGF-D was higher in LAM vs. non-LAM (1,420 [930–2,380] vs. 580 [420–910] pg/mL; $p < 0.001$), and KL-6, SP-A, and SP-D were comparable between LAM and non-LAM patients. In Framework A, VEGF-D demonstrated moderate accuracy (AUC = 0.61, 95% CI 0.50–0.72). In Framework B, FEV_1 was identified as a significant independent predictor in multivariable analysis besides VEGF-D, renal AML, and TSC mutation. The integrated model in Framework B achieved excellent discrimination (AUC = 0.97, 95% CI 0.93–1.00, $p < 0.001$).

Conclusions: An integrated model incorporating VEGF-D, AML, TSC mutation, and FEV_1 provides a robust and clinically applicable diagnostic algorithm for LAM within diffuse CLD.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB61

連續正壓呼吸對阻塞型睡眠呼吸中止併射血分率降低型心衰竭患者之左心室射血分率的影響：系統性回顧與統合分析

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Continuous positive airway pressure on left ventricular ejection fraction in obstructive sleep apnea and heart failure with reduced ejection fraction: A Systematic Review and Meta-Analysis

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Purpose: Continuous positive airway pressure (CPAP) is the primary treatment for obstructive sleep apnea (OSA), with fixed pressure CPAP (FP-CPAP) and auto-titrating CPAP (Auto-CPAP) being the two modes. We examined the impact of CPAP on left ventricular ejection fraction (LVEF) in patients with OSA and heart failure with reduced ejection fraction (HFrEF).

Materials and Methods:. We systematically searched PubMed and ClinicalTrials.gov from inception to January 2025 using terms combining OSA, LVEF, heart failure, and CPAP/APAP/PAP. Randomized controlled trials enrolling adults with OSA and HFrEF that reported echocardiographic LVEF at baseline and follow-up after CPAP (FP-CPAP or Auto-CPAP) versus control/usual care were eligible. Exclusion criteria: heart failure with preserved EF, central sleep apnea, adaptive servo-ventilation, or duplicate follow-ups. The primary outcome was change in LVEF. Random-effects meta-analysis (RevMan 5.3) generated pooled mean differences (MD) with 95% CIs; heterogeneity was assessed with I^2. Prespecified subgroup analyses compared FP-CPAP vs Auto-CPAP; sensitivity analysis excluded influential studies.

Results: Ten RCTs (233 CPAP users, 242 controls) met inclusion criteria. Overall, CPAP produced a significant gain in LVEF versus control (MD 3.72%, 95% CI 2.21–5.23), though heterogeneity was substantial (I^2=73%, p=0.0001). In prespecified subgroups, the effect was **mode-dependent** (test for subgroup differences p=0.02). **Fixed-pressure CPAP** improved LVEF (MD 4.84%, 95% CI 3.23–6.45); removing one influential study lowered heterogeneity from 76% to 13% while preserving the benefit (MD 3.87%, 95% CI 3.13–4.61). By contrast, **auto-adjusting CPAP** showed **no significant effect** (MD 1.07%, 95% CI –1.66 to 3.79).

Conclusions: In OSA with HFrEF, CPAP is associated with a modest but significant improvement in LVEF, driven predominantly by FP-CPAP, whereas Auto-CPAP shows no clear benefit. *The cardiovascular benefits of CPAP in patients with OSA and HFrEF may vary by mode, suggesting a potential mode-specific effect between FP-CPAP and Auto-CPAP that warrants further investigation.*

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB62

營養狀態對慢性呼吸照護病房病人脫離呼吸器的影響

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Effect of Nutritional Status on Weaning Patients from Ventilator in Respiratory Care Ward

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Purpose:

In various studies, various clinical factors related to the weaning ventilator have been mentioned. However, the issue in patients who remained in the chronic respiratory care unit (ventilator support for more than 63 days) was less reported, especially in the role of nutritional status. The purpose of this study is to investigate the relationship between nutritional status and successful weaning from prolonged mechanical ventilation (MV) on the respiratory care ward (RCW).

Materials and Methods:

This is a retrospective observational study performed in a 20-bed RCW at E-DA Cancer Hospital, data collected from May 2017 to August 2025. Successful weaning was defined as patient independence from MV for 5 consecutive days and nights. Demographic data, clinical characteristics, diet record, and laboratory data were compared between successful and unsuccessful weaning using the Student t test or the Chi-Square test. The variables associated with successful weaning were performed in univariate and multivariate analyses. A p value of less than 0.005 was considered statistically significant.

Results:

A total of 150 patients (60.6% male) were analyzed in this study (Figure 1). The average age was 71.55±14.98 years old and the average day of ventilator use was 366.2±466.1 days. Sixty patients have been weaned off MV until the index date. The significant factors for successful weaning included MV days, rapid shallow breath index (RSBI), maximum inspiratory force (Pimax), body mass index (BMI), hemoglobulin (Hb), neutrophile/lymphocyte ratio (NLR), albumin, daily ingestion of protein ($p<0.005$ for all) (Table1). The results of the stepwise multivariate logistic regression analysis revealed that lower Pimax (OR = 1.114; 95% CI = 1.040-1.194; p=0.002) and higher serum albumin (OR = 0.073; 95% CI= 0.012-0.433; p=0.004) were significant predictors of successful weaning (Table 2).

Conclusions: In addition to the Pimax weaning index, improved nutritional status is also a significant factor for MV weaning for patients in RCW.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PB63

探討保留比率肺功能減損的臨床重要性：一醫學中心的回溯觀察性研究

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Investigating clinical significance of preserved ratio impairment spirometry: A retrospective observational study in a medical center

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Purpose: Progressive airway diseases can lead to a reduced quality of life. There remains a significant knowledge gap in accurate determining those at the highest risk of lung function loss. In the recent years, the early detection of airway obstruction had also gained concerns and studies on Preserved Ratio Impairment Spirometry (PRISm) kept increasing. This study aimed to analyze the risk factors for lung function decline and early airway obstruction.

Materials and Methods: We retrospectively reviewed and analyze the medical record of patients who have received lung function tests at the National Taiwan University hospital for at least 2 times between January 2012 and December 2022.

Results: From January 2012 to December 2022, a total of 12561 patients were eligible. The mean age was 60.3 years (SD:14.9), and 7110 (57%) were male. We classified these patients into 4 groups (GOLD1-2: FEV1/FVC<0.7& FEV1%>50; GOLD 3-4: FEV1/FVC<0.7& FEV1>50; PRISm: FEV1/FVC>=0.7& FEV1%<0.8; Normal: FEV1/FVC>=0.7& FEV1>0.8) based on their first lung function test. The majority of the subjects was Normal(61.6%), followed by GOLD1-2(19.8%), PRISm (13.4%) and GOLD3-4 (5.1%). Active smoking or ex-smoking were mostly observed in the GOLD 3-4 group (35.6%) and GOLD 1-2 group (31.8%), compared to PRISm group(21.1%) and Normal group(20.1%). The PRISm group tended to have higher comorbidities rates than other groups, including heart failure, chronic kidney disease, diabetes mellitus. PRISm group poses a proportional group in NTUH retrospective cohort, which was similar to recent cohort studies among other countries. It has similar smoking rate compared with Normal group. Besides, PRISm group have the most comorbidities of heart failure, CKD and DM.

Conclusions: PRISm group have different characteristics compared with COPD populations, considering its lower smoking rate. Early detection and specific strategy may assist in dealing with its relative high mortality and comorbidities.

Respiratory Tract Infections
Critical Care Medicine
Tuberculosis

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OC01

以新創電化學生物感測器檢測血液 ESAT-6 來辨識肺結核患者：一項臨床病例對照驗證研究

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Detecting Blood ESAT-6 via an Electrochemical Biosensor to Identify Pulmonary Tuberculosis: A Clinical Case–Control Validation Study

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Purpose: Non-sputum-based diagnostic and screening tools for active pulmonary tuberculosis (PTB) remain limited. The 6-kDa early secreted antigenic target (ESAT-6), a *Mycobacterium tuberculosis* -specific antigen, represents a promising blood biomarker, but its clinical use has been constrained by low circulating levels. We recently developed an electrochemical biosensor capable of detecting ESAT-6 in blood samples in a pilot study. We aimed to validate its potential as a non-sputum triage test in a large-scale case-control study to meet WHO's optimal sensitivity criterion of ≥95%.

Materials and Methods: A gold electrode–based biosensor was fabricated by electropolymerizing poly(3,4-ethylenedioxythiophene) with carboxyl groups and conjugating it with an ESAT-6 antibody. ESAT-6 levels in blood were quantified by differential pulse voltammetry through antigen–antibody binding–induced potential changes. Blood samples were selected from individuals enrolled in prospective studies (2022-2025) upon diagnosis, including patients with PTB, TB contacts with latent tuberculosis infection (LTBI, infection control), patients with nontuberculous mycobacterial lung disease (NTM-LD) or lung cancer (disease control), and healthy controls (low-dose CT showing no active lung lesions). Samples were tested in triplicate. Receiver operating characteristic analysis was performed to calculate the area under the curve (AUC), sensitivity, and specificity for detecting PTB.

Results: A total of 178 plasma samples were tested: 84 PTB cases (65 culture-positive, 37 smear-positive), 30 TB contacts with LTBI, 30 NTM-LD (only 2 with *M. kansasii* infection), 21 with lung cancer, and 13 healthy controls. ESAT-6 levels were significantly higher in PTB than in LTBI, NTM-LD, lung cancer, or healthy groups (114.5 ± 14.1 vs. 75.0 ± 15.0, 71.8 ± 17.8, 60.0 ± 23.8, and 63.3 ± 21.6 μg/mL; all $p < 0.001$). Blood monocyte-to-lymphocyte ratios were also higher in PTB cases than in controls (n =166; 0.43 ± 0.30 vs. 0.33 ± 0.26, $p = 0.024$), but C-reactive protein levels were not significantly different (n =144; 2.6 ± 3.6 vs. 1.8 ± 4.2 mg/dL, $p = 0.237$). The biosensor-based ESAT-6 detection yielded an AUC of 0.977 (95% CI, 0.960–0.994) for identifying PTB, higher than that of MLR (0.632, 95% CI 0.547–0.718). Using an optimized cut-off of 95.0 μg/mL, sensitivity and specificity were 95.2% (80/84) and 91.5% (86/94), respectively.

Conclusions: The blood-based ESAT-6 biosensor effectively differentiated PTB from controls, with a sensitivity >95% and high specificity, supporting its potential as a non-sputum triage tool for PTB.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OC02

噬菌體治療在膿腫分枝桿菌肺部疾病的潛力：從發現、特徵解析到效能訓練

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The potential of phage therapy for *Mycobacterium abscessus* lung disease: from discovery, characterization to training the potency

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Purpose: *Mycobacterium abscessus*, a rapidly growing mycobacterium, often exhibits multidrug resistance and poses a significant clinical challenge due to limited treatment options and poor therapeutic outcomes. The recent resurgence of interest in phage therapy has highlighted mycobacteriophages as a compelling alternative, particularly for infections that fail to respond to standard antibiotic regimens. However, the narrow host range of phages remains a critical limitation, demanding constant discovery of new phages and adaptation (or training) of the existing phages effective against clinically relevant *M. abscessus* strains.

Materials and Methods: We initiated a mycobacteriophage discovery effort by isolating phages from hospital wastewater. The newly identified mycobacteriophages were characterized through assessment of their lytic activity against different drug-resistant *M. abscessus* strains and subjected to whole phage structure determination by cryo-electron microscopy (cryo-EM). To enhance the phage effectiveness, we implemented a training protocol to improve its efficacy against *M. abscessus* strain. In addition, the therapeutic potential of these phages was further evaluated using *M. abscessus*-infected THP-1 macrophages.

Results: We successfully isolated and identified two mycobacteriophages, capable of infecting and kicking clinical *M. abscessus* strains. The following cryo-EM structure determine of the whole phage structure revealed its structural assembly for host interaction. Furthermore, we are developing an adaptive training protocol to enhance phage susceptibility and improve bactericidal efficacy against *M. abscessus* clinical strains. In *M. abscessus*-infected THP-1 macrophages, these phages significantly reduced the intracellar *M. abscessus* burden, demonstrating their therapeutic potential.

Conclusions: Mycobacteriophage could be isolated and trained specifically for *M. abscessus* and helpful for *M. abscessus*-infected macrophage model. Further study might be important for alternative therapy in refractory *M. abscessus* pulmonary infection. This work contributes to the foundational knowledge required to advance phage-based therapies for treating multidrug-resistant *M. abscessus*.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OC03

化被動為主動：「智營導」，數據導引的重症營養支持優化策略

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From Reactive to Proactive: NutriPilot, a Data-Driven Strategy for Proactive Nutrition Optimization in Critical Care

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Background: Critically ill patients face multifactorial challenges and rapid hemodynamic changes that often hinder adequate nutritional delivery, particularly sufficient protein provision. Although stepwise nutrition protocols can mitigate the risk of refeeding syndrome and improve target attainment, the dynamic nature of daily goals and limited availability of accurate intake data often lead to delayed recognition of nutritional deficits, hindering timely adjustments and meaningful improvement. This study retrospectively evaluated the impact of a proactive, data-driven dashboard in the ICU, focusing on improvements in protein adequacy and the prognostic significance of achieving protein targets by day 7 of admission.

Methods: This retrospective study included 1,174 ICU patients admitted between December 2023 and June 2025. NutriPilot, a proactive stepwise data-driven dashboard implemented in February 2025, continuously calculated daily calorie and protein intake, displayed goal–delivery gaps, and generated proactive alerts during the first 7 days of ICU stay to guide clinicians toward nutritional target achievement. Protein adequacy and ICU survival were compared between the pre-implementation (usual care) and post-implementation (data-driven) phases. Among patients with available 60-day outcome data, the association between day-7 protein adequacy and 60-day survival was evaluated using Kaplan–Meier survival analysis and multivariable Cox proportional hazards modeling.

Results: The proactive, data-driven dashboard showed strong concordance with registered dietitian assessments (Pearson's $r = 0.86$ for calorie intake; $r = 0.90$ for protein intake) and reduced feedback latency by approximately 180 minutes. The proportion of patients achieving protein adequacy by day 7 increased markedly after implementation, from 45.7% to 81.3%. Kaplan–Meier analysis demonstrated significantly higher 60-day survival among patients who achieved day-7 protein adequacy compared with those who did not ($p = 0.03$). In multivariable Cox proportional hazards modeling, independent predictors of improved 60-day survival included lower SOFA scores, absence of refeeding syndrome, and achievement of day-7 protein adequacy (aHR 0.75, 95% CI 0.57-0.98, $p = 0.04$).

Conclusions: The implementation of the NutriPilot dashboard transformed ICU nutrition management from passive, data-delayed adjustments to proactive, real-time precision care. By automating real-time tracking and alert generation, NutriPilot significantly shortened information-to-action time and increased protein target achievement by day 7—an outcome that independently predicted improved 60-day survival. These findings highlight early nutrition as a modifiable outcome factor and demonstrate the potential of data-driven systems to translate insights into clinical benefit.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OC04

探討糖尿病控制不良患者潛伏結核治療後 IGRA 轉陰的腸道菌相特徵

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Title Gut Microbiota Signatures Linked to IGRA Reversion after LTBI Therapy in Poorly Controlled Diabetes

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Introduction: Poorly controlled diabetes mellitus (pDM) is associated with increased risk of latent tuberculosis infection (LTBI) and impaired immune responses to preventive therapy. However, the biological factors underlying interferon-gamma release assay (IGRA) reversion after LTBI treatment remain unclear. Given the immunoregulatory role of intestinal microbiota, this study explored gut microbial alterations associated with IGRA reversion in pDM patients following tuberculosis preventive therapy (TPT).

Methods: We prospectively enrolled adults (≥20 years) with pDM (HbA1c >9% within the past year) who underwent LTBI screening using the QuantiFERON-TB Gold Plus (QFT-Plus) assay. Stool and blood samples were collected before and after TPT. Gut microbiota were characterized by full-length 16S rRNA sequencing (PacBio Sequel IIe). Among IGRA-positive participants, those with post-therapy reversion were classified as responders, and others as nonresponders. Alpha- and beta-diversity metrics and differential abundance analyses were conducted using QIIME2 and PERMANOVA, with statistical significance defined as $p<0.05$.

Results: Of 192 participants, 164 met inclusion criteria for microbiome analysis (92 IGRA-negative, 72 IGRA-positive). Following TPT, 25 of 72 (34.7%) IGRA-positive individuals achieved reversion. Alpha diversity decreased progressively from IGRA-negative to IGRA-positive and was lowest after TPT (Shannon index, $p<0.05$). Beta diversity showed distinct clustering across these groups. Responders were enriched with *Victivallales bacterium CCUG 44730* and *Butyricimonas spp.,* both linked to anti-inflammatory effects and butyrate synthesis, whereas nonresponders exhibited persistently dysbiotic profiles. HbA1c levels tended to be lower in responders (7.3 vs. 7.9, $p=0.059$).

Conclusion: Alterations in gut microbiota are associated with IGRA reversion among pDM patients receiving LTBI therapy. The enrichment of butyrate-producing, anti-inflammatory taxa in responders suggests a gut-immune axis influencing therapeutic success. Microbiome-targeted interventions may offer a novel strategy to enhance LTBI treatment efficacy in diabetic populations.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OC05

嗜伊紅性支氣管擴張症與分枝桿菌感染風險之關聯：台灣多中心研究

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Association Between Eosinophilic Bronchiectasis and Risk of Mycobacterial Infection: A Multicenter Study from Taiwan

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Purpose: Eosinophilic bronchiectasis, defined by a blood eosinophil count (BEC) ≥300 cells/μL, represents a distinct inflammatory phenotype from the classic neutrophilic endotype. Although pulmonary tuberculosis (TB) and nontuberculous mycobacterial lung disease (NTM-LD) are common comorbidities among patients with bronchiectasis, their relationship with the eosinophilic phenotype remains unclear.

Materials and Methods: We analyzed data from the Taiwan Bronchiectasis Research Collaboration (TBARC) registry (2017–2020). Patients were categorized into eosinophilic (BEC ≥300 cells/μL) and non-eosinophilic groups. Clinical characteristics and one-year incidences of newly diagnosed TB and NTM-LD were compared. Propensity score–based inverse probability of treatment weighting (IPTW) with trimming at the 1st–99th percentile was applied. Design-based logistic regression (svyglm, quasibinomial) and weighted Firth's correction (logistf) were used to assess associations and robustness.

Results: Among 1,963 patients with available BEC, 248 (12.6%) were classified as eosinophilic. Compared with the non-eosinophilic group, eosinophilic bronchiectasis patients were more often male (58% vs. 42%, $p<0.001$), had higher BMI (22.4 vs. 21.8, $p=0.023$), more frequent COPD (43.5% vs. 36.4%, $p=0.035$), lower pre-bronchodilator FEV_1 (63.7% vs. 69.8%, $p=0.015$), and fewer new cases of pulmonary TB (0% vs. 1.7%, $p=0.042$) and NTM-LD (1.6% vs. 4.5%, $p=0.037$). After weighting, the incidence of new mycobacterial infection (TB or NTM-LD) was 1.7% in the eosinophilic group versus 4.5% in the non-eosinophilic group (RR≈0.38; RD=−2.8%). In the trimmed design-based model, eosinophilia remained inversely associated with infection risk, though quasi-separation caused the odds ratio to approach zero. The Firth-corrected model confirmed a significantly lower risk (OR=0.071; 95% CI, 0.0006–0.515; $p=0.003$). Other covariates, including incense burning, chronic rhinosinusitis, and liver cirrhosis, were not significant.

Conclusions: Eosinophilic bronchiectasis was associated with a markedly lower risk of subsequent mycobacterial infection compared with the non-eosinophilic phenotype. These findings suggest that eosinophil-dominant airway inflammation may confer relative protection against mycobacterial colonization or infection, underscoring a distinct immunologic endotype with potential implications for bronchiectasis management and infection surveillance.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OC06

以機器學習建立與驗證重症分枝桿菌感染病人 30 天及 90 天死亡率預測模型

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Development and Validation of Machine Learning Models for Predicting 30-Day and 90-Day Mortality in Critically Ill Mycobacterial Patients

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Purpose: To develop and compare machine learning models for predicting 30-day and 90-day mortality among critically ill patients with pulmonary mycobacterial infections admitted to ICUs.

Materials and Methods: This retrospective study used de-identified data from the National Taiwan University Hospital–Integrative Medical Database (NTUH-iMD), encompassing NTUH and its Hsin-Chu and Yun-Lin branches between January 2006 and March 2022. Patients were classified as mycobacterial infection (tuberculosis or nontuberculous mycobacterial lung disease) or no-growth controls. Four prediction tasks (30- and 90-day mortality for each group) were analysed using five algorithms—logistic regression, support vector machine (SVM), decision tree, random forest, and LightGBM—with two imbalance-handling strategies. Hyperparameters were optimized by grid search or Tree of Parzen Estimators (TPE). Performance was evaluated by area under the receiver operating characteristic curve (AUROC) and accuracy, with external validation using branch-hospital data.

Results: A total of 5,996 patients met inclusion criteria, including 714 with mycobacterial pulmonary infection and 5,282 controls. After variable completeness screening, 290 mycobacterial and 1,403 control patients were included for model development. The logistic regression model for 30-day mortality in the mycobacterial group achieved the best internal validation performance (AUC = 0.8715) and maintained strong external validation (AUC = 0.8851). Feature selection was conducted exclusively for this model, retaining 17 key predictors. The most influential predictors for mortality included heart rate, respiratory rate, age, Glasgow Coma Scale motor response, and systolic blood pressure within the first 24 hours after ICU admission. For 90-day mortality, the decision-tree model performed best (AUC = 0.8195). In the control group, LightGBM and SVM yielded the highest discrimination for 30- and 90-day mortality (AUC = 0.8012 and 0.8004, respectively).
Conclusions: Machine learning models accurately predicted short- and medium-term mortality among ICU patients with mycobacterial infections. Logistic regression with feature selection provided the most generalizable predictions, supporting early risk stratification and clinical decision-making.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OC07

高張鹽水吸入療法在非結核分枝桿菌肺病的應用：從臨床成效分析到細胞細菌實驗

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Hypertonic saline inhalation therapy in patients with nontuberculous mycobacterial lung disease: from clinical application to *in vitro* and bacterial studies

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Purpose: Hypertonic saline (HS) inhalation, an airway clearance therapy (ACT) for nontuberculous mycobacterial lung disease (NTM-LD), remains underused in East Asia. Its effects on symptom control in patients not receiving antibiotics, and its potential bacteriostatic and immunomodulatory properties, are unclear. This study evaluated the clinical impact of HS inhalation in patients with NTM-LD and investigated its immunologic effects *in vitro* and in bacterial models.

Materials and Methods: Between September 2024 and September 2024, NTM-LD patients without antibiotic initiation were enrolled. 3% HS inhalation (5 mL once daily) was given as routine care, and those not receiving HS were classified as controls. A six-item Visual Analog Scale (VAS; each scored 0–10 from none to severe, total 0–60) was used to assess overall symptom burden at baseline and after 3–6 months. *In vitro*, *M. abscessus* isolates were cultured in 7H9 broth with 0–6% NaCl for 24 hours and plated on 7H10 agar for colony-forming unit (CFU) quantification after 4 days. THP-1–derived macrophages pretreated with 3% HS for 30 min were infected by *M. abscessus* for 24 hours and lysed for CFU counting to assess HS-enhanced intracellular killing.

Results: 46 NTM-LD patients were included, with sputum production and cough as predominant symptoms (VAS 3 [IQR 2–5] and 2 [1–3.25]). No significant baseline differences were found between the HS (n=23) and control (n=23) groups in smear positivity (35% vs 17%), MAC infection (48% vs 57%), cavitary disease (22% vs 17%), radiographic scores (5 [IQR 3–8] vs 6 [3–7]), or total VAS (11 [7–14] vs 7 [4–12]) (all p>0.05). After 3 months, no notable changes were observed in smear grading or radiographic scores in either group, whereas a significant reduction in total VAS was observed in the HS group (from 11 [7–14] to 6 [3–7], p<0.001) but not in controls (from 7 [4–12] to 7 [4–12], p=0.270). A higher proportion of patients achieved a 3-month total VAS ≤7 in the HS group (83% vs 52%, p = 0.057). HS inhalation was significantly associated with a 3-month total VAS ≤7 (crude OR 4.35 [95% CI: 1.13–16.85], p=0.033) and was still independently associated after adjustment for baseline VAS score (adjusted OR 33.26 [3.24–341.45], p=0.003). *In vitro*, CFU counts of HS-treated *M. abscessus* were reduced by approximately 56% at 3% HS and 69% at 6% HS compared with the 0% control, in a dose-response manner. Pretreatment of THP-1–derived macrophages with 3% HS further decreased intracellular *M. abscessus* survival by about 62%.

Conclusions: In NTM-LD patients, 3% HS inhalation for 3–6 months was associated with symptom improvement. *In vitro*, 3% HS directly inhibited NTM growth and enhanced macrophage-mediated bacterial killing. Further confirmatory trials and immunologic mechanistic studies are warranted.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. ■口頭報告 (Oral Presentation) □海報競賽 (Post)

OC08

用於移植醫學研究的嚴重急性呼吸窘迫症候群動物模型的優質建立

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A high quality animal model of severe acute respiratory distress syndrome for translational research

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Purpose and Background: Despite the fact that an increasing number of studies have focused on developing therapies for acute lung injury, managing acute respiratory distress syndrome (ARDS) remains a challenge in intensive care medicine.
Whether the pathology of animal models with acute lung injury in prior studies differed from clinical symptoms of ARDS, resulting in questionable management for human ARDS. To evaluate precisely the therapeutic effect of transplanted stem cells or medications on acute lung injury, we developed an animal model of severe ARDS with lower lung function, capable of keeping the experimental animals survive with consistent reproducibility. Establishing this animal model could help develop the treatment of ARDS with higher efficiency.
Methods and Results: In this approach, we intratracheally delivered bleomycin (BLM, 5 mg/rat) into rats' left trachea via a needle connected with polyethylene tube, and simultaneously rotated the rats to the left side by 60 degrees. Within seven days after the injury, we found that arterial blood oxygen saturation (SpO2) significantly decreased to 83.7%, partial pressure of arterial oxygen (PaO2) markedly reduced to 65.3 mmHg, partial pressure of arterial carbon dioxide (PaCO2) amplified to 49.2 mmHg, and the respiratory rate increased over time. Morphologically, the surface of the left lung appeared uneven on Day 1, the alveoli of the left lung disappeared on Day 2, and the left lung shrank on Day 7. A histological examination revealed that considerable cell infiltration began on Day 1 and lasted until Day 7, with a larger area of cell infiltration. Serum levels of IL-5, IL-6, IFN-γ, MCP-1, MIP-2, G-CSF, and TNF-α substantially rose on Day 7.
Conclusions: This modified approach for BLM-induced lung injury provided a severe, stable, and one-sided (left-lobe) ARDS animal model with consistent reproducibility. The physiological symptoms observed in this severe ARDS animal model are entirely consistent with the characteristics of clinical ARDS. The establishment of this ARDS animal model could help develop treatment for ARDS.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC01

廣泛抗藥性糞產鹼桿菌肺炎

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Extensive drug resistant Alcaligenes faecalis

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Purpose: *Alcaligenes faecalis* is a Gram-negative, nonfermenting bacterium and a potential emerging pathogen in humans. *Alcaligenes faecalis* infection is often challenging to treat due to increase resistance to many antibiotics. We here report a cases series of *Alcaligenes faecalis* pneumonia and aim to help improve the clinical care of patients with *Alcaligenes faecalis* pneumonia**.**

Materials and Methods: We conducted a retrospective analysis of all patients with *Alcaligenes faecalis* pneumonia seen from January 2014 and December 2019. We analyzed the risk factors for pneumonia, prior intravenous antibiotic used within three months, respiratory secretion culture, antibiotics sensitivity test, and the clinical outcome of *Alcaligenes faecalis* pneumonia patients.

Results: Eight cases of *Alcaligenes faecalis* pneumonia were seen, six males and two females. The mean age was 70.0 years. All eight patients were at risk factors for pneumonia. Two patients died of *Alcaligenes faecalis* pneumonia and six patients were discharged. Two cases of extensively drug-resistant *Alcaligenes faecalis* pneumonia were found.

Conclusions*: Alcaligenes faecalis* pneumonia is rarely reported in the literature. Extensively drug-resistant *Alcaligenes faecalis* has emerged recently. Either polymyxin B or tigecycline is needed to treat extensive-drug resistant *Alcaligenes faecalis* pneumonia. When *Alcaligenes faecalis* pneumonia patients receive adequate susceptible antibiotic therapy, the clinical outcome is usually good, but fatal pneumonia cases reported in the literature.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC02

應用機器學習預測 COVID-19 住院病人之預後

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Machine Learning for Prognosis Prediction in Hospitalized Patients with COVID-19

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Purpose: Coronavirus disease 2019 (COVID-19) emerged as a global pandemic in 2019 and has since gradually subsided. However, the prognosis of hospitalized vulnerable populations remains a significant concern. With advancements in artificial intelligence and machine learning, their applications in clinical practice have become increasingly widespread.

Materials and Methods: This retrospective study collected data from hospitalized COVID-19 patients from May 2022 to April 2023, including information on age, gender, Charlson Comorbidity Index (CCI), quick Sequential Organ Failure Assessment score (qSOFA), vaccination status, laboratory data, and mortality in 30 days. Machine learning algorithms including decision trees, random forest, XGBoost, support vector machine and logistic regression, were employed to develop predictive models by Python. The performance of each model was evaluated based on metrics such as the area under the receiver operating characteristic curve (AUC) and average precision (AP). The SHapley Additive exPlanations (SHAP) value was applied to identify important predictive factors.

Results: Among the 548 hospitalized patients diagnosed with COVID-19, there were 451 survivors and 97 mortalities. In terms of performance metrics, the support vector machine model achieved the highest AUC (0.916), while the random forest model demonstrated the highest AP (0.741). Among all predictive models, the qSOFA consistently exhibited the greatest SHAP value, indicating that it was the most influential predictor. Additionally, CCI, age, vaccine doses, absolute neutrophil count, and hemoglobin also played significant roles in outcome prediction.

Conclusions: Machine learning models not only facilitate the prediction of COVID-19 prognosis but also offer novel perspectives beyond traditional statistical approaches in evaluating predictive indicators.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC03

SGLT2 抑制劑對糖尿病患者非結核分枝桿菌感染發生率的影響

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The impact of sodium-glucose cotransporter 2 inhibitors on the incidence of non-tuberculous mycobacteria infection in diabetes populations

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Purpose: Sodium glucose co-transporter 2 inhibitors (SGLT2i) not only control blood sugar but also exhibit cardiovascular and renal protection via inflammation modulation. But there is scarce information about the impact of SGLT2i on infections, especially non-tuberculous mycobacteria (NTM) infection.

Methods: This retrospective study screened the Taiwan National Health Insurance Research Database from 2016 to 2021, and enrolled subjects aged more than 20 years with initial diagnoses of type 2 diabetes mellitus (T2DM) in 2017 to 2021. The subjects were categorized into two groups based on whether SGLT2i were used (SGLT2i and non-SGLT2i users).

Results: A total of 853720 subjects were enrolled. Of these, 91181 individuals were identified as the SGLT2i users, while the remaining 762539 were classified as the non-SGLT2i users. The prevalence of NTM infection was lower in the SGLT2i users than in the non-SGLT2i (0.05% v. 0.14%, $p < 0.001$). Multivariable analysis of risk factors for NTM infection showed that SGLT2i were a protective factor (adjusted hazard ratio: 0.44, $p < 0.001$), whereas male, age of 35 years or more, cancer and chronic airway diseases were risk factors for NTM infection. Diabetes complication tended to be a risk factor for NTM infection only when the diabetes complications severity index (DCSI) was 3 or more ($p = 0.050$).

Conclusions: SGLT2i use was less associated with NTM infection than was non-SGLT2i use. In addition, adequate management of co-morbidities and good glycemic control to avoid complications were also associated with reduced risk of NTM infection.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC05

存在數個月的泌尿道症狀與反覆的膿尿症：病例報告

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A patient with urinary symptoms for several months and refractory pyuria

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Introduction: Urinary tract infection (UTI) is a common condition, usually responsive to antibiotics. When UTIs fail to improve, clinicians should consider structural abnormalities (such as urolithiasis, prostatic hyperplasia, or tumor), or unusual pathogens, including *Mycobacterium tuberculosis* (TB). Because acid-fast staining and TB cultures are not routine in UTI evaluation, urogenital TB may be overlooked, particularly in patients with active pulmonary TB or risk factors for TB infection.

Case Presentation: A male patient in his fifties presented to the urology outpatient clinic at the Yun-Lin Branch of National Taiwan University Hospital with urinary frequency and urgency for three months, and dysuria for two days. Urinalysis showed pyuria (WBC >100/HPF, RBC 6-9/HPF) and microscopic hematuria. UTI was diagnosed, and oral first-generation cephalosporin was prescribed for two weeks. Despite therapy, the patient developed low-grade fever, dyspnea, and refractory dysuria. He presented to the emergency department with BP 98/65 mmHg, HR 122 bpm, RR 20/min, and SpO_2 96% on room air. Repeat urinalysis again revealed pyuria and hematuria (WBC >100/HPF, RBC >100/HPF). Chest radiography showed right upper lobe consolidation and suspicious diffuse miliary nodules. The patient was admitted to hospital for further treatment.

CT confirmed bilateral pulmonary miliary lesions, and bladder wall thickening without stones in urinary tract. Sputum and urine acid-fast smears were positive (3+ and 4+, respectively), and TB PCR confirmed disseminated TB with urogenital involvement. Anti-TB therapy was initiated. However, the patient's course was complicated by bacterial pneumonia, respiratory failure, and acute renal failure, leading to death from severe pneumonia and sepsis.

Conclusions: Urogenital TB is the third most common form of extrapulmonary TB, following lymph node and pleural involvement. Hematogenous spread to the urinary tract occurs in up to 25–62% of patients with miliary TB. Clinical manifestations are nonspecific; sterile pyuria and hematuria may be early findings, while bladder involvement can cause frequency, urgency, nocturia, and dysuria. Diagnosis relies on acid-fast staining, TB PCR, and imaging, with early endoscopy and CT aiding assessment. If UTI is refractory to common treatment, urogenital TB should be considered and surveyed.

Reference: Figueiredo AA, Lucon AM, Srougi M. Urogenital Tuberculosis. Microbiol Spectr 2017; 5.Guo C, Zhang Y, Guo J, et al. Analysis of the clinical characteristics of 765 renal tuberculosis patients: based on 10 years of experience in four provincial teaching hospitals. Int Urol Nephrol 2025; 57:407.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC06

Boerhaave Syndrome 併發膿胸與縱膈炎：病例報告

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Boerhaave Syndrome Complicated by Empyema and Mediastinitis：A Case Report

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Abstract:
Boerhaave syndrome is a rare, life-threatening esophageal rupture with high morbidity and mortality. We report a 58-year-old man with comorbidities who developed rupture complicated by right empyema, mediastinitis, and Klebsiella pneumoniae sepsis. He required VATS decortication, esophagostomy with T-tube, and reoperation. With intensive multidisciplinary care, he stabilized and was discharged. This case underscores the importance of early recognition and surgical intervention.

Case Presentation:
A 58-year-old man with diabetes, CKD, hypertension, and alcohol use presented with vomiting, chest/abdominal pain, dyspnea, and fever. Labs revealed leukopenia with bandemia, azotemia, and lactic acidosis. Chest imaging showed right pneumonia with effusion; cultures grew Klebsiella pneumoniae. Despite antibiotics and thoracentesis, empyema persisted. Repeat CT confirmed esophageal perforation with empyema and mediastinitis. He underwent VATS decortication, esophagostomy with T-tube, gastrostomy, and jejunostomy, followed by biportal VATS. With infection control and nutritional support, his condition improved and he was discharged.

Discussion:
Boerhaave syndrome accounts for ~15% of esophageal perforations. It is commonly triggered by forceful emesis, with alcohol use as a risk factor. The classic Mackler's triad is rarely seen; nonspecific signs such as fever or effusion often delay diagnosis. In this case, empyema masked the rupture until repeat CT. Literature shows early recognition allows less invasive management, while delayed diagnosis requires extensive surgery with mortality up to 75%. VATS is effective for empyema and mediastinitis with reduced morbidity. This case highlights the need for suspicion in unexplained empyema or sepsis and the benefit of timely multidisciplinary intervention.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC07

會厭炎併呼吸衰竭：病例報告

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Epiglottitis complicated with acute respiratory failure：A Case Report

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Abstract:
A 48-year-old male with diabetes mellitus presented with pharyngodynia, productive cough, and progressive dyspnea. Acute epiglottitis was diagnosed by image study. The patient underwent endotracheal intubation for airway protection. Empiric broad-spectrum antimicrobial therapy and systemic corticosteroids were initiated. Following clinical improvement, he was successfully extubated. This case highlights the critical importance of prompt recognition, early airway intervention, and timely initiation of therapy in the management of epiglottitis.

Case Presentation:
A 48-year-old male with diabetes mellitus presented with a 2-day history of pharyngodynia, productive cough, and progressive dyspnea. Chest radiography demonstrated a steeple sign. Due to acute upper airway obstruction, the patient underwent emergent endotracheal intubation. Subsequent contrast-enhanced CT of the head and neck demonstrated marked soft tissue edema of the oropharynx, confirming the diagnosis of acute epiglottitis. Empiric broad-spectrum antimicrobial therapy was initiated. Adjunctive therapy included nebulized epinephrine, intravenous methylprednisolone, NSAIDs, and supportive measures. Following clinical improvement, the patient successfully completed a spontaneous breathing trial, was extubated, and transferred to the general medical ward in stable condition.

Discussion:
Respiratory failure in epiglottitis results from upper airway obstruction due to inflammatory edema. Beyond clinical evaluation and laboratory investigations, imaging modalities are pivotal for confirming the diagnosis. Once identified, immediate initiation of empiric antimicrobial therapy and systemic corticosteroids is indicated to mitigate infection and reduce airway inflammation. Otorhinolaryngology consultation is essential to evaluate for potential complications, including peritonsillar or parapharyngeal abscess, and to determine the need for surgical drainage.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC08

Benralizumab 成功治療高齡衰弱合併過敏性支氣管性肺部麴菌症及難治性黏液栓塞：病例報告

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Successful Use of Benralizumab in a Frail Elderly Patient with Allergic Bronchopulmonary Aspergillosis and Refractory Mucus Plugging: A Case Report

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Introduction: Allergic bronchopulmonary aspergillosis (ABPA) is an immunologically mediated pulmonary disorder resulting from hypersensitivity to Aspergillus species, often complicating asthma and leading to severe mucus plugging and progressive lung damage. Standard therapy with systemic corticosteroids poses significant risks, particularly in frail, elderly patients with multiple comorbidities. We report a case with ABPA whose refractory mucus plugging resolved rapidly following treatment with benralizumab, an anti-interleukin-5 receptor alpha monoclonal antibody

Case Presentation: A 72-year-old frail woman with a history of asthma, cachexia, early gastric cancer status post resection, was hospitalized for worsening dyspnea, cough with thick sputum. Laboratory investigations revealed marked eosinophilia (absolute count 2025/μL) and a total IgE level greater than 5000 IU/mL. A chest X-ray revealed a patchy opacity with atelectasis in the right lower lobe (RLL). Sputum cultures were positive for *Aspergillus* spp., and *Aspergillus fumigatus*-specific IgG was elevated at 200 mgA/L. A bronchoscopy confirmed the presence of highly tenacious mucus plugs in both lower lobes, which were resistant to mechanical removal. The patient was started on subcutaneous benralizumab (30 mg), intravenous voriconazole, levofloxacin, and methylprednisolone. Within 24 hours of benralizumab administration, she spontaneously expectorated the mucus plug, with subsequent radiographic and symptomatic resolution of the atelectasis. Systemic corticosteroids were successfully discontinued within 10 days. Over a three-month follow-up period, her eosinophil count remained at zero. She experienced no recurrence of mucus plugging, and her clinical condition remained stable.

Discussion: This case underscores the pivotal role of eosinophils in refractory mucus plugging in ABPA. Rapid eosinophil depletion with benralizumab appeared to alter mucus properties, enabling clearance when mechanical removal had failed. Importantly, the ability to discontinue systemic corticosteroids in a frail, multimorbid patient highlights a major therapeutic advantage, reducing risks of infection, osteoporosis, and metabolic complications. These findings add to the growing evidence supporting biologics as a valuable option in complex ABPA management.

Conclusion: Benralizumab can be a safe and highly effective treatment for ABPA complicated by refractory mucus plugging. In frail elderly patients, this therapy may lead to rapid clinical improvement and facilitate the early discontinuation of systemic corticosteroids, thereby minimizing treatment-related risks.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC09

竹東次醫療區住宿是照護機構的潛伏結核篩檢經驗

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Latent Tuberculosis Screening Experience in Residential Care Institutions within the Zhudong Secondary Healthcare Region

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Purpose:
Latent tuberculosis infection (LTBI) screening is crucial in residential care facilities due to the high risk of disease reactivation among vulnerable populations. This study aimed to describe the implementation and outcomes of LTBI screening across various institutional settings in the Zhudong secondary medical district, including hospital-based wards and community-based residential care facilities.

Materials and Methods:
In 2025, a cross-sectional comprehensive LTBI screening program using interferon-gamma release assays (IGRAs) was conducted among residents and staff in seven residential care settings: a nursing home, a psychiatric nursing home, a psychiatric chronic ward, and four community-based institutions (A–D). Screening results, positivity rates, initiation of preventive therapy, and treatment-related adverse events were analyzed.

Results:
A total of 462 individuals underwent LTBI screening, including 194 residents and 74 staff from hospital-based settings, and 137 residents and 57 staff from community facilities.

- The overall LTBI positivity rates were 5.9% among nursing home residents, 8.3% in psychiatric nursing home residents, 9.1% in psychiatric ward residents, and ranged from 2.3% to 20.0% among community institutions.
- Across all sites, 36 individuals tested positive, and 28 initiated preventive treatment.
- 15 participants (53.6%) experienced adverse drug reactions, predominantly flu-like symptoms. No participants discontinued therapy due to adverse events.

Conclusions:
LTBI screening in residential care facilities within the Zhudong secondary medical district revealed a moderate positivity rate and high treatment uptake, particularly among psychiatric and community-based institutions. Although adverse events were relatively common, all were manageable, and no discontinuations occurred. These findings support the feasibility and effectiveness of LTBI screening and treatment programs in high-risk institutional settings.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC10

目標次世代定序運用於加護病房肺炎病人辨識呼吸道病原體之角色：一項初步研究

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The role of targeted next generation sequencing(tNGS) for the identification of respiratory pathogens in patients with pneumonia in the intensive care unit (ICU): a pilot study

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Purpose: Targeted next-generation sequencing (tNGS) enables comprehensive genetic pathogen identification. However, its diagnostic value in intensive care unit (ICU) patients with pneumonia remains undefined. This study aimed to compare the clinical utility of tNGS and conventional microbiological testing (CMT) for pathogen detection in ICU patients with pneumonia.

Materials and Methods: A prospective pilot study was conducted among adult ICU patients with pneumonia who required invasive mechanical ventilation at a referral hospital in Taiwan from November 2023 to October 2024. Respiratory samples were obtained from the lower respiratory tract via bronchoalveolar lavage. The performance of tNGS using the Respiratory Pathogen ID/AMR Enrichment Panel (RPIP) was compared with CMT and the multiplex PCR-based FilmArray Pneumonia Panel (FilmArray-PN, FAPP).

Results: Thirty patients were enrolled in this study. The overall detection rates were 90% (n=27/30) with RPIP alone, and 86.7% (n=26/30) with FAPP combined with CMT. After expert evaluation, the positive rates were 56.6% (n=17/30) with RPIP alone, 63.3% (n=19/30) with FAPP combined with CMT. With the combination of RPIP, FAPP, and CMT, the positive rate was 66.7% (n=20/30) of patients after expert evaluation. When compared with pathogens detected by FAPP and CMT, 30% (n=9/30) of patients had additional pathogens identified by RPIP, 17% (n=5/30) had fewer pathogens detected, and 20% (n=6/30) had identical pathogen profiles across methods. Among all participants, 26.7% (n=8/30) had a clinical diagnostic impact from RPIP results. There were 33% (n=10/30) of patients had no detectable pathogens by any methods after expert evaluation.

Conclusions: This study demonstrates the feasibility of tNGS in ICU patients with pneumonia. Given its high detection rate, expert interpretation is essential to distinguish relevant pathogens from colonization or contamination. The RPIP, which identifies a broader range of pathogens than CMT and FAPP, offers physicians a reliable diagnostic tool for precise pathogen identification.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC11

Cefoperazone/sulbactam 不同製劑於肺炎與菌血症治療之臨床成效：單一醫學中心回溯性研究

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Do All Cefoperazone–Sulbactam Products Perform Equally? A Retrospective Single-Center Study on Pneumonia and Bacteremia Treatment Outcomes

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Background: Cefoperazone/sulbactam (CPZ/SUL) is widely prescribed for pneumonia and bloodstream infections, but differences in clinical performance between branded and generic formulations remain unclear.

Methods: We conducted a retrospective single-center study at Tri-Service General Hospital, Taiwan, between June 2021 and May 2023. Adult patients with gram-negative pneumonia or bacteremia treated with CPZ/SUL for ≥72 h were included. Three CPZ/SUL formulations were compared: branded (drug A) and two generics (drugs B and C). Patients receiving anticoagulants, vitamin K1, or with pre-existing coagulopathy were excluded. Clinical and microbiological outcomes and adverse drug reactions were analyzed.

Results: A total of 402 patients were included (drug A: 218; drug B: 111; drug C: 73), with pneumonia (69.7%) or bacteremia (30.3%). Pathogens most frequently isolated were *Acinetobacter baumannii* (17%), *Klebsiella pneumoniae* (15%), and *Stenotrophomonas maltophilia* (13%). Microbiological eradication was significantly higher with drug A at day 4 (56.4%), day 7 (66.5%), and end-of-treatment (72.5%) compared with drugs B and C ($p<0.001$). Clinical improvement was also superior with drug A on day 4 (95.9% vs. 87.4% and 87.7%; $p=0.008$) and day 7 (92.2% vs. 79.3% and 84.9%; $p=0.003$), though end-of-treatment outcomes were similar ($p=0.291$). Coagulopathy occurred more often with drug B (35.7%) than with drug A (14.0%) or drug C (19.4%) ($p=0.017$). Thirty-day mortality did not significantly differ among groups ($p=0.802$), although Kaplan–Meier analysis showed poorer survival in drug B recipients ($p=0.003$).

Conclusions: Among the three CPZ/SUL formulations studied, the branded product (drug A) achieved higher microbiological eradication and better early clinical improvement. In contrast, drug B was associated with a higher risk of coagulopathy and poorer survival trends. Careful selection of CPZ/SUL formulations is essential to optimize outcomes and minimize safety concerns.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC12

產氣性膿胸在 A 型流感與 COVID-19 合併感染後的罕見病例

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An Unusual cause of Emphysematous Empyema: *Peptostreptococcus micros* Following Influenza A and COVID-19 Coinfection

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Introduction: Pleural infection remains a serious complication of pneumonia, with mortality approaching 20% despite advances in antimicrobial therapy and surgical management. Anaerobic organisms, although less commonly reported, are increasingly recognized as significant pathogens in community-acquired empyema, particularly in elderly or debilitated patients. We describe a case of empyema thoracis caused by Peptostreptococcus micros in a patient with preceding Influenza A and SARS-CoV-2 infection, managed successfully with prompt chest drainage, video-assisted thoracoscopic surgery (VATS) with decortication, and tailored antimicrobial therapy.

Case Presentation: A 77-year-old woman presented with fever and progressive dyspnea 2 weeks after COVID-19 and a new Influenza A infection. She required high-flow nasal cannula for hypoxemia. Chest radiography revealed a large right pleural effusion, and thoracentesis yielded frank pus. Despite empiric piperacillin–tazobactam and linezolid, she developed respiratory failure. Computed tomography demonstrated hydropneumothorax with a lenticular shape of fluid collection and pleural thickening.

Urgent video-assisted thoracoscopic surgery with decortication revealed extensive pleural rind and purulent fluid. Pleural cultures grew *Peptostreptococcus micros*, an anaerobic Gram-positive coccus, while blood cultures were negative. By hospital day 13, the patient was ambulating with assistance and her chest radiograph showed satisfactory lung re-expansion with minimal residual space. She was discharged on oral amoxicillin-clavulanate for 14 days. At outpatient follow-up, she remained clinically stable.

Discussion: Post-viral bacterial infections are well described following Influenza and, more recently, SARS-CoV-2. The most common pathogens include Streptococcus pneumoniae, Staphylococcus aureus (often MRSA), and Haemophilus influenzae. These organisms account for the majority of secondary pneumonia and empyema cases. In contrast, anaerobes are less frequently identified but may be underrecognized due to culture challenges.

Peptostreptococcus micros is an uncommon cause of pleural infection, more often associated with dental, oropharyngeal, and aspiration-related disease. In large epidemiologic series, anaerobes account for up to one-third of community-acquired empyema, but *P. micros* specifically represents only a small fraction of isolates. Its identification in this patient underscores the importance of obtaining anaerobic cultures in pleural infection, especially in elderly patients with post-viral airway disruption and possible aspiration risk.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC13

Imipenem 誘導的細菌囊泡釋放：改變院內病原競爭生態的新機制

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Imipenem-induced outer membrane vesicles from *Elizabethkingia anopheles* inhibit biofilm formation and shift nosocomial pathogen dynamics

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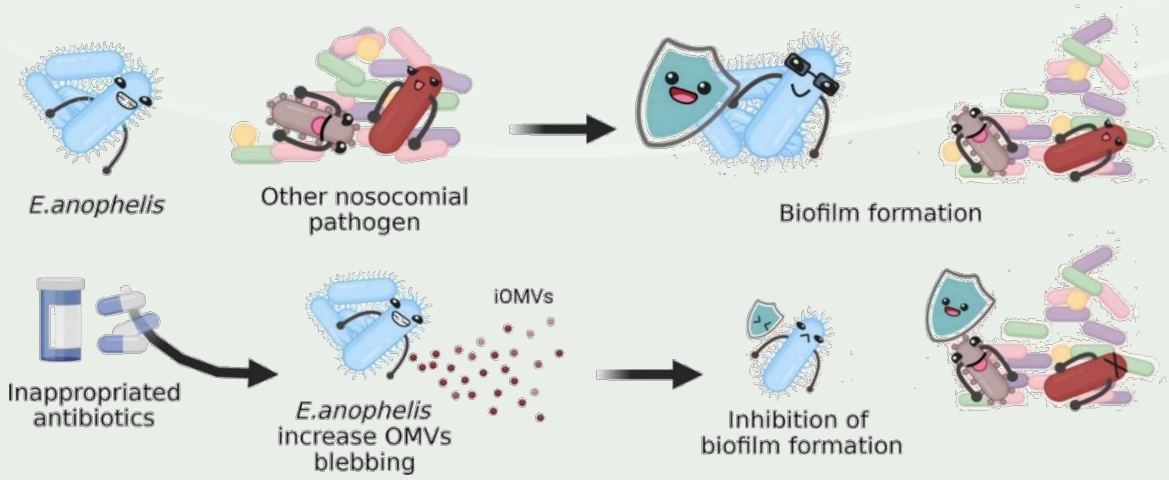
Abstract:

Elizabethkingia anophelis is an emerging multidrug-resistant Gram-negative pathogen that can cause severe nosocomial infections. Although multidrug resistance complicates the clinical management of *E. anophelis*, the ecological impact of stress responses, including antibiotic pressure, is unclear. We demonstrated that exposure to sub-inhibitory concentrations of imipenem promoted the secretion of antibiotic-induced outer membrane vesicles (iOMVs) by *E. anophelis*. This study analyzed the physical and functional characteristics of iOMVs produced by a drug-resistant clinical isolate of E. anophelis treated with imipenem and assessed the potential of *E. Anophelis* iOMVs to modulate biofilm formation in other clinically relevant Gram-negative bacteria. High-resolution imaging and biofilm assays showed that iOMVs inhibited biofilm formation and reduced biofilm density. The inhibitory effect did not affect other nosocomial pathogens such as *Pseudomonas aeruginosa*, *Enterobacter cloacae*, or *Klebsiella pneumoniae*. Imipenem-induced vesiculation may inadvertently impair *E. anophelis*' biofilm resilience while altering microbial competition, reshaping survival dynamics in polymicrobial environments. These results demonstrate the paradoxical effect of antibiotic stress and suggest that vesicle-mediated interactions strongly affect nosocomial pathogen ecology.



A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC14

以高流量鼻導管系統輸送霧化 Colistin Methanesulfonate 之可行性與體外評估

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Feasibility and *In-Vitro* Evaluation of Inline Nebulized Colistin Methanesulfonate Delivery through High-Flow Nasal Cannula

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Purpose: Nebulized colistin methanesulfonate (CMS) is a key adjunct therapy for pneumonia caused by multidrug-resistant Gram-negative bacteria, achieving high pulmonary exposure while reducing systemic toxicity. However, the efficiency of CMS delivery via high-flow nasal cannula (HFNC) remains unclear due to flow- and humidity-dependent aerosol losses. This study evaluated the feasibility of delivering a 160 mg CMS dose through an HFNC system and examined the physicochemical properties of the CMS solution, as well as the effect of flow rate and breathing pattern on aerosol performance.

Materials and Methods: CMS solutions (26.7-160 mg/mL) were prepared using injectable water or saline as diluents. Aerosolization was performed with a vibrating mesh nebulizer (VMN, Aerogen Solo) integrated into an HFNC system (Airvo2, Fisher & Paykel). An *in vitro* nasal airway model with quiet and distressed breathing profiles was used to assess aerosol delivery efficiency across HFNC flow rates from 10 to 60 L/min. Inhaled drug mass, residual drug, and fugitive emissions were quantified by high-performance liquid chromatography.

Results: Physicochemical characterization identified saline as the optimal diluent, enabling CMS concentrations of 26.7-53.3 mg/mL for nebulizing a total dose of 160 mg. Based on these optimized formulations, *in vitro* aerosol testing revealed a strong dependence of delivery efficiency on flow rate and breathing pattern. Inhaled dose declined with increasing flow rate (87.4 ± 14.3 mg at 10 L/min vs. 8.5 ± 2.0 mg at 60 L/min, $p < 0.01$). Under distressed breathing, higher inhaled doses were achieved but showed a similar decreasing trend (107.4 ± 8.8 mg at 10 L/min vs. 3.7 ± 0.4 mg at 60 L/min, $p < 0.01$). Decreasing CMS solution concentration significantly improved lung deposition (36.0 ± 2.0 mg with 53.3 mg/mL vs. 71.1 ± 3.1 mg with 26.7 mg/mL at 10 L/min, $p < 0.05$). Fugitive emissions peaked at 10-20 L/min, particularly during quiet breathing.

Conclusions: Delivery of 160 mg CMS via HFNC using a VMN is feasible but was highly affected by HFNC flow rate, breathing pattern, and CMS solution concentration. Lower flows and solution concentration markedly enhance lung deposition, while higher flows substantially reduce aerosol delivery. These findings support optimized dosing strategies for inline nebulized CMS and demonstrate the need to manage fugitive emissions in clinical settings.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC15

隱形的殺手：年輕患者因先天性抗凝血酶 III 缺乏導致大範圍肺栓塞與院外心跳停止

天生易栓：因遺傳性抗凝血酶缺乏導致院外心跳停止

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A Silent Inheritance Unveiled: Massive Pulmonary Embolism Leading to Out-of-Hospital Cardiac Arrest in a Young Patient with Antithrombin III Deficiency

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Case Presentation: A 61-year-old man with a known history of hereditary antithrombin III (AT-III) deficiency was brought to the emergency department after a sudden collapse of unknown duration. On arrival, his initial rhythm was ventricular fibrillation (VF). Cardiopulmonary resuscitation (CPR) was initiated, and return of spontaneous circulation (ROSC) was achieved after 29 minutes. Due to persistent hemodynamic instability, the cardiovascular surgery team was consulted for consideration of venoarterial extracorporeal membrane oxygenation (V-A ECMO). A whole-body computed tomography (CT) scan revealed massive bilateral pulmonary embolism (PE), which was subsequently confirmed by cardiac catheterization. Thrombolytic therapy with urokinase was administered; however, the patient remained in profound cardiogenic shock requiring four concurrent inotropic agents. Despite maximal medical support, his condition continued to deteriorate. After discussion with the family, life-sustaining treatment was withdrawn, and the patient passed away two days later.

Discussion: Hereditary AT-III deficiency is a rare disorder, with an estimated prevalence of approximately 0.02%–0.2% in the general population. It may be inherited in an autosomal dominant pattern or acquired secondary to various conditions. AT-III deficiency significantly increases the risk of venous thromboembolism (VTE), including deep vein thrombosis and pulmonary embolism, particularly in the presence of additional precipitating factors.

Conclusions: Massive pulmonary embolism remains a potentially fatal emergency. Early recognition and prompt initiation of reperfusion therapy are crucial for improving patient outcomes. This case highlights the catastrophic consequences of unrecognized hereditary thrombophilia and underscores the importance of considering underlying coagulation disorders in patients presenting with unexplained thromboembolic events.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC16

肺類鼻疽膿瘍像肺癌表現：類鼻疽伯克氏菌菌血症併發敗血症

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Pulmonary Melioidosis Abscess Presenting as Lung Cancer: *Burkholderia Pseudomallei* Bacteremia with Sepsis

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Purpose: Pulmonary melioidosis, caused by *Burkholderia pseudomallei*, is an uncommon but potentially life-threatening infection that can clinically and radiologically mimic lung cancer. Early recognition is essential, as delayed diagnosis may result in sepsis and high mortality. We present a rare case of an 86-year-old previously healthy woman who developed a large right upper lobe abscess mimicking lung cancer.

Case report: An 86-year-old woman, a retired physical education teacher, had been generally healthy except for degenerative knee arthritis. She lived with her husband in a three-story house, with no history of flooding or gardening exposure. She developed a productive cough for several days, followed by a sudden onset of shaking chills and fever for one day, prompting her visit to the emergency department.

On arrival, she appeared drowsy (GCS: E2V3M5) and febrile (38.6°C) with tachycardia (130/min), tachypnea (22/min), and hypoxia (SpO_2 93%) under a non-rebreathing mask. Chest X-ray (Figure 1) and chest CT (Figure 2) revealed a large mass-like lesion measuring approximately 9.6 cm in the right upper lobe with a Golden S-sign, raising strong suspicion for lung malignancy.

She was intubated and placed on mechanical ventilation, then admitted to the intensive care unit for sepsis with acute respiratory failure. Due to worsening ventilation and oxygenation (pH 7.012, pCO_2 100 mmHg, pO_2 72 mmHg, HCO_3^- 23 mmol/L), veno-venous ECMO was initiated after shared decision-making with her family. Bronchoscopic examination with right upper lobe biopsy and blood cultures both yielded *Burkholderia pseudomallei*. No malignant cells were identified on biopsy or bronchial washing cytology. Despite aggressive antibiotic therapy with ceftazidime, meropenem, and trimethoprim-sulfamethoxazole, the patient unfortunately expired on hospital day 28.

Conclusion: Pulmonary melioidosis can closely mimic lung cancer and rapidly progress to sepsis. Clinician awareness is essential—even in patients without known exposure risk factors—to ensure timely diagnosis and life-saving management.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC17

重症照護之機械通氣與失智症：世代追蹤研究

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Mechanical Ventilation in Critical Care Associated with Dementia: A Retrospective Cohort Study

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Purpose: Recent cohort studies demonstrated that long-term mechanical ventilation was also associated with the increasing risk of development of dementia. In this study, we intended to analysis the brain-lung interactions using nationwide databases to investigate the related factors between mechanical ventilation used and dementia.

Materials and Methods: We conducted this retrospective cohort study using outpatient and inpatient of Longitudinal Health Insurance Database in 2000 - 2005 in Taiwan with follow-up until 2015. Patients with mechanical ventilators used were included. Exclusion criteria included ventilator used before 2000, dementia before screening and age < 40 years. We conducted another 4-fold propensity score matching by sex, age and inclusion year for comparison cohort as for patients without ventilator used ever. All patients were tracked over time to monitor the time-to-event for the primary outcome: the new onset of dementia. Subgroup analysis was also conducted.

Results: There is a significant overall increase in the risk of dementia in the mechanical ventilation group compared to the non- mechanical ventilation group (*aHR=1.328, P=0.002*). Secondly, this increased risk demonstrates a duration-dependent effect, being highly pronounced in patients receiving mechanical ventilation for four days or longer (*aHR=1.769, P<0.001)*, while shorter ventilation periods showed no significant association. In subgroup analysis with dementia subtypes, the association was found to be strongest for vascular dementia (*aHR=1.403, P<0.001*).

Conclusions: Our retrospective cohort study's data analysis established a significant association between mechanical ventilation and an increased risk of developing dementia. Minimizing the duration of mechanical ventilation in critically ill patients, particularly those with existing vascular risk factors, is a critical component of a long-term neuroprotective strategy.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC18

使用支氣管鏡導引經支氣管冷凍肺切片於急性呼吸窘迫症候群病患

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Bronchoscopy-Guided Transbronchial Lung Cryobiopsy for Patients with Acute Respiratory Distress Syndrome

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Purpose: Bronchoscopy-guided transbronchial lung cryobiopsy (TBLC) is a viable diagnostic procedure for patients with acute respiratory distress syndrome (ARDS). This study aims to evaluate the clinical utility and associated complications of TBLC in this patient population.

Materials and Methods: This single-center retrospective study included all patients diagnosed with ARDS who underwent TBLC between January 2017 and December 2024. Patients' demographic data, laboratory results, pathologic reports, ventilator settings, and clinical outcomes were collected from the electronic medical record.

Results: A total of 55 patients underwent TBLC during the study period. Specific diagnoses were established in 56.4% of cases, including diffuse alveolar damage (n=11), pulmonary fibrosis (n=9), organizing pneumonia (n=5), Pneumocystis jirovecii pneumonia (n=3), pulmonary hemorrhage (n=1), herpes virus infection (n=1), and usual interstitial pneumonia (n=1). Non-specific findings included inflammation (n=21), atypia (n=2), and no diagnosis (n=1). The most common complication was pneumothorax, occurring in 36.4% of patients, followed by bleeding in 9.1%. Comparing the ventilator settings and arterial blood gas before and 1 day after the procedure, no significant change in the PaO_2/FiO_2 ratio (189.8±75.9 vs. 188.8±91.4 mmHg, p = 0.929), $PaCO_2$ (42.1±8.5 vs. 50.3±18.9 mmHg, p = 0.155), tidal volume/predicted body weight (8.8±2.7 vs. 8.0±1.6 mL/kg, p = 0.309), lung compliance (31.0±13.9 vs. 30.4±16.0 ml/cmH_2O, p = 0.248), or ventilatory ratio (2.2±0.7 vs. 2.2±1.0, p = 0.795) was noted.

Conclusions: Bronchoscopy-guided TBLC demonstrated clinical benefits with an acceptable complication rate. However, improving the specific diagnosis rate remains a critical challenge.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC19

抗丙型干擾素抗體相關成人免疫缺乏症候群：病例報告及文獻回顧

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Anti-interferon Gamma Antibody-Associated Adult Onset Immunodeficiency: A Case Report and Literature Review

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Introduction: Anti-interferon Gamma Antibody(AIGA)-Associated Adult Onset Immunodeficiency is very rare disease. Interferon gamma (IFNγ). Herein, we report a rare case of anti-interferon gamma antibody-associated adult-onset immunodeficiency with disseminated non-tuberculous mycobacterial (NTM) infection.

Case Description: A 49-year-old Taiwanese man was diagnosed with disseminated non-tuberculous mycobacterial infection in 2022 and received anti-NTM treatment. In March 2024, he presented with right-sided chest pain, cough producing yellow sputum, and shortness of breath lasting 2 days. A chest CT revealed rapid progression with pneumonia and empyema formation. He received Video-Assisted Thoracic Surgery (VATS) decortication and antibiotic treatment. Following surgery, the patient developed septic shock. Bilateral pleural effusion cultures revealed Candida albicans. Antifungal therapy with fluconazole was prescribed for invasive candidiasis. The patient was successfully extubated and discharged after completing treatment. An anti-interferon gamma antibody test was performed to make diagnosis of AIGA-associated adult onset immunodeficiency.

Discussion: AIGA-associated adult onset immunodeficiency is predominantly documented in Southeast Asia. Most patients were from Southeast Asia, including 33.7% from mainland China, 20.3% from Thailand, 15.5% from Taiwan area, and 13.4% from Japan. IFN-γ is a pro-inflammatory cytokine secreted by T cells and NK cells. It has been shown to play important roles in both innate and adaptive immunity. The predominant phenotype associated with AIGAs is disseminated NTM infection, with or without other opportunistic infections, caused by intracellular microorganisms in particular. The diagnosis of AIGA disease requires (1) the detection of AIGAs and (2) an assessment of the neutralizing activity of these AIGAs. AIGAs can be detected and monitored by enzyme-linked immunosorbent assay (ELISA), particle-based assay, flow cytometry analysis, or western blotting. Many patients with AIGAs face frequent disease recurrence, it may be beneficial to consider not only antibiotics but also immunosuppressive therapy (such as Rituximab or Cyclophosphamide) and possibly IFNγ supplementation.

Conclusions: Anti-interferon gamma antibody-associated adult-onset immunodeficiency should be considered in cases of chronic or recurrent mycobacterial infections often disseminated infections in severe cases. Immunosuppressive therapy and possibly IFNγ supplementation is treatment choices.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC20

亞洲大型創傷中心: 肋骨骨折固定手術與保守治療臨床結果分析

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Clinical outcomes of rib fracture stabilization and conservative treatment in a high-volume Asian trauma center: a propensity score-matched retrospective study

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Background: Rib fractures are common chest wall injuries with conservative treatment and surgical stabilization of rib fractures (SSRF) as treatment options. We retrospectively compared the efficacy and long-term prognosis of conservative treatment and SSRF as treatment options for rib fractures.

Methods: This retrospective study was conducted at a single trauma center in Taiwan. The study population comprised patients with rib fractures who underwent conservative treatment or SSRF at the National Taiwan University Hospital between 2017 and 2022. We analyzed the outcomes between the operative and non-operative groups, including the length of intensive care unit and hospital stays, pain scales at admission and follow-up, and post-operative complication rates.

Results: Of the 217 patients with rib fractures in this study, 103 received SSRF, and 114 received conservative treatment. Patients in the operative group had worse consciousness statuses and higher injury severity scores than those in the non-operative group. In addition, patients in the operative group had more preoperative chest complications than those in the non-operative group. Regarding outcomes and long-term prognoses, patients in the operative group had longer intensive care unit and hospital stays than those in the non-operative group; however, patients in the operative group had better recovery quality than those in the non-operative group.

Conclusions: Our study showed that, in patients who meet the surgical indications, SSRF is an effective and safe way to relieve acute pain after thoracic injury and achieve better recovery and quality of life after surgical intervention.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC21

***Mycobacterium kansasii* 肺疾病之處置與預後分析：單一機構回溯性研究**

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Analysis of management and prognosis of patients with culture-positive Mycobacterium kansasii lung disease : a single-institution retrospective study

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Purpose: Mycobacterium kansasii (M. kansasii) is considered relatively virulent and prone to lung damage, yet typically responds well to therapy, with success rates >90%. This study evaluated outcomes and prognosis under American Thoracic Society (ATS) diagnostic criteria.

Methods: Patients with sputum cultures positive for M. kansasii in Chest Hospital (June 2019–December 2020) were classified per ATS criteria as definite M. kansasii pulmonary disease (treatment indicated) or uncertain/colonization (no treatment). The definite group was subdivided into treated and untreated.

Results: Fifty-nine patients were included (36 male, 23 female). Twenty-seven (46%) met ATS criteria; 18 received treatment, achieving 100% radiographic improvement and culture conversion. After >3 years, two treated patients had radiographic worsening; one had negative cultures and one lacked sputum testing, precluding confirmation of relapse. Nine ATS-positive patients were not treated, six patients had ≥3 years follow-up, all developed radiographic worsening with persistently positive cultures. Thirty-two patients (54%) did not meet ATS criteria; 22 (69%) were followed >3 years: two (9%) showed radiographic worsening with negative cultures, and four (18%) had persistently positive cultures without radiographic progression.

Conclusions: Not all patients with M. kansasii isolated from sputum require treatment. Approximately 46% met ATS criteria. Treating ATS-positive patients yielded near-100% success; lack of treatment in ATS-positive cases was associated with deterioration and persistent positivity. For ATS-negative patients, observation is reasonable; persistent culture positivity without imaging progression leaves the need for treatment uncertain. If imaging worsens, repeat sputum evaluation is needed.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC22

結核病合併慢性阻塞性肺疾病或哮喘患者臨床數據的回顧性研究：比較 LABA+ICS 治療策略的療效

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Retrospective Study Analyzing Clinical Data from Patients with Tuberculosis Coexisting with COPD or Asthma: Comparing Outcomes Based on Treatment Strategies with LABA+ICS

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Introduction: Tuberculosis (TB) remains a significant public health concern, particularly when coexisting with chronic respiratory diseases such as COPD and asthma. The overlap of these conditions complicates management and affects patient outcomes. This study aims to analyze clinical data of patients with TB and either COPD or asthma, with effects of treatment strategies involving LABA combined with ICS.

Materials and Methods: A retrospective review was conducted, including two male patients diagnosed with pulmonary tuberculosis alongside either COPD or asthma. The first patient, a 47-year-old male with a history of hypertension and COPD (GOLD stage 3, FEV1 1000 ml, CAT 35, mMRC 3), was treated with standard anti-TB therapy (HERZ) and streptomycin, in addition to LABA+ICS and prednisolone due to autoimmune disorders. The second patient, an 81-year-old male farmer with no prior medical history, presented with asthma symptoms and had a baseline FEV1 of 1230 ml, requiring standard anti-TB treatment alongside LABA+ICS. Clinical data was evaluated over the treatment course, focusing on lung function tests, quality of life assessments, and adverse events.

Results: For the first patient, FEV1 improved from 1000 ml to 1350 ml over the course of treatment, with stable CAT and mMRC scores throughout. He did not experience any episodes of acute respiratory distress or pneumonia. Following the successful completion of TB treatment, acid-fast bacilli cultures were negative, and chest X-rays showed no signs of recurrence. This patient, however, tragically succumbed to cardiovascular disease three years post-treatment. In contrast, the second patient exhibited a notable FEV1 increase from 1230 ml to 1460 ml after nine months, coupled with an improvement in ACT scores from 3 to 15. This patient experienced complete resolution of respiratory symptoms, with no emergency interventions or pneumonia during the treatment period.

Discussion: Our findings suggest that the combination of LABA and ICS with standard TB therapy can lead to favorable improvements in lung function and quality of life for patients with concurrent tuberculosis and respiratory diseases. However, the disparities observed in clinical outcomes underscore the necessity for personalized treatment plans that account for patients' individual risk factors, comorbidities, and adherence levels. This study highlights the critical need for larger, longitudinal studies examining patients population to better understand the nuances of managing tuberculosis in patients with chronic respiratory conditions. Enhanced interventions for patients are also recommended to mitigate the risk of complications and improve health outcomes.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC23

結構性肺疾病患者中與室內黴菌暴露相關的肺部枝孢黴菌（Cladosporium）感染回顧性研究

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Retrospective Study on Pulmonary Cladosporium Infection Associated with Indoor Mold Exposure in Patients with Structural Lung Disease

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Introduction: Pulmonary infections caused by Cladosporium species are rare, primarily affecting patients with pre-existing structural lung diseases. While these infections are uncommon, environmental exposure, particularly indoor mold colonization, is suspected to be a significant risk factor. This retrospective study presents two compelling cases of pulmonary Cladosporium infection in patients with chronic lung conditions. We aim to highlight the challenges in diagnosis, evaluate the efficacy of treatment regimens, and analyze the clinical outcomes in relation to their underlying diseases and environmental exposures.

Materials and Methods: We conducted a retrospective analysis of medical records from two patients diagnosed with pulmonary Cladosporium infection, confirmed by both sputum culture and radiological imaging.

Results: Patient 1 experienced a diagnostic delay of 37 days, necessitating a prolonged antifungal therapy of 429 days. Treatment efficacy was monitored through sputum cultures, chest X-rays, and CT scans. The patient's COPD and frequent corticosteroid use were considered contributing factors to the extended duration of the infection. In contrast, Patient 2, despite a longer diagnostic delay of 49 days, had a significantly shorter treatment course of 85 days, with follow-up including chest X-ray, CT, and ultrasound. Both patients were HIV- and diabetes-negative, suggesting their systemic immunity was intact but their local pulmonary defense mechanisms were compromised by their underlying structural lung diseases and smoking history.

Discussion: These cases underscore the inherent difficulties in diagnosing pulmonary Cladosporium infections, primarily due to their nonspecific symptoms and the presence of confounding underlying lung pathologies. although pulmonary Cladosporium infections are rare, they should be considered in patients with chronic structural lung disease and documented indoor mold exposure who present with respiratory symptoms. This study demonstrates that early diagnosis and prolonged itraconazole therapy, guided by serial imaging and culture follow-up, are essential for successful treatment. We further emphasize that environmental control measures must complement medical management to effectively reduce the risk of recurrence.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC24

肺部菌相失衡、綠膿桿菌互作網絡與宿主發炎反應導致肺結核後支氣管擴張症不良臨床預後

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Lung Dysbiosis, Pseudomonas Interactome, and Host Inflammation Contribute to Poor Outcomes in Post-Tuberculosis Bronchiectasis

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Purpose: Post-tuberculosis bronchiectasis (post-TB BE) is a prevalent yet understudied phenotype in Asia and is consistently linked to poorer clinical outcomes. However, how prior TB infection reshapes the airway microbiota, drives adaptive changes in *Pseudomonas aeruginosa* (PA), and amplifies host inflammation in bronchiectasis remains unclear.

Materials and Methods: Eighty-eight patients with bronchiectasis (58 non-TB, 30 post-TB) were prospectively enrolled at a tertiary referral hospital. Bronchoalveolar lavage (BAL) samples underwent shotgun metagenomic sequencing (Illumina NextSeq 2000). Taxonomic and functional profiling were performed using Kraken2, Bracken, and ShortBRED with protein marker databases from CARD (2023) and VFDB (2022). Microbial interaction networks were inferred through ensemble-based ReBoot correlation analysis. Host immune profiles, including BAL cytokine levels and neutrophil-to-lymphocyte ratio (NLR), were assessed in conjunction with clinical indices such as the Bronchiectasis Severity Index (BSI), E-FACED score, FEV_1, and exacerbation outcomes.

Results: Post-TB BE showed higher BSI/E-FACED scores, lower FEV_1, and shorter exacerbation-free survival than non-TB BE ($p < 0.05$). Reduced bacterial diversity correlated with worse outcomes ($p < 0.001$). During PA presence, post-TB BE had faster exacerbation recurrence ($p = 0.024$), enriched antimicrobial resistance/iron metabolism genes, and reduced adherence and biofilm-related traits. Unlike non-TB BE, where PA was positively linked to commensals (e.g., *Veillonella*, *Gemella*, *Streptococcus*), post-TB networks showed predominantly negative correlations, indicating disrupted microbial coexistence. Furthermore, elevated NLRs and reduced BAL lymphocytes indicate enhanced airway inflammation in post-TB BE, supporting a link between microbial dysfunction, immune dysregulation, and worse outcomes.

Conclusion: Post-TB bronchiectasis is characterized by lung dysbiosis, *Pseudomonas* functional remodeling, and amplified inflammation, leading to worse clinical outcomes. These microbe–host–pathogen interactions may inform phenotype-specific therapies.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC25

藥物性肺損傷與感染造成間質性肺病的診斷

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Diagnostic Challenge in Distinguishing Drug-induced Lung Injury from Infection-related Interstitial Changes

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Introduction: Influenza A pneumonia frequently reveals diffuse ground-glass opacities, centrilobular nodules, or tree-in-bud patterns. Such radiologic features are associated with severe pneumonia, and episodes of intense inflammation may predispose to subsequent interstitial lung disease. Gemcitabine, a nucleoside analog, is widely used in the treatment of breast cancer, non-small cell lung cancer and other malignancies. Although gemcitabine is generally well tolerated, pulmonary toxicity—including interstitial lung disease—has been recognized, with higher-grade adverse events (grade III/IV) occurring infrequently.

Case Report: A patient who recently commenced gemcitabine for recurrent cholangiocarcinoma presented with a new usual interstitial pneumonia (UIP) pattern at both lung bases on computed tomography, in the absence of notable preceding respiratory symptoms. Gemcitabine-induced pulmonary toxicity was initially considered the likely cause. However, subsequent bronchoalveolar lavage unexpectedly identified an influenza A infection, creating a diagnostic dilemma: was the interstitial lung disease attributable to the drug or the viral infection? Following antiviral treatment, the patient was re-challenged with gemcitabine, and the previously observed interstitial pneumonia did not recur.

Discussion: There is limited discussion in the medical literature regarding the potential additive risk of interstitial lung disease when influenza infection coincides with gemcitabine therapy.

Conclusions: While gemcitabine-induced pulmonary toxicity was initially considered, subsequent bronchoalveolar lavage identified influenza A infection, complicating attribution of the interstitial lung disease to either etiology.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC26

A 型流行性感冒病毒感染併發膿胸:個案報告

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Influenza A viral infection associated Empyema: One case report

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Introduction: Influenza A viral infection is a common respiratory infection worldwide, with several antiviral agents and annual vaccines available for prevention and treatment. Although pneumonia associated empyema are frequently recognized. However, influenza A viral infection associated empyema is extremely rare. We report a case of influenza A viral infection induced empyema successfully managed with video-assisted thoracoscopic surgery (VATS).

Case presentation: A 65-year-old woman with a history of bronchiectasis presented with spiking fever and chest discomfort. Laboratory studies revealed elevated C-reactive protein levels, and chest radiography showed infiltration in the left lower lung field. A rapid influenza A antigen test was positive. The patient initially received a single dose of peramivir. However, her pneumonia progressed, and the follow- up image revealed loculated effusion. All microbiological studies such as blood, sputum, and pleural fluid were negative for bacterial pathogens. She subsequently underwent successful video-assisted thoracoscopic surgery (VATS) and was discharged in stable condition.

Conclusion: We suggest that in patients with pre-existing pulmonary conditions such as bronchiectasis, prolonged antiviral therapy might be considered. Annual influenza A vaccination should also be strongly encouraged in this groups of patients to reduce the risk of severe complications.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC27

非計劃性拔管病人之預後改善：醫學中心的經驗

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The Improvement in Outcomes Among Patients with Unplanned Extubation: Experience at a Medical Center

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Purpose: Unplanned extubation (UE) among mechanically ventilated (MV) patients is regarded as a key quality indicator in intensive care units (ICUs). This study aimed to evaluate the outcomes and prognostic factors associated with UE in ICU patients.

Materials and Methods: All patients who experienced UE in a tertiary medical center were prospectively registered and retrospectively analyzed using electronic medical records across 96 ICU beds from January 1, 2009, to December 31, 2024. A continuous quality improvement (CQI) program targeting UE reduction had been implemented since 2001.

Results: A CQI concept has been proved to reduce the incidence of UE. During the study period, 442 patients experienced UE, of whom 234 (59.7%) were aged ≥65 years. The median Acute Physiology and Chronic Health Evaluation II (APACHE II) score was 18, and the median Glasgow Coma Scale (GCS) score was 10. Reintubation within 48 hours occurred in 232 patients (52.5%), and in-hospital mortality was observed in 94 (21.3%). Multivariate analysis identified prolonged intubation duration, absence of weaning status, higher respiratory rate, elevated positive end-expiratory pressure (PEEP), and higher admission APACHE II scores as independent predictors of failed UE (requiring reintubation). Independent predictors of hospital mortality included higher fractional inspired oxygen (FiO_2), elevated blood urea nitrogen (BUN), higher APACHE II scores, greater minute ventilation, longer ICU stays, and the presence of liver cirrhosis or malignancy.

Conclusions: Implementation of a CQI program successfully reduced the incidence of UE in the ICU. Among patients with UE, higher FiO_2, BUN, APACHE II scores, and minute ventilation, prolonged ICU stays, and comorbidities such as liver cirrhosis or malignancy were associated with increased mortality risk.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC28

運用改良式早期預警評分（MEWS）於快速反應團隊以預測並預防加護病房再入院情況

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Leveraging the Modified Early Warning Score (MEWS) in rapid response teams to predict and prevent ICU readmissions

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Purpose: Enhancing ICU Readmission Prediction and Prevention: Integrating the Modified Early Warning Score(MEWS) with Rapid Response Teams. This study evaluates the effectiveness of integrating the Modified EarlyWarning Score (MEWS) with Rapid Response Teams (RRTs) to predict and prevent ICU readmissions.

Materials and Methods: A retrospective case-control study was conducted to assess adult ICU patients readmitted within 48 h post-transfer to general wards. The predictive accuracy of MEWS was compared with the APACHE II score, validating its integration with RRT interventions.

Results: Among 4,160 ICU patients, 74 (1.8 %) were readmitted within 48 h. Readmitted patients exhibited significantly higher mean MEWS scores (4.4 vs. 2.8, $p < 0.001$), elevated heart and respiratory rates, lower oxygen saturation, and lower systolic blood pressure. MEWS demonstrated superior predictive ability (AUC 71.6%) compared to APACHE II (AUC 59.0 %). Implementation of MEWS-integrated RRT interventions reduced ICU readmission rates from 1.26 % to 1.12 %.

Conclusion: MEWS, when combined with timely RRT interventions, enhances early detection and proactive care, thereby reducing ICU readmissions and optimizing resource allocation in critical care settings.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC29

自發性腸繫膜上動脈剝離之加護病房保守治療經驗：病例報告

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Conservative Management of Spontaneous SMA Dissection in ICU: A Case Report

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Abstract:
Spontaneous isolated superior mesenteric artery (SMA) dissection is a rare vascular disorder causing acute abdominal pain and potentially fatal complications. With advances in imaging, cases are increasingly detected, yet optimal management remains debated. We report a 52-year-old hypertensive man with SMA dissection managed conservatively in the ICU, highlighting the value of timely imaging and observation in stable patients.

Case Presentation:
A 52-year-old man with hypertension and gallstone disease presented with epigastric pain. CT revealed SMA dissection without bowel ischemia. Labs showed leukocytosis (WBC 12,800/μL) but normal lactate (1.7 mmol/L), suggesting no hypoperfusion. As he remained hemodynamically stable, conservative ICU management was provided: blood pressure control, bowel rest, IV hydration, and aspirin 100 mg daily. He remained stable, tolerated diet advancement, and follow-up CT confirmed no progression. He was discharged with outpatient follow-up.

Discussion:
Spontaneous SMA dissection is an uncommon but important cause of abdominal pain, especially in hypertensive patients. CT angiography allows rapid diagnosis and treatment planning. In stable patients without ischemia, conservative therapy with hemodynamic control, ICU monitoring, and antiplatelet therapy is effective. Intervention is reserved for deterioration or complications. This case shows that early recognition and conservative ICU care can prevent **serious complications.**

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC30

呼吸道融合病毒感染風險因子與臨床預後評估：回溯型世代研究

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Respiratory Syncytial Virus Infection: Clinical Outcomes and Risk Factors in a Retrospective Cohort Study

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Purpose: Respiratory Syncytial Virus (RSV) infection causes morbidity and mortality in both pediatric and adult patients. RSV incidence has increased following Coronavirus disease 2019 pandemic in Taiwan, yet local data on clinical outcomes and their predictors of RSV infection remain scarce. This study investigated clinical outcomes and their risk factors in adult RSV-infected patients.

Materials and Methods: This retrospective cohort study was conducted at Taichung Veterans General Hospital from November 2022 to December 2024, enrolling adult patients with confirmed RSV infection. Exclusion criteria included incomplete data of interest or co-infections with another virus. Data collected encompassed demographics, comorbidities and pulmonary function parameters. Outcome assessment included 3-month mortality, hospitalization, mechanical ventilation uses and readmission within 3 months. Statistical analyses used Mann-Whitney U test and chi-square test.

Results: A total of 426 patients were included in this study, with a median age of 69 years and equal gender distribution (49.8% male). Among them, 281 patients (65.9%) required hospitalization, 91 (21%) required mechanical ventilation, 97 (22%) were readmitted to hospital within 3 months, and 37 (8.7%) died within 3 months. Mechanical ventilation uses and malignancy (HR 2.52, 95% CI 1.25-5.06, p=0.009) were independent predictors for 3-month mortality (HR 8.96, 95% CI 4.20-19.09, p<0.05). Patients with forced expiratory volume in 1 second % predicted ≥50% were less likely to be hospitalized (OR 0.17, 95% CI 0.03-0.82, p=0.027) readmitted within 3 months (HR 0.27, 95% CI 0.09-0.82, p=0.021). Meanwhile, chronic kidney disease was independently associated with increased 3-month readmission (HR 3.32, 95% CI 1.23-9.00, p=0.018).

Conclusions: A substantial proportion of adult patients with RSV infection have poor clinical outcomes. These findings provide evidence supporting the necessity of risk stratification strategies in the management of RSV infection in the adult population.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC31

在台灣第一波新冠疫情期間，接受侵入性機械通氣治療的新冠肺炎病患之氣胸情形

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Pneumothorax in COVID-19 pneumonia patients with invasive mechanical ventilation during Taiwan's first wave of the pandemic

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Objectives: Pneumothorax is one of the most serious complications in patients receiving mechanical ventilation. The incidence of pneumothorax in patients with COVID-19 pneumonia has been rarely reported.
Methods: This multicenter retrospective study included 588 adult patients with acute respiratory failure who required invasive mechanical ventilation during Taiwan's first major COVID-19 outbreak, which occurred between April and July 2021.
Results: In the univariable logistic regression analysis, 51 of the 588 intubated patients (8.7%) developed pneumothorax. Among them, 35 patients (68.6%) died, whereas 182 patients (33.9%) without pneumothorax died. ICU length of stay ($P = 0.0006$), initial ventilator peak pressure ($P = 0.0018$), and mortality ($P < 0.001$) were significantly increased in patients with pneumothorax. In addition, we observed that patients with a lower BMI had a higher risk of developing pneumothorax.
Conclusions: Pneumothorax occurred in 8.7% of intubated COVID-19 patients and was associated with increased mortality and prolonged ICU stays. Lower BMI and elevated ventilator pressures may increase the risk of developing pneumothorax. Early recognition and careful ventilator management may help reduce this complication in critically ill COVID-19 patients.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC32

非結核分枝桿菌臨床重要菌種之藥物敏感性更新: 來自醫學中心的回顧

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Drug Susceptibility of Clinically Relevant Nontuberculous Mycobacterial Species: An Update from a Medical Center

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Purpose: Nontuberculous mycobacteria (NTM) infections are increasingly prevalent, yet therapeutic strategies remain heterogeneous due to limited application of drug susceptibility testing (DST). We aimed to review DST profiles of clinically relevant NTM species to provide more precise combination therapies that may improve treatment outcomes in severe or drug-resistant cases.
Materials and Methods: NTM isolates from respiratory samples for which clinicians requested DST were analyzed at Taipei Veterans General Hospital between 2023 and 2025. Clinical data, including species, acid-fast bacilli results, radiographic Brixia score, and laboratory parameters were reviewed. Patients were categorized into treatment and supportive groups. DST was performed using broth microdilution method (Sensititre™ SLOMYCO2 assay in slow growing mycobacterium and Sensititre™ RAPMYCO2 assay in rapid growing mycobacterium). Chi-square test and Mann–Whitney U test were applied for groups comparisons.
Results: The study included 78 isolates from 73 patients. Mycobacterium avium complex (MAC) and Mycobacterium abscessus subgroup (Mabs) each accounted for 46% of all isolates. The treatment group (n=38, 52%) had lower BMI (18.4 ± 3.1 vs. 19.7 ± 1.9 kg/m², p=0.036), higher radiographic score (5.0 ± 2.0 vs. 3.9 ± 1.6, p=0.017), higher neutrophil counts (5021 [1450–15810] vs. 3869 [2221–10281] cells/μL, p=0.047), and elevated CA-125 levels (54.0 [6.9–221.0] vs. 32.4 [7.6–104.0] U/mL, p=0.03) compared with the supportive care group (n=35, 47.9%). In drug susceptibility testing, MAC showed low MIC_{50} for rifabutin (1 μg/mL) but high MIC for rifampicin (most ≥4 μg/mL), variable susceptibility to amikacin (66.7% with intravenous administration and 94.4% with inhaled) and high susceptibility to clarithromycin (97.2%) and low susceptibility to moxifloxacin (8.3%). Among subgroup patients with cavitary disease, the susceptibility of MAC to intravenous amikacin was 72.2%. Mabs demonstrated high susceptibility to amikacin (97.2%), low MICs for tigecycline (MIC_{50}=1μg/mL) and clofazimine (MIC_{50}=0.12μg/mL), moderate susceptibility to linezolid (50%), and low susceptibility to clarithromycin (30.6% sensitive; 41.7% were inducible resistance and 27.7% were constitutive resistance), imipenem (0%) and moxifloxacin (11.1%). Among less common species, all were susceptible to clarithromycin except for one M. fortuitum isolate.
Conclusions: Our updated DST data from northern Taiwan support that, in MAC-LD with cavitary lesions or refractory disease, the use of both intravenous and inhaled amikacin is reasonable. In M. abscessus, the high rate of clarithromycin resistance underscores the importance of routine DST or genotyping to guide macrolide-based therapy. Given the uniformly poor susceptibility to fluoroquinolones among NTM species, empirical use of moxifloxacin without confirmed susceptibility should be avoided.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC33

影響新型冠狀病毒清除的危險因子以及預後分析

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Factors Influencing SARS-CoV-2 Virus Shedding: A Retrospective Cohort Study

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Purpose: Several studies have reported that the duration of viral shedding in COVID-19 patients varies widely. Most individuals have detectable viral RNA in respiratory samples for up to 10–14 days after symptom onset. However, some patients, particularly those with severe disease or immunocompromised conditions, may shed the virus for a longer duration.
The objective of this study is to identify and evaluate factors that influence the shedding of the SARS-CoV-2 virus and to assess the impact of viral shedding on overall survival in individuals infected with COVID-19.

Materials and Methods: This retrospective cohort study was conducted at the Hsinchu Branch of the National Taiwan University Hospital, reviewing medical records from January 1, 2021, to December 31, 2022. Approval for the study was obtained from the Research Ethics Committee of the National Taiwan University Hospital Hsinchu Branch prior to its initiation.

Results: During the study period, 595 patients with confirmed SARS-CoV-2 infection were initially enrolled. Based on their isolation period, 492 patients (82.7%) had isolation lasting less than 30 days, indicating a shorter viral shedding period, while 103 patients (17.3%) had isolation exceeding 30 days, indicating prolonged viral shedding.
Patients with longer hospital stays were more likely to have extended viral shedding (>30 days) (hazard ratio [HR], 0.91; 95% CI, 0.89–0.92). Patients with moderate to severe disease or hypertension were also more likely to have prolonged viral shedding (HR, 0.77; 95% CI, 0.64–0.92; and HR, 0.80; 95% CI, 0.66–0.96, respectively).

Conclusions: Our analysis revealed that severe disease, hypertension, and longer hospital stays are associated with extended viral shedding. This information is critical for optimizing isolation strategies and resource allocation in clinical settings. In survival analysis, disease severity was identified as a major predictor of survival, along with an unexpected protective association of diabetes mellitus.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC34

利用電阻抗肺成像觀察俯臥治療前後連續區域性肺通氣變化之先導性研究

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Pilot study of serial regional ventilation changes before and after prone positioning assessed by electrical impedance tomography

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Introduction: Prone positioning in patients with severe acute respiratory distress syndrome (ARDS) requiring mechanical ventilation has been proven to improve oxygenation and reduce mortality. The mechanism involves redistribution of ventilation and perfusion, enabling reopening of collapsed dorsal alveoli and reducing ventilation–perfusion mismatch. Despite evidence supporting its efficacy, clinical response to prone positioning remains variable and patient-specific. Electrical impedance tomography (EIT), a non-invasive, radiation-free bedside imaging modality, provides real-time assessment of ventilation distribution and may serve as a useful tool to monitor physiological changes during prone positioning.

Methods: This prospective observational study was conducted in a medical intensive care unit over one year. Adult patients diagnosed with severe ARDS (PaO_2/FiO_2 <150 with FiO_2 >0.6 and PEEP >5 cmH_2O) were enrolled. Exclusion criteria included pacemaker use, BMI >30kg/m^2, recent major surgery, pregnancy, or hemodynamic instability. EIT monitoring was performed at supine position, and at 1, 2, and 16 hours after prone positioning, with 30-minute recordings at each time point. Arterial blood gases, respiratory mechanics, and EIT indices—regional ventilation delay inhomogeneity (RVDI), center of ventilation (CoV), and global inhomogeneity (GI) index—were assessed. The primary outcome was 28-day mortality.

Results: Among 13 screened patients, four met inclusion criteria. All had underlying malignancies; one had chronic obstructive pulmonary disease. Within one hour of prone positioning, all patients showed improved oxygenation, while $PaCO_2$ initially rose but stabilized after ventilator adjustment. Survivors demonstrated progressive increases in static compliance and declining plateau pressures, whereas non-survivors exhibited the opposite pattern. EIT analysis showed that RVDI and GI index decreased continuously in survivors, indicating more homogeneous ventilation, while changes were delayed or attenuated in non-survivors. The CoV shifted dorsally in survivors, reflecting improved dorsal ventilation distribution. No consistent association was observed between inflammatory markers and survival, though survivors maintained more stable leukocyte counts.

Conclusion: Continuous EIT monitoring provides valuable real-time insights into lung mechanics and regional ventilation changes, potentially serving as a guide for individualized ventilator management. Future studies with larger cohorts and biomarker integration are warranted to develop predictive models for clinical response to prone positioning.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC35

類固醇脈衝治療於嚴重 COVID-19 肺炎的臨床應用：系列病例報告

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Clinical Application of Pulse Steroid Therapy in Severe COVID-19 Pneumonia : A Case Series

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Background The use of corticosteroids has been associated with reduced mortality among patients with severe COVID-19 pneumonia who require oxygen therapy or mechanical ventilation. However, evidence regarding the optimal steroid dosage remains limited, and whether higher doses confer additional benefits is still under investigation. Some studies have suggested that higher doses of steroid (e.g., methylprednisolone up to 250 mg per day), or pulse therapy (methylprednisolone ≥500 mg/day), may be beneficial.

Methods We conducted a case series at Mackay Memorial Hospital to evaluate the use of methylprednisolone pulse therapy in patients with severe COVID-19 pneumonia on mechanical ventilation. Eleven patients treated with intravenous methylprednisolone pulse therapy between 2023 and 2024 were included. Their outcomes were compared with patients treated in 2021 who received low- to intermediate-dose corticosteroids using 1:2 propensity score matching. Thirty- and sixty-day mortality, duration of mechanical ventilation, and length of ICU stay were compared between the groups.

Results No significant differences in 30- or 60-day mortality were observed between the groups. However, the pulse-therapy group experienced longer ICU stays, extended hospital stays, and a longer duration of mechanical ventilation compared with the standard-dose group.

Conclusion In this case series, intravenous methylprednisolone pulse therapy did not provide additional benefits compared to standard-dose corticosteroid therapy in mechanically ventilated patients with severe COVID-19 pneumonia.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC36

高齡病人拔管後高流量溼化鼻導管支持對再插管風險之探討：ICU 四年回溯性研究

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Exploring the Risk of Reintubation in Elderly Patients Receiving HFNC Support After Extubation: A Four-Year Retrospective ICU Study

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Purpose: Elderly patients are at higher risk of extubation failure and reintubation due to decreased respiratory muscle strength and impaired cough efficacy. Post-extubation respiratory failure often requires reintubation or enhanced respiratory support, increasing mortality. Since 2021, our ICU has routinely applied high-flow nasal cannula (HFNC) therapy after extubation as an alternative to conventional oxygen therapy in high-risk patients. This study aimed to evaluate the association between HFNC use and reintubation within 72 hours in elderly ICU patients.

Materials and Methods: We conducted a retrospective analysis of adult ICU patients from July 2021 to June 2025. Exclusion criteria included unplanned extubation, extubation for bronchoscopy, or tube-related issues. Inclusion required ≥24 hours of intubation and high-risk features, including age >65 years, APACHE II >12, or BMI >30 kg/m². Multidisciplinary assessment included respiratory physiology, consciousness, sputum clearance, weaning difficulty, airway patency, and post-SBT (spontaneous breathing trial) hypercapnia. The primary outcome was reintubation within 72 hours.

Results: Among 5,412 extubated adult ICU patients, 180 (3.33%) were reintubated within 72 hours. In patients >65 years receiving HFNC (n=260, 4.80%), mean age was 74.82 years, 220 (84.62%) had APACHE II >12, and 32 (12.31%) had BMI >30. Of these, 176 were post-operative, with 24 (13.64%) reintubated. Common surgical types included cardiac surgery (33.33%), thoracic surgery (22.02%), and upper abdominal surgery (21.43%). In the 18–65-year control group (n=177), mean age was 52.31 years; 124 (70.6%) had APACHE II >12, 28 (15.82%) had BMI >30, and 7 (11.48%) were reintubated. Chi-square analysis indicated patients >65 years receiving HFNC had significantly higher 72-hour reintubation rates than younger patients (P = 0.035). Post-operative HFNC use was not statistically significant.

Conclusions: Patients aged >65 have higher 72-hour post-extubation reintubation rates, likely due to reduced respiratory muscle endurance, impaired cough, and poor secretion clearance. Comorbidities such as obesity or obstructive sleep apnea further increase airway collapse risk. Clinically, thorough pre-extubation assessment, post-extubation HFNC support, enhanced respiratory monitoring, airway clearance strategies, and respiratory muscle training are recommended to reduce reintubation risk and improve outcomes.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC37

呼吸器波型辨認病人與呼吸器不同步：一位反向驅動個案報告

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Recognizing Patient-Ventilator Asynchrony Through Ventilator Waveforms: A Case Report of Reverse Triggering

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Introduction: Patient-ventilator asynchrony (PVA) is a mismatch between the timing of a patient's spontaneous efforts and the mechanical support delivered by the ventilator. PVA may lead to patient discomfort, increase the work of breathing (WOB), prolong intensive care unit (ICU) stays, and extend the duration of mechanical ventilation. Reverse triggering (RT), first described in adult critically ill patients in 2013, has been reported in 30% to 50% of sedated mechanically ventilated patients in recent studies.

Case Presentation: A 62-year-old male with sudden-onset respiratory failure with COVID-19 infection progressing to a ARDS requiring intubation and ICU admission. On Day-33 this patient required flow-triggered pressure-control ventilation with an inspiratory pressure (IP) of 14 cmH_2O, a positive end-expiratory pressure (PEEP) of 8 cmH_2O, an respiratory rate (RR) of 24 breaths/min, and a flow-trigger sensitivity of 2 L/min. While sedated with fentanyl and propofol, the patient exhibited RT which characterized by the ventilator's inspiratory pressure waveform extending into the expiratory phase, coinciding with a patient inspiratory effort noted during the ventilator's expiratory phase (Figure.1). After shift to pressure support ventilation (PSV) which totally solved the RT.

Discussion: Clinical management strategies often involve adjusting to PSV mode to reduce asynchrony, or decreasing the set respiratory rate to better evaluate for the presence of RT. For some patients on low tidal volumes, applying a higher tidal volume and prolonging the inspiratory time may be beneficial, though current evidence is limited. This case underscores the critical importance of continuous ventilator waveform monitoring for the early detection and effective clinical management of PVA.

Figure.1 Reverse trigger during mechanical ventilation

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)
B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC38

呼吸道融合病毒於接受侵入性呼吸治療之肺炎病患間盛行率：單一醫學中心調查

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The Prevalence of Respiratory Syncytial Virus in Pneumonia Patients Receiving Invasive Ventilation: A Single-Center Investigation

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Background and Objective: Respiratory syncytial virus (RSV) infection has traditionally been receiving limited attention to its impact on adult populations. Recent evidence indicates that RSV infection among adults may be more prevalent than previously recognized. The true prevalence of RSV among critically ill adults requiring invasive mechanical ventilation remains unclear, however. This study aims to evaluate the prevalence of RSV infection among patients who received invasive mechanical ventilation.

Methods: A total of 582 adult patients who received invasive mechanical ventilation and were admitted to the Intensive Care Unit of MacKay Memorial Hospital, Tamsui Branch, between 2023 and 2024 were retrospectively analyzed. Sputum samples were obtained via standardized bronchial lavage and tested using the FilmArray® Respiratory Panel (bioMérieux, France). Patient comorbidities, as well as concurrent bacterial and viral co-infections, were documented and analyzed.

Results: Among the 582 patients, RSV infection was identified in 15 patients (2.6%). Of these, 5 cases (0.9%) were single RSV infections, while 10 cases (1.7%) were associated with bacterial or viral co-infections. Other viral infections were detected in 49 patients (8.4%), and bacterial infections were more common, occurring in 212 patients (36.4%). No statistically significant correlation was found between RSV infection and the presence of comorbidities ($p > 0.05$).

Conclusion: The prevalence of RSV among invasively ventilated ICU patients was low (2.6%) in this cohort. Bacterial and other viral co-infections were frequently observed among RSV-positive patients. No specific comorbidity was found to be significantly associated with RSV infection.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC39

高流量鼻導管與非侵入性正壓呼吸器在急性呼吸窘迫症候群患者之比較:系統性文獻回顧與統合分析

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High-Flow Nasal Cannula versus Noninvasive Positive Pressure Ventilation for Acute respiratory distress syndrome: A Systematic Review and Meta-Analysis

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Abstract

Background

Acute respiratory distress syndrome (ARDS) is a frequent cause of intensive care unit (ICU) admission and has increasingly been managed with noninvasive ventilatory support in recent years. Among available modalities, high-flow nasal cannula (HFNC) and noninvasive positive pressure ventilation (NIPPV) are the primary strategies; however, their relative efficacy and clinical outcomes remain a subject of ongoing debate.

Methods

A systematic review and meta-analysis were performed according to PRISMA guidelines. Randomized controlled trials (RCTs) published between 2015 and 2025 comparing HFNC with NIPPV in ARDS patients were included. Primary outcomes were intubation rate and mortality, while ventilator-free days were analyzed as a secondary outcome. Risk of bias and heterogeneity were assessed using standard Cochrane tools.

Results

Four RCTs met the inclusion criteria. Pooled analysis revealed no significant difference between HFNC and NIPPV in terms of intubation rate and mortality. However, two studies reported significantly longer ventilator-free days with HFNC. The overall risk of bias was low, though moderate clinical and methodological heterogeneity existed across studies.

Conclusion

HFNC demonstrates comparable efficacy to NIPPV in patients with ARDS and may confer additional benefits in selected populations. Further high-quality, large-scale trials are warranted to confirm these findings and guide optimal patient selection for noninvasive respiratory support.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC40

以呼吸體學鑑別肺部非結核分枝桿菌患者之疾病狀態：多中心世代研究

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Breathomics for Differentiating Disease Status in Pulmonary Nontuberculous Mycobacterial Patients: A Multicenter Cohort Study

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Objectives: We aimed to investigate whether volatile organic compounds (VOCs) in exhaled breath could differentiate between the two disease statuses in pulmonary nontuberculous mycobacteria (NTM) patients (pulmonary disease [PD] and pulmonary colonization [PC]), and identify VOC biomarkers associated with NTM-PD.

Methods: Between 2021 and 2024, we recruited 240 pulmonary NTM patients from two medical centers (Cohorts 1 and 2) in Taiwan. Exhaled breath VOCs were analyzed using selected ion flow tube mass spectrometry (SIFT-MS). XGBoost was applied to classify disease status, with models trained in one medical center and tested in the other.

Results: Among 240 participants, 154 were classified as NTM-PD, and 86 as NTM-PC. In Cohort 1, the model achieved an accuracy of 0.73 (95% CI: 0.59–0.90) and an area under the curve (AUC) of 0.84 (95% CI: 0.68–0.97). In Cohort 2, the accuracy was 0.77 (95% CI: 0.65–0.90) with an AUC of 0.65 (95% CI: 0.45–0.83). After fine-tuning with 30% Cohort 2 samples, the model trained on Cohort 1 attained comparable performance in Cohort 2, with an accuracy of 0.76 (95% CI: 0.68–0.84) and an AUC of 0.74 (95% CI: 0.63–0.85). We identified 13 significantly different VOCs, many of which have known antimycobacterial activities. Notably, the NTM-PD group had lower VOC concentrations than the NTM-PC group.

Conclusions: Breathomics may effectively differentiate pulmonary NTM disease status, although cross-site validation remains challenging. The relative scarcity of candidate VOCs in NTM-PD warrants further research.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC41

隱藏性胰臟腺癌於重症患者中以瀰漫性骨髓侵犯表現

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Occult Pancreatic Adenocarcinoma Presenting as Disseminated Carcinomatosis of the Bone Marrow in a Critically Ill Patient

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Background: Disseminated carcinomatosis of the bone marrow (DCBM) is a rare manifestation of solid tumors, most commonly originating from gastric, breast, prostate, or lung cancers. Pancreatic cancer–related DCBM is exceptionally uncommon and may present as unexplained cytopenia in critically ill patients.

Case Presentation: A 77-year-old woman with hypertension and dementia was admitted to the ICU due to chronic left frontal subdural hematoma. During hospitalization, she developed progressive thrombocytopenia and anemia refractory to transfusions, corticosteroids, and IVIG. Infection was suspected but not confirmed. Abdominal sonography revealed chronic liver disease without splenomegaly, while non-contrast CT demonstrated diffuse mixed osteoblastic and osteolytic lesions. Bone marrow biopsy showed hypocellularity with metastatic mucinous adenocarcinoma positive for CK19, CK7, and Claudin-18, suggestive of pancreaticobiliary origin. CA 19-9 was markedly elevated (407 U/mL), and subsequent CT shown calcified peripancreatic lymph nodes. However, no definite pancreatic mass was detected on contrast CT image. A diagnosis of DCBM from occult pancreatic adenocarcinoma was made. The patient deteriorated rapidly and expired on day 19 after admission.

Discussion & Conclusion: This case illustrates a rare presentation of pancreatic adenocarcinoma manifesting as DCBM without a detectable primary lesion. Bone marrow biopsy played an essential diagnostic role when conventional imaging failed. In the ICU, persistent cytopenia unresponsive to standard therapy should prompt consideration of marrow infiltration, as timely recognition can guide prognosis and prevent unnecessary interventions.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC42

肺動脈假性動脈瘤：嚴重肺炎續發致命性咳血之病例報告

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Pulmonary Artery Pseudoaneurysm: A Case Report of Fatal Hemoptysis Secondary to Severe Pneumonia

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Introduction: Hemoptysis, the expectoration of blood originating from the lower respiratory tract, is a clinical sign indicative of potentially severe underlying pathology. While frequently associated with lung malignancy or severe infections like pneumonia, its acute presentation as massive hemoptysis constitutes a medical emergency. In this report, we describe a patient initially admitted for pneumonia who developed fatal hemoptysis from a rare vascular complication.

Case Report: An 87-year-old female who was previously in relatively good health, was brought to our emergency department with shortness of breath and a productive cough. Her family reported that she had experienced several choking episodes over the past two weeks, followed by a disturbance in consciousness for the preceding two days. Given the history of choking and dyspnea, aspiration pneumonia was highly suspected. Initial laboratory data revealed leukocytosis with a neutrophilic predominance, acute kidney injury, and a markedly elevated C-reactive protein level. A chest X-ray showed lobar consolidation in the right lung. A subsequent non-enhanced chest computed tomography (CT) scan indicated right-sided consolidation with a cavitary lesion and a right pleural effusion. The tentative diagnosis was necrotizing pneumonia with probable abscess formation. Treatment with antibiotics was initiated; however, the patient developed respiratory failure requiring endotracheal intubation soon after initiation of antibiotic treatment. During her course in the medical intensive care unit (MICU), hemoptysis was noted. A contrast-enhanced chest CT was then performed, which showed diffuse consolidation of the right lower lobe with air-bronchograms and cavitations. Critically, it also revealed a large (4x4 cm) contrast-filling mass arising from the right lower segmental pulmonary artery, suggesting a pulmonary artery pseudoaneurysm (PAP) with a surrounding hematoma. The family opted for conservative treatment due to the patient's advanced age. Follow-up chest X-rays and laboratory data showed improvement in her infectious parameters. Due to a poor weaning status, she was transferred to a respiratory care center. However, one night she experienced a massive amount of hemoptysis from the endotracheal tube. The patient expired shortly thereafter due to profound hemodynamic collapse.

Discussion: In our case, the PAP was strongly associated with vessel erosion from the severe necrotizing pneumonia. Management strategies vary from surgical intervention and transcatheter embolization to conservative therapy. Due to the patient's advanced age, a conservative approach with antibiotics and hemostatic agents was chosen. This case highlights the highly fatal nature of infectious PAPs, as conservative measures may not be sufficient to prevent catastrophic rupture.

Conclusions: Pulmonary artery pseudoaneurysm is a rare but highly lethal complication, often linked to severe infection as demonstrated in our case. This report highlights the critical importance of considering PAP in any pneumonia patient who develops massive hemoptysis, especially following clinical deterioration. Early diagnosis via contrast-enhanced CT is crucial.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC43

非結核分枝桿菌肺部移生與疾病：台灣多中心研究結果

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NTM Pulmonary Disease and Colonization: Implications from Multicenter Cohort in Taiwan

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Purpose: To evaluate clinical outcomes in patients with pulmonary nontuberculous mycobacterial pulmonary disease (NTM-PD) and colonization (NTM-PC) using a multicenter cohort in Taiwan.

Materials and Methods: We retrospectively enrolled patients with positive respiratory cultures for *M. abscessus, M. avium*, or *M. kansasii* from three centers in Taiwan (2016–2021). All underwent chest CT within 3 months and were followed for up to 2 years. Disease status was determined by consensus among 3 NTM specialists and clinicians. Outcomes included 2-year all-cause mortality (ACM), respiratory-related mortality (RRM), and overall adverse events (OAE, including ACM and/or hospitalization for hemoptysis or pneumonia). Sensitivity analyses applied treatment-informed definitions, with the strict definition requiring both consensus and treatment decision.

Results: Among 1,068 patients with pulmonary NTM isolation (505 PC; 563 PD), 2-year ACM, RRM, and OAE rates were 21.3%, 14.4%, and 34.8%. No significant differences were observed between PC and PD in ACM (adjusted hazard ratio [aHR]:0.89; 95% CI:0.65–1.22; p=0.474), RRM (aHR:1.03; 95% CI:0.70–1.52; p=0.867), or OAE (aHR:0.91; 95% CI:0.74–1.13; p=0.413). In cancer patients, OAE was significantly higher in PC group (aHR:0.66; 95% CI:0.46–0.93; p=0.019), while ACM (aHR:0.72; 95% CI:0.48–1.10; p= 0.121) and RRM (aHR: 0.74; 95% CI: 0.44–1.25; p=0.261) were similar. Consolidation (38.2%) was the most frequent CT pattern and an independent poor prognostic factor across all three outcomes in cancer patients: ACM (aHR:1.89; 95% CI:1.23–2.81; p=0.001), RRM (aHR:2.59; 95% CI:1.50–4.47; p=0.001), and OAE (aHR:1.97; 95% CI:1.44–2.68; p<0.001). Sensitivity analyses yielded consistent results.

Conclusions: Our findings suggest that the mortality and adverse events rates remained high for patients with pulmonary NTM isolation, regardless of disease status judgement. Immunocompromised patients, particularly those with cancer, may have atypical NTM imaging features, especially consolidation, which may correlate with poor prognosis and warrant close monitoring.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC44

肺部努卡氏菌與黴菌混合感染:臨床表現疑似慢性肺麴菌病之病例報告

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Mixed Nocardia and Fungal Pulmonary Infection Mimicking Chronic Pulmonary Aspergillosis - A cases report

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Introduction: Chronic pulmonary aspergillosis (CPA) is a progressive and destructive fungal infection caused by *Aspergillus* species. It typically presents with chronic cough, hemoptysis, and weight loss, most often in immunocompetent patients with underlying structural lung disease. Diagnosis relies on characteristic chest CT findings—such as cavitary lesions or the classic air-crescent sign—combined with evidence of an immunologic response to *Aspergillus* species, including elevated *Aspergillus*-specific IgG or a positive galactomannan antigen test in bronchoalveolar lavage (BAL) fluid or serum. However, *Aspergillus* IgG assays may cross-react with other molds such as *Cladosporium*, leading to diagnostic confusion. We report a case of mixed *Nocardia* and *Cladosporium* pulmonary infection initially presumed to be CPA based on imaging and serologic findings.

Case Presentation: A 52-year-old woman presented with hemoptysis, productive cough, and over 5% weight loss in six months. Chest CT showed multiple lung nodules, some with cavitation. *Aspergillus fumigatus* and *A. niger* IgG were positive, leading to a tentative diagnosis of CPA. However, *Aspergillus* antigens in BAL fluid and serum were negative. Fungal culture yielded *Cladosporium* species, and transbronchial lung biopsy (TBLB) revealed acute and chronic inflammation with negative PAS and GMS stains. Eventually, tissue culture and next-generation sequencing confirmed *Nocardia amamiensis*. A mixed *Nocardia* and *Cladosporium* infection was suspected, and treatment with voriconazole plus trimethoprim–sulfamethoxazole resulted in resolution of pulmonary nodules and clinical symptoms.

Conclusion: Co-infection with *Nocardia* and fungal pathogens is uncommon but has been reported in patients with structural lung disease, even without overt immunosuppression. Such cases can mimic chronic pulmonary aspergillosis both clinically and radiologically. In this patient, as the *Aspergillus* galactomannan test in BAL fluid has high sensitivity, the negative result reduced the likelihood of true aspergillosis. Moreover, *Aspergillus*-specific IgG may cross-react with molds such as *Cladosporium*, leading to false-positive results. Therefore, microbiologic confirmation remains essential for accurate diagnosis in patients suspected of CPA.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC45

影響非結核分枝桿菌肺病患者痰液陰轉的臨床因素:治療持續性的重要性

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Clinical factors associated with culture conversion in patients with nontuberculous mycobacterial lung disease: the importance of treatment adherence

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Purpose: Culture conversion has been linked to improvements in clinical symptoms, lung function, radiological findings, and possibly mortality among patients with nontuberculous mycobacterial lung disease (NTM-LD). However, the clinical factors, especially treatment adherence, influencing culture conversion in NTM-LD remain unclear. This study aimed to identify and evaluate the clinical factors associated with culture conversion in patients with NTM-LD.

Materials and Methods: Patients were identified from the National Taiwan University Hospital–Integrative Medical Database between 2011 and 2020. The diagnosis of NTM-LD was established based on the microbiological criteria defined in current clinical guidelines. Culture conversion was defined as at least three consecutive negative mycobacterial cultures obtained from respiratory specimens collected at intervals of ≥ 4 weeks. Treatment adherence was assessed by the number of days of anti-NTM therapy during the first three months after treatment initiation. Clinical characteristics were compared between patients with and without culture conversion.

Results: During an average follow-up of 1.16 years, 592 patients achieved culture conversion and 453 did not. Compared with converters, non-converters were less likely to receive guideline-based antimicrobial therapy (15.2% vs. 23.8%, $P < 0.001$) and had higher rates of positive acid-fast smears (28.0% vs. 16.1%, $P < 0.001$) and BMI < 18.5 Kg/m^2 (18.3% vs. 15.9%, $P = 0.024$). Multivariable Cox regression identified positive acid-fast smear and isolation of *Mycobacterium avium* complex, *M. abscessus* complex, and *M. kansasii* (vs. other slow-growing species) as independent predictors of culture non-conversion. Conversely, guideline-based antimicrobial therapy was significantly associated with culture conversion in a dose-dependent manner: within the first three months of treatment, patients who received 56–90 days (HR = 2.05, 95% CI: 1.51-2.79) or ≥ 91 days (HR = 3.60, 95% CI: 2.74-4.74) of antimicrobial therapy had a significantly higher likelihood of culture conversion than those who did not receive therapy. Kaplan–Meier analysis further demonstrated a higher cumulative incidence of culture conversion among patients receiving ≥ 91 days of antimicrobial therapy within the same three-month period.

Conclusion: Both microbiological characteristics (acid-fast smear positivity, isolation of *M. avium* complex, *M. abscessus* complex, and *M. kansasii*) and adherence to guideline-based antimicrobial treatment are critical determinants of culture conversion in patients with NTM-LD.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC46

使用類升糖素胜肽-1 受體促效劑，對於糖尿病患者其肺結核發生率及死亡率的影響

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Effect of glucagon-like peptide-1 receptor agonists on the incidence of tuberculosis and mortality in patients with diabetes mellitus

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Purpose: Diabetes mellitus significantly increases the risk of developing active tuberculosis. Poorly controlled diabetes, particularly with sustained hyperglycemia, is associated with higher TB incidence. This study aims to evaluate whether glucagon-like peptide-1 receptor agonist (GLP-1 RA) control modifies TB risk and all-cause mortality.

Materials and Methods: We conducted a retrospective cohort study using the Global Collaborative Network of the TriNetX™ research platform. We identified adults (≥18 years of age) with a diagnosis of diabetes mellitus who received either a GLP-1RA or dipeptidyl peptidase-4 inhibitor (DPP-4i) between January 1, 2016, and December 31, 2024. To reduce confounding, we estimated propensity scores using logistic regression models incorporating age, sex, race, documented comorbidities, concomitant medications, and availability of key laboratory values.

Results: Compared to the control (DPP-4i) cohort, the GLP-1 RA cohort demonstrated a significantly reduced occurrence of tuberculosis (HR: 0.55, 95% CI: 0.45-0.69). Subgroup analysis showed that young people, male gender, and whites/Asians' population had more obvious benefits. Compared to the control (DPP-4i) cohort, the GLP-1 RA cohort exhibited a significantly reduced risk of death (HR: 0.52, 95% CI: 0.51-0.54) and significantly reduced risk of gastrointestinal and hepatobiliary disorders (HR: 0.77, 95% CI: 0.75-0.78). Subgroup analysis suggested benefits across all examined subgroups.

Conclusions: This observational study demonstrated that the use of GLP-1 RA, compared with DPP-4i, was associated with a lower incidence of tuberculosis, all-cause mortality, and gastrointestinal adverse events. These findings may have important implications for public health policy.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC47

血液轉錄體標誌區分鳥型分枝桿菌肺病與移生狀態：一個多中心世代研究

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Blood Transcriptomic Signatures Distinguish *Mycobacterium avium* Complex Pulmonary Disease from Colonization: A Multicenter Cohort Study

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Background: Pulmonary infections caused by nontuberculous mycobacteria (NTM), particularly *Mycobacterium avium* complex (MAC), are increasingly recognized as an important disease. Distinguishing active disease from asymptomatic colonization is based on composite criteria and remains difficult.

Methods: We recruited patients with positive culture of MAC from respiratory specimens in two medical centers in Taiwan, one being internal cohort and the other being external cohort. Peripheral blood transcriptomic profiling was analyzed to predict the clinical status of MAC infection, i.e., pulmonary disease (PD) or pulmonary colonization (PC), as judged according the current diagnostic guidelines. Using the internal cohort, candidate genes were first selected using LASSO regression and recursive feature elimination (RFE) under multiple random seeds to ensure stability. Genes were further filtered based on statistical relevance and functional uniqueness, yielding a biologically informed panel of genes. Systematic exploration of gene subsets was performed and machine learning models with robust generalizability were retained for validation in the external cohort.

Results: A total of 120 MAC-positive patients (Internal cohort: 46 MAC-PD and 28 MAC-PC cases; External cohort: 25 MAC-PD and 21 MAC-PC cases) were enrolled. Seven driver immune-related gene ontology terms were prioritized based on adjusted p-values and hierarchical relevance. The three models demonstrated robust performance in the external validation cohort, with AUCs of 0.78, 0.78, and 0.75, accuracies of 0.67–0.76, precision of 0.75–0.81, sensitivity of 0.68–0.84, and specificity of 0.67–0.81. Additionally, shared a five-gene core signature—IGKV1D-39, IGKV6-21, OVCH1, PLAU, and DMD.

Conclusions: Blood transcriptomics coupled with machine learning modeling can differentiate MAC-PD from MAC-PC. The identified five-gene core signature represents a biologically coherent, minimally invasive biomarker panel with clinical relevance.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC48

長期使用呼吸器患者之吸氣肌訓練效益－肌力訓練與耐力訓練之差異

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Inspiratory Muscle Training in Prolonged Mechanical Ventilation: Strength or Endurance?

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Purpose:

Mechanical ventilation (MV) is a critical intervention for managing respiratory failure; however, approximately 40% of patients experience difficulties during the weaning process. Diaphragm dysfunction (DD) frequently develops in individuals requiring prolonged mechanical ventilation (PMV), leading to weakened inspiratory muscles and delayed ventilator liberation. Inspiratory muscle training (IMT) has been shown to strengthen respiratory muscles and facilitate weaning, though optimal training parameters remain uncertain. This study aimed to compare the effects of strength training (at 50% of maximal inspiratory pressure, MIP) and endurance training (at 20% of MIP) on respiratory function and inspiratory muscle strength in patients undergoing PMV.

Materials and Methods:

This randomized controlled trial was conducted at a tertiary care hospital in northern Taiwan. Forty patients receiving PMV for more than 21 days were randomly assigned to either a strength-training group (MIP 50%) or an endurance-training group (MIP 20%). Both groups performed daily IMT sessions for seven consecutive days, consisting of five breathing cycles per session. Tidal volume (Vt), minute ventilation (MV), respiratory rate (RR), and maximal inspiratory pressure (PiMax) were measured before and after the training period.

Results:

Forty patients were included in the study. Baseline characteristics were comparable between groups ($p > 0.05$). Following intervention, the **strength-training group (n = 20)** exhibited a significant reduction in RR (from 25.1 to 22.5 breaths/min, $p = 0.03$) and significant increases in VT and PiMax (both $p < 0.05$). The **endurance-training group (n = 20)** demonstrated significant improvements in VT, MV, and PiMax (all $p < 0.05$). Between-group analysis showed no significant differences in VT or MV improvement; however, the strength-training group displayed a greater reduction in RR and a trend toward greater PiMax enhancement.

Conclusions:

Inspiratory muscle training effectively enhances respiratory function and muscle strength in patients with PMV. Strength-focused IMT primarily improves inspiratory power and breathing efficiency, whereas endurance training enhances ventilatory capacity. Both approaches are clinically beneficial and should be selected based on individual patient goals and tolerance.

A. □原著論文 (Original Paper) ■病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC49

早期使用體外膜氧合治療吸入硝酸蒸氣合併嚴重急性呼吸窘迫症候群：病例報告

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Early use of ECMO for nitric acid fumes inhalation with severe acute respiratory distress syndrome: a case report

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Background: Inhalation injury due to highly corrosive substances, such as nitric acid, can rapidly lead to Acute Respiratory Distress Syndrome (ARDS) and carries a high mortality risk. Reports of successful management of severe ARDS following nitric acid exposure are limited.

Case Presentation: A 62-year-old man, with a history of heavy smoking and cardiovascular disease, presented with acute dyspnea after occupational inhalation of nitric acid fumes. His chest X-ray showed bilateral consolidation consistent with ARDS. Due to refractory hypoxemia, he was promptly intubated and initiated on veno-venous extracorporeal membrane oxygenation (VV-ECMO) support.

Management & Outcome: The patient received standard ARDS supportive care, including lung-protective ventilation, empirical antibiotics, and intravenous corticosteroids. VV-ECMO was successfully weaned and removed after 9 days, and the patient was extubated on day 13 of admission. He was discharged without supplemental oxygen. A transient complication of four-limb weakness, possibly related to muscle relaxant use, was noted but improved at subsequent follow-up.

Conclusion: This case demonstrates that early, aggressive management with VV-ECMO can be a life-saving strategy for patients suffering from severe ARDS secondary to nitric acid inhalation injury.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC50

COVID-19 患者追蹤 1 年後主要不良心血管事件的發展

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The Development of Major Adverse Cardiovascular Events in COVID-19 Patients after 1 years follow up

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Purpose: This study aimed to investigate the incidence, risk factors and outcomes of major adverse cardiovascular events (MACE) occurring between 30 days and one year after COVID-19 infection.

Materials and Methods: We conducted a single center retrospective study of adult patients with PCR-confirmed COVID-19 at a tertiary hospital in Taiwan (2020–2022). Patients were followed for at least one year to assess MACE occurring between 30 days and 1 year post-infection. Demographics, clinical features, acute illness severity, and outcomes were analyzed.

Results: Of 380 patients included, 35 developed MACE. These patients were older and had more comorbidities, and they had significantly higher frequency of emergency room (ER) visits, rehospitalizations, and 1-year mortality (all $p < 0.001$). The ER visit-free days (HR 4.397, 95% CI 2.931-6.595, $p < 0.001$), hospitalization-free days (HR 5.571, 95% CI 3.69-8.412, $p < 0.001$), and 1-year survival (HR 3.631, 95% CI 2.094-6.297, $p < 0.001$) were significant lower in MACE group. Multivariate analysis identified AF (OR 8.74, $p < 0.001$), CAD (OR 3.09, $p = 0.017$), and malignancy (OR 3.28, $p = 0.01$) as independent risk factors of MACE.

Conclusions: MACE occurring 30 days to one year after COVID-19 infection is associated with increased healthcare utilization and mortality, independent of acute disease severity. Pre-existing AF, CAD, and malignancy are key predictors, highlighting the need for targeted post-COVID cardiovascular monitoring.

A. ■原著論文 (Original Paper) □病例報告論文 (Case Report)

B. □口頭報告 (Oral Presentation) ■海報競賽 (Post)

PC51

感染病原基因定序檢測在肺炎重症肺炎患者的診斷意義：與傳統檢測方式之比較

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Comparison of Metagenomic Next-Generation Sequencing and Conventional Diagnostic Methods for Identifying Causative Pathogens in Severe Pneumonia

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Purpose: Pneumonia remains one of the leading infectious causes of hospitalization and mortality worldwide. Early and appropriate antibiotic therapy is essential for effective treatment, which relies on the prompt identification of the causative pathogens. However, accurately and rapidly determining the etiologic agents of pneumonia remains a major challenge in clinical practice.

Metagenomic next-generation sequencing (mNGS) is a high-throughput DNA sequencing technique that enables the comprehensive detection and identification of a wide spectrum of microorganisms. In the present study, we aim to evaluate the diagnostic performance and accuracy of mNGS, compared with conventional methods such as culture, serology, and polymerase chain reaction (PCR), for identifying causative pathogens of pneumonia in critically ill patients.

Materials and Methods: This study is a subgroup analysis of a randomized trial investigating the use of mNGS for the diagnosis of pneumonia. We analyzed the results of conventional methods, which includes sputum culture, serology, and PCR, and mNGS from mini–bronchoalveolar lavage (mini-BAL) samples collected from 112 intubated patients diagnosed with pneumonia.

Results: The most prevalent pathogens detected by mNGS were *Klebsiella pneumoniae, Veillonella parvula, Pseudomonas aeruginosa, Candida albicans, Pneumocystis jirovecii*, Epstein–Barr virus, and cytomegalovirus. The positive and negative agreement rates for bacterial detection between conventional methods and mNGS were 93.5% and 41.8%, respectively. Compared with conventional methods, mNGS demonstrated significantly higher detection rates for bacteria, fungi, viruses, and even parasites (all $p < 0.05$).

Conclusions: mNGS provides a comprehensive and efficient approach for pathogen detection in critically ill patients with pneumonia. Compared with conventional diagnostic methods, mNGS demonstrated superior sensitivity across a broad range of microorganisms, including bacteria, fungi, viruses, and parasites. However, some organisms detected by mNGS, such as *Veillonella parvula* and *Candida albicans*, may represent colonization rather than true infection. Therefore, mNGS results should always be interpreted in conjunction with clinical context to accurately identify true pathogens and guide appropriate antimicrobial therapy.

NOTE

NOTE

主辦單位

台灣胸腔暨重症加護醫學會

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