會訊

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台灣胸腔暨重症加護醫學會

Taiwan Society of Pulmonary and Critical Care Medicine

總會地址：83301 高雄市鳥松區大埤路 123 號 B1 台灣胸腔暨重症加護醫學會
電話：(07) 735-3917
分會地址：10045 台北市中正區重慶南路一段 57 號 6 樓之 3
電話：(02) 2314-4089
網　址：www.tspccm.org.tw

台灣胸腔暨重症加護醫學會會訊 109 年 6 月第 31 期

發行人 Publisher　林孟志 Meng-Chih Lin

主編 Editor-in-Chief　夏德椿 Te-Chun Hsia

副主編 Deputy Editor-in-Chief　楊政達 Cheng-Ta Yang

學會秘書處
總會地址：83301 高雄市鳥松區大埤路 123 號 B1　台灣胸腔暨重症加護醫學會
電話：(07) 735-3917
分會地址：10045 台北市中正區重慶南路一段 57 號 6 樓之 3
電話：(02) 2314-4089
E-mail：tspccm.t6237@msa.hinet.net
網址：www.tspccm.org.tw
編輯部助理：余智惠
電話：(06) 235-3535 轉 5399　E-mail：chest_medicine@yahoo.com.tw

印刷公司：天生行印刷有限公司
地址：台北市博愛路 52 號　　電話：(02) 2361-5281

本期封面：109 年 5 月 5 日世界氣喘日暨合作備忘錄簽署 (氣喘卓越計畫)。封面為中華民國診所協會全國聯合會塗勝雄理事長、衛生福利部中央健康保險署李伯璋署長、本會理事台大醫院王鶴健主任、臺灣阿斯特捷利康陳康偉總裁合影 (由左至右)

目　　錄

新冠肺炎(COVID-19)的疫情在台灣已經趨於和緩，但是在歐美，非洲，南美各國甚至俄羅斯，印度均還有快速增加的個案，全世界的挑戰還正在起步階段，台灣目前的穩定安全是國人共同努力的結果，在中央流行疫情指揮中心的領導下我們做了非常成功的防疫作為，也有了非常成功的醫療成果，目前為止台灣的確診個案死亡人數比起全世界的平均數是相當的低，這一點學會會員同仁們的努力佔很重要的貢獻，也再次呼籲我們所有學會同仁面對再來的疫情挑戰仍是要沉著穩定面對，再作更多的研究及教育。

在後新冠肺炎的年代，由於全世界各個國家社會經濟已受到很大的衝擊，因此許多國家縱使疫情沒得到緩和但已經急於解封，社會秩序文化個人習慣都會因為此次疫情的衝擊做了巨大的改變。口罩、洗手及安全的社交距離會是在後新冠肺炎年代裡頭一定要遵守的規矩。也因為疫情的衝擊，我們學會的再教育行程內容安排也都受到影響。相關的胸腔國際會議如ATS、ASCO都已經取消或直接改成線上直播，在接下來的如ERS也改成線上舉行，而在京都舉行的APSR也延至明年舉行。在六月二十日的學會夏季會我們也採取線上會議，期待所有會員同仁能夠踴躍參與，讓這首次的視訊會議能達到最好的成效。

因為教育型態的改變，下半年度的教育、演講安排大部分都會採視訊或是小班教學，實名制報名，固定座位的方式進行，很多的議題也會跟COVID-19有連結，如肺癌與COVID-19、呼吸道疾病與COVID-19。但是與心臟學會合作的COPD和Heart Failure共識指引，以及NTM議題在台灣醫學會雜誌發表的專刊均仍如火如荼進行中會在近期發表。以一個病毒的感染造成全世界的大改變真是始料未及，祝福大家保重平安，共同合作面對COVID-19病毒防疫與戰爭。

理事長 林孟志

薛尊仁教授
國立成功大學附設醫院 胸腔內科

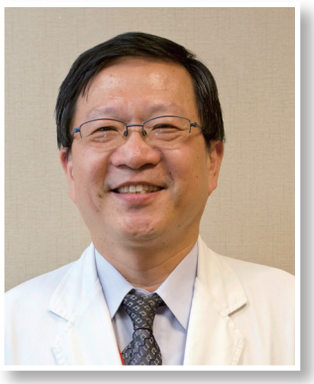
二個月前接到學校的通知，告知明年一月底為屆齡退休的日期，才驚覺時間過得太快了，從民國 75 年考上胸專，在胸腔科教學服務研究已近 34 年了。

這期間胸腔科診治有許多的改變，包括氣喘治療藥物從靜脈注射茶鹼到吸入性類固醇及生物製劑；肺癌從近無效且痛苦的針劑化學治療到有效且少副作用的標靶藥物治療；電腦斷層攝影及正子攝影的發明導入；IPF 治療藥物從無到有；呼吸治療的一路千里；支氣管鏡檢查及肋膜腔鏡檢查的進化；睡眠醫學的普及；重症醫師由原科兼任至專職化；RCC 及 RCW 的設置；冠狀病毒肺炎的兩次恐怖來襲；以及紙本病歷變成方便 copy and paste 的電子病歷。這些改變讓胸腔科醫師業務更寬廣且工具更精良來拯救我們的病人。

但不變的是，我們從醫的初心：安身立命，幫助病人；基本的病史詢問身體檢查能力；基本的胸部 X 光片判讀技巧；正確的病歷書寫內容；系統性的臨床推理方法；以及我們教導培育年輕醫師的熱誠。而這些都是我們核心基本也是最重要不可忽略的修練。

值此武漢肺炎病毒肆虐之時，我們的工作雖有風險及辛苦，但比別人更有價值及意義。除了工作，我們也不要忘記美好人生的其他面向，包括健康、家庭、及人際關係。平時分配好時間在運動及定期體檢，家庭優先經營和諧家庭，以及控制情緒維持良好人際關係等方面，希望我們胸腔科醫師都能有一個美好充實的人生。

監事 薛尊仁



立夏日已過，希望炎熱的天氣會將疫毒驅散，讓我們重回以往。

本期資深理事的話，薛教授語重心長，勉勵大家要一本初心、安身立命、幫助病人。工作之餘更要注意自己的健康、家庭以及人際關係的和諧。希望每一位胸腔科醫生都有一個完美充實的人生。薛教授從事胸腔科診療工作 30 多年是我們學習的典範。

本期胸腔暨重症案例由義大醫院呼吸胸腔內科許榮逵醫師提供一例素有高血壓、糖尿病病史的中年婦女因為高燒和咳嗽住院，在雙側肺炎的診斷下，給予抗生素治療，但卻快速的惡化進入呼吸衰竭。這類病人常常是胸腔重症醫師在鑑別診斷上最大的挑戰。

醫學新知第一篇由李和昇醫師編譯和評論 2019 年刊載於 NEJM 的一個前瞻性隨機分配臨床實驗的結果。本研究收納 532 位病人，臨床上都有慢性阻塞性肺病的診斷，探討乙型交感神經阻斷劑是否可以減少肺阻塞急性惡化？因為在以往的觀察性研究認為此類藥物對肺阻塞病人是利大於弊。但本文的結論卻發現使用交感神經阻斷劑的病人惡化住院率和死亡率都高於安慰劑組織。所以對於慢性肺病病人要使用乙型交感神經劑仍必須詳細的評估其適應症。

第二篇，陳靜宜醫師同樣選讀了 NEJM 2020 年的一篇文章。這個研究探討中量至大量的非複雜性、原發性自發性氣胸，保守治療相對於介入治療是否是一種有效且可以被接受的選擇。本研究挑戰是否所有中量至大量原發性自發性氣胸病人都必須接受常規引流的概念。研究結果所提供的證據可能打破了我們傳統的概念值得大家一讀。

魏裕峰主任同樣摘錄了來自 NEJM 2020 年的文章。自從 National lung screening trial (NLST) 結果顯示低劑量電腦斷層篩檢可以降低 20% 的肺癌死亡率之後，美國便開始實施篩檢計劃一但有很多國家仍採觀望。本文的背景重點在於探討吸菸已戒菸的高危險族群接受低劑量電腦斷層篩檢是否可以降低肺癌死亡率。本研究收入的男性有 13,195 位，女性 2,594 位。研究的結果的確提供了低劑量電腦斷層篩檢可以有效降低肺癌死亡率的證據，但如何普及化就必須要列入經濟條件的考量，所以適當族群的選擇應該是未來需要重點研究的方向。

陳鍾岳醫師在吐納園地發表的“一萬英里的期待”讓我們看到義守大學和附設醫院的醫生們如何面對懷著希望到台灣學習的友邦醫師。在種族、語言、文化差異非常大的狀況之下要做好醫學傳承的確是非常大的挑戰。我直接的想法就是夏蟲不可語冰，但陳醫師娓娓道來他們如何因材施教，如何克服語言的障礙，希望台灣的努力可以滿足這些友邦人士的期待。

本次出刊十分感謝魏裕峰主任帶領義大醫院呼吸胸腔內科的全力支援，才能讓會刊準時發行。我們也更期待有更多團隊願意為會刊提供資訊，強化我們的內容和溝通。

主編 夏德勝

會員動態

會籍資料 (統計至 109/5/11)

榮譽會員：29 人

準會員：131 人

一般會員：1,403 人

共計：1,563 人

敬告各位會員們：

若您自身有任何訊息 (升遷、調動)，希望由本會公告轉知所有會員時，敬請直接 E-mail 至 chest_medicine@yahoo.com.tw，本會將刊登於「會員動態」中，謝謝您～

研討會、繼續教育課程行事曆

名稱	日期	地點
健保氣喘慢性照護醫師資格認證與進修演講課程	109 年 5 月 31 日 (星期日) 109 年 6 月 7 日 (星期日) 109 年 6 月 14 日 (星期日) 109 年 6 月 28 日 (星期日)	北區 - 張榮發基金會 8 樓 803 會議室 宜蘭區 - 李科永紀念圖書館三樓階梯視聽館 高屏區 - 高雄國際會議中心 303A 會議室 台北區 - 張榮發基金會 8 樓 802 會議室
夏季年會	109 年 6 月 20~21 日 (星期六 ~ 日)	因應新型冠狀病毒疫情，2020 夏季會採「線上直播」方式辦理
2020 年會	109 年 12 月 12~13 日 (星期六 ~ 日)	台大國際會議中心 (100 台北市中正區徐州路 2 號)

※ 詳情請參閱學會網站 (http://www.tspccm.org.tw/)

胸腔暨重症案例

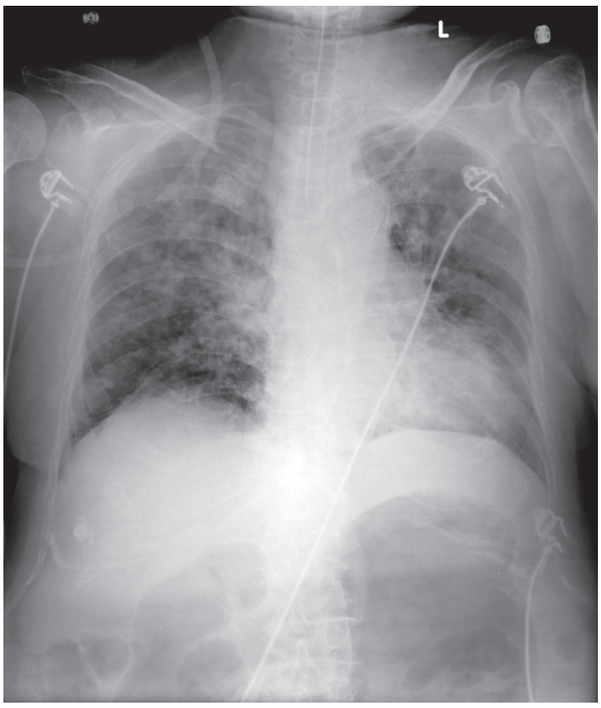


Fig. A

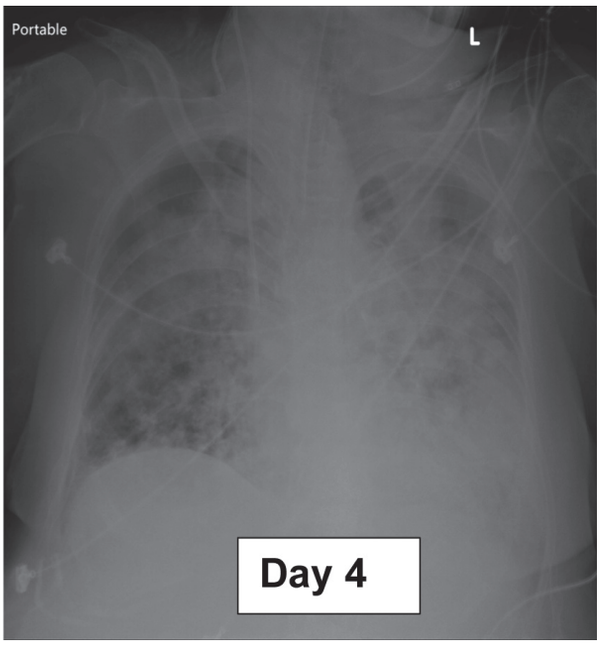


Fig. B

提供：義大醫院 呼吸胸腔內科 許棨逵醫師

[Case]

A 66-years-old woman with diabetes mellitus and hypertension presented to a regional hospital with 3-day history of high fever and productive cough. The diagnosis of bilateral pneumonia was made after a series work-up. On the next day, she was intubated with mechanical ventilator support and was transferred to ICU. Initial antibiotic with Piperacillin/Tazobactam was administered. Sputum culture disclosed Klebsiella pneumoniae, which was susceptible to all antibiotics. Unfortunately, her consciousness deteriorated and septic shock developed, so her family requested transferal to our ICU for further treatment.

On arrival, her body temperature: 39.9°C, the initial WBC: 24,360/μL, Neutrophil: 89.3%, lymphocyte: 2.5%, BUN/Cr: 78.6/2.4 mg/dL, Na/K: 170/3.9 mEq/L, AST/ALT: 44/21, Procalcitonin (PCT): 1.346 ng/mL. The first day Chest X ray (CXR) was presented. (Fig. A)

Antibiotic combination with Meropenem + Levofloxacin were administered since the first day in our ICU. But fever persisted, and bilateral lung consolidation progressed 3 days later (the 11th day after onset of disease). (Fig. B)

醫學新知 I

Metoprolol 對肺阻塞急性惡化的預防

摘自：N Engl J Med 2019; 381: 2304-14.
編譯：李和昇醫師 義大醫院 呼吸胸腔內科

目的：

過去的觀察型研究顯示 beta-blocker 可以降低中度或重度的肺阻塞病人急性惡化和死亡的風險，但缺乏隨機臨床試驗的驗證。

研究方法：

這是一個前瞻性的隨機分配臨床試驗，將年紀介於 40 歲至 85 歲的肺阻塞病人分配到 beta-blocker (extended-release metoprolol) 或安慰劑組。所有的病人都有肺阻塞的臨床診斷，並且有中度的氣流阻塞和較高的急性惡化風險，像是試驗前的一年內有急性發作的紀錄或是使用氧氣。排除那些已經在使用 beta-blocker 的病人和已經有 beta-blocker 適應症的病人。臨床試驗終點是直到肺阻塞第一次急性惡化的時間 (the time until the first exacerbation of COPD during the treatment period)。

研究結果：

最後總共 532 位病人進入隨機分配，年齡中位數是 65.0±7.8 歲，FEV_1 中位數是 41.1±16.3%。本試驗因為臨床試驗終點無效以及安全考量而提早終止。這兩組發生第一次急性惡化的中位數時間並沒有差異，metoprolol 組是 202 天，安慰劑組是 222 天 (Hazard ratio 1.05, 95% 信賴區間 0.84-1.32, p=0.66)。Metoprolol 組因急性惡化住院的比率較高 (Hazard ratio 1.91, 95% 信賴區間 1.29-2.83)。藥物治療相關的副作用和呼吸道以外的嚴重副作用的頻率，兩組間並無差異。在治療期間當中，metoprolol 組有 11 位死亡，而安慰劑組是 5 位。

結論：

中度或重度肺阻塞的病人若並沒有已知的 beta-blocker 適應症或是已經正在使用 beta-blocker，在本試驗這兩組的第一次肺阻塞急性發作中位時間是沒有差異的，而且 metoprolol 組還有更高的機會因急性惡化住院。

〔編譯者評論〕

Beta-blocker 因為有支氣管收縮的副作用，過去在肺阻塞的病人被視為需小心使用的藥物。但另一方面，beta-blocker 對於高血壓、鬱血性心衰竭、心博過速等都有很好的治療效果及實證，所以在合併有上述疾病的肺阻塞病人是否利大於弊，一直都是臨床醫師關注的議題，也有許多相關

的臨床試驗。雖然大部份是回溯性、觀察性的研究，但有許多結論是認為 beta-blocker 對於有上述適應症的肺阻塞病人是利大於弊的，也能改善肺阻塞急性惡化的頻率和死亡率。而這樣的好處，可能是經由改善心臟功能而得到的，不一定是藥物改善了肺阻塞本身疾病的控制。

本篇臨床試驗很大膽的將 selective beta-1-blocker (metoprolol) 用在單純的中重度肺阻塞病人，這些病人並沒有正在使用 beta-blocker，也沒有 beta-blocker 的適應症。這樣做的目的在於檢視 beta-blocker 對於單純的中重度肺阻塞病人是否有減少急性惡化發生的效果。而且本試驗採用隨機分配進行，總共納入了 532 位病人，這樣的試驗設計及人數也勝過之前的研究。本臨床試驗因為兩組在第一次急性惡化的中位數時間上沒有差異，而且 metoprolol 組的肺阻塞急性惡化住院率和死亡率都高於安慰劑組，所以提早終止試驗。

因此，依目前的證據，對於肺阻塞病人，還是在病人具有心臟衰竭、高血壓等適應症的情形下，依據病人臨床狀況審慎使用 selective beta-1-blocker，才能利大於弊，對肺阻塞達到更好的控制。

Metoprolol for the Prevention of Acute Exacerbations of COPD

N Engl J Med 2019; 381: 2304-14.

M. T. Dransfield, H. Voelker, J. E. Connett, *et al*.

Abstract

BACKGROUND:

Observational studies suggest that beta-blockers may reduce the risk of exacerbations and death in patients with moderate or severe chronic obstructive pulmonary disease (COPD), but these findings have not been confirmed in randomized trials.

METHOD:

In this prospective, randomized trial, we assigned patients between the ages of 40 and 85 years who had COPD to receive either a beta-blocker (extended-release metoprolol) or placebo. All the patients had a clinical history of COPD, along with moderate airflow limitation and an increased risk of exacerbations, as evidenced by a history of exacerbations during the previous year or the prescribed use of supplemental oxygen. We excluded patients who were already taking a beta-blocker or who had an established indication for the use of such drugs. The primary end point was the time until the first exacerbation of COPD during the treatment period, which ranged from 336 to 350 days, depending on the adjusted dose of metoprolol.

RESULTS:

A total of 532 patients underwent randomization. The mean (±SD) age of the patients was 65.0±7.8 years; the mean forced expiratory volume in 1 second (FEV_1) was 41.1±16.3% of the predicted value. The trial was stopped early because of futility with respect to the primary end point and safety concerns. There was no significant between group difference in the median time until the first exacerbation, which was 202 days in the metoprolol group and 222 days in the placebo group (hazard ratio for metoprolol vs. placebo, 1.05; 95% confidence interval [CI], 0.84 to 1.32; *P*=0.66). Metoprolol was associated with a higher risk of exacerbation leading to hospitalization (hazard ratio, 1.91; 95% CI, 1.29 to 2.83). The frequency of side effects that were possibly related to metoprolol was similar in the two groups, as was the overall rate of nonrespiratory serious adverse events. During the treatment period, there were 11 deaths in the metoprolol group and 5 in the placebo group.

CONCLUSION:

Among patients with moderate or severe COPD who did not have an established indication for beta-blocker use, the time until the first COPD exacerbation was similar in the metoprolol group and the placebo group. Hospitalization for exacerbation was more common among the patients treated with metoprolol. (Funded by the Department of Defense; BLOCK COPD ClinicalTrials.gov number, NCT02587351.)

醫學新知Ⅱ

自發性氣胸的保守治療與介入治療

摘自：N Engl J Med 2020; 382: 405-15. DOI: 10.1056/NEJMoa1910775

編譯：陳靜宜醫師 / 魏裕峰醫師 義大醫院 呼吸胸腔內科

背景：

對於中量至大量的非複雜原發性自發性氣胸，保守治療相對於介入治療是否為一種有效且可以被接受的治療選擇。

方法：

這是一個開放性、多中心、非劣性試驗，招募 14 到 50 歲病人具有初次發現、單側且中量至大量原發性自發性氣胸。患者被隨機分配到立即接受氣胸介入治療 (介入組) 和保守觀察 (保守治療組)，並訪視追蹤 12 個月。主要指標為 8 周內肺部重新擴張情況。

結果：

試驗結果共有 316 位病人進行隨機分組 (154 位病人為介入組與 162 位病人為保守治療組)。在保守治療組中，有 25 位病人 (15.4%) 依據試驗計畫中規定的理由接受氣胸介入治療，其他 137 位病人 (84.6%) 沒有進行介入。在介入組的 131 位病人中有 129 位 (98.5%) 在 8 周內氣胸獲得改善，而在保守治療組中 125 位病人有 118 位 (94.4%)(風險差異 -4.1 百分點；95% 信賴區間 -8.6 to 0.5；非劣性 P=0.02)，95% 信賴區間的下限仍在原本預期非劣性 -9 百分點內。而在敏感性分析中，如果將因超過 56 天後訪視追蹤的排除案例缺失數據歸因於治療失敗時 (介入組的 138 位病人中有 129 位 [93.5%] 與保守治療組中 143 位病人有 118 位 [82.5%]，則風險差異 -11.0 百分點；95% 信賴區間 -18.4 to -3.5，超出原本預期非劣性的差異。

結論：

此試驗仍提供中度等級的證據，指出對於原發性自發性氣胸，保守治療非劣於介入治療，且有較低併發症的風險。

〔編譯者評論〕

原發性自發性氣胸最常見治療方式包括保守觀察、抽吸空氣、豬尾巴導管引流、以及胸管插入引流，甚至需要手術治療。但是豬尾巴導管引流或胸管插入引流通常會引起疼痛且可能導致器官損傷出血或感染等併發症。保守觀察是另外一種治療選擇，然而目前尚無對於原發性自發性氣胸的保守治療相對於介入治療的隨機試驗，所以也沒有證據指出哪一種治療方式為最佳選擇。臨床上，中量至大量原發性自發性氣胸病人通常會接受常規引流。

此研究試驗挑戰是否所有中量至大量原發性自發性氣胸病人皆須接受常規引流的概念。設計

標準化的隨機治療方式後，若保守觀察組有臨床症狀加重或失命跡象改變，仍可按照臨床常規做進行介入治療。而在病人選擇上，此研究僅限於初發非複雜性自發性中量至大量氣胸，以免先前治療或潛在肺疾病影響分析。結果顯示兩組除了 8 周內氣胸改善類似之外，保守觀察組較介入組有較低的住院日及併發症，甚至有較低的一年內氣胸復發率。

這篇研究結果提供證據，面對原發性自發性氣胸，保守治療與介入治療相比治療效果沒有比較差且發生併發症機會更少，是一種有效且可以被接受的治療選擇。

Conservative versus Interventional Treatment for Spontaneous Pneumothorax

N Engl J Med 2020; 382: 405-15. DOI: 10.1056/NEJMoa1910775

S.G.A. Brown, E.L. Ball, K. Perrin, *et al*.

Abstract

BACKGROUND

Whether conservative management is an acceptable alternative to interventional management for uncomplicated, moderate-to-large primary spontaneous pneumothorax is unknown.

METHODS

In this open-label, multicenter, noninferiority trial, we recruited patients 14 to 50 years of age with a first-known, unilateral, moderate-to-large primary spontaneous pneumothorax. Patients were randomly assigned to immediate interventional management of the pneumothorax (intervention group) or a conservative observational approach (conservative-management group) and were followed for 12 months. The primary outcome was lung reexpansion within 8 weeks.

RESULTS

A total of 316 patients underwent randomization (154 patients to the intervention group and 162 to the conservative-management group). In the conservative management group, 25 patients (15.4%) underwent interventions to manage the pneumothorax, for reasons prespecified in the protocol, and 137 (84.6%) did not undergo interventions. In a complete-case analysis in which data were not available for 23 patients in the intervention group and 37 in the conservative-management group, reexpansion within 8 weeks occurred in 129 of 131 patients (98.5%) with interventional management and in 118 of 125 (94.4%) with conservative management(risk difference, -4.1 percentage points; 95% confidence interval [CI], -8.6 to 0.5; *P*=0.02 for noninferiority); the lower boundary of the 95% confidence interval was within the prespecified noninferiority margin of -9 percentage points. In a sensitivity analysis in which all missing data after 56 days were imputed as treatment failure (with reexpansion in 129 of 138 patients [93.5%] in the intervention group and in 118 of 143 [82.5%] in the conservative-management group), the risk difference of -11.0 percentage points (95% CI, -18.4 to -3.5) was outside the prespecified noninferiority margin. Conservative management resulted in a lower risk of serious adverse events or pneumothorax recurrence than interventional management.

CONCLUSIONS

Although the primary outcome was not statistically robust to conservative assumptions about missing data, the trial provides modest evidence that conservative management of primary spontaneous pneumothorax was noninferior to interventional management, with a lower risk of serious adverse events. (Funded by the Emergency Medicine Foundation and others; PSP Australian New Zealand Clinical Trials Registry number, ACTRN12611000184976.)

醫學新知Ⅲ

體積測量的低劑量電腦斷層可降低肺癌死亡率

摘自：N Engl J Med 2020; 382: 503-513. DOI: 10.1056/NEJMoa1911793

編譯：魏裕峰醫師 義大醫院 呼吸胸腔內科

背景：

在吸菸或已戒菸的男性接受體積測量的低劑量電腦斷層篩檢是否可以降低肺癌死亡率，目前並無大型的隨機試驗。

方法：

本試驗共有年齡介於 50 到 74 歲的 13,195 位男性及 2,594 位女性，隨機接受低劑量電腦斷層篩檢，並於第 1 年，第 3 年，及第 5.5 年接受追蹤 (篩檢組)，或不篩檢 (對照組)。之後收集肺癌診斷的相關資料並於資料庫追蹤病人死亡原因作分析。所有參加的人至少追蹤十年，一直到 2015 年 12 月 31 日。

結果：

試驗結果共有 90.0% 的男性完成了追蹤。平均有 9.2% 接受篩檢的參加者多接受了至少一次以上的電腦斷層 (因無法排除惡性)。另外，有 2.1% 懷疑是惡性結節而轉介。經過十年的追蹤，在篩檢組每一千人年的肺癌發生率為 5.58 例，對照組每一千人年的肺癌發生率為 4.91 例。每一千人年的肺癌死亡率，在篩檢組及對照組分別為 2.50 例及 3.30 例。篩檢組比起對照組，男性第十年的累計死亡率比值為 0.76 (95% 信賴區間 0.61 to 0.94; *P*=0.01)，跟第八年或第九年的比值差不多。女性第十年的的累計死亡率比值則為 0.67 (95% 信賴區間 0.38 to 1.14)，第七年及第九年的比值分別為 0.41 及 0.52。

結論：

在高危險的族群，接受體積測量的低劑量電腦斷層篩檢可以降低肺癌死亡率。

〔編譯者評論〕

自從 National Lung Screening Trial (NLST) 結果顯示低劑量電腦斷層篩檢可以降低 20% 肺癌死亡率之後，美國便開始施行篩檢計畫。但是很多國家仍在觀望並等待其他的大型研究結果。這篇 NELSON 研究的樣本人數更多，結果發現接受篩檢的男性在第十年可以降低 24% 的肺癌死亡率，女性更可以降低 33% 的肺癌死亡率。

這個研究結果與 NLST 的結果一致。另外還有幾點值得注意：1. 這個研究的篩檢間隔為 1 年，2 年，及 2.5 年，與 NLST 嚴格規定每年篩檢的間隔不同，但是結果甚至比 NLST 更好。這是否暗示兩年篩檢一次即是有效及安全的？ 2. 篩檢組及對照組的肺癌死亡率在第八年之後就不再有

差異，是否暗示篩檢的好處在開始篩檢後的 3-4 年內便達到最高？ 3. 這篇 NELSON 研究與先前 NLST 研究皆顯示女性較男性可降低更多的肺癌死亡率，其原因有待後續研究釐清。4. 本研究有 10% 的參加者被過度診斷 (overdiagnosis)，但比起降低更多的肺癌死亡率 (24-33%)，結果似乎可以接受。5. 先前研究指出約有 20% 接受篩檢的參加者會因無法排除惡性而多接受了至少一次以上的電腦斷層，但本研究只有 9.2%。是否因為此研究是用體積測量的低劑量電腦斷層，評估結節體積 (volume) 及體積倍增時間 (volume doubling time)，而非僅是大小評估結節的變化？

這篇 NELSON 研究結果提供了低劑量電腦斷層篩檢可以有效降低肺癌死亡率的證據。之後的研究應該著重在研究篩檢方式及族群的選擇，讓篩檢更符合經濟效益。

Reduced Lung-Cancer Mortality with Volume CT Screening in a Randomized Trial

N Engl J Med 2020; 382: 503-513. DOI: 10.1056/NEJMoa1911793

Harry J. de Koning, Carlijn M. van der Aalst, Pim A. de Jong, *et al*.

Abstract

BACKGROUND

There are limited data from randomized trials regarding whether volume-based, low-dose computed tomographic (CT) screening can reduce lung-cancer mortality among male former and current smokers.

METHODS

A total of 13,195 men (primary analysis) and 2,594 women (subgroup analyses) between the ages of 50 and 74 were randomly assigned to undergo CT screening at T0 (baseline), year 1, year 3, and year 5.5 or no screening. We obtained data on cancer diagnosis and the date and cause of death through linkages with national registries in the Netherlands and Belgium, and a review committee confirmed lung cancer as the cause of death when possible. A minimum follow-up of 10 years until December 31, 2015, was completed for all participants.

RESULTS

Among men, the average adherence to CT screening was 90.0%. On average, 9.2% of the screened participants underwent at least one additional CT scan (initially indeterminate). The overall referral rate for suspicious nodules was 2.1%. At 10 years of follow-up, the incidence of lung cancer was 5.58 cases per 1,000 person-years in the screening group and 4.91 cases per 1,000 person-years in the control group; lung-cancer mortality was 2.50 deaths per 1,000 person-years and 3.30 deaths per 1,000 person-years, respectively. The cumulative rate ratio for death from lung cancer at 10 years was 0.76 (95% confidence interval [CI], 0.61 to 0.94; *P*=0.01) in the screening group as compared with the control group, similar to the values at years 8 and 9. Among women, the rate ratio was 0.67 (95% CI, 0.38 to 1.14) at 10 years of follow-up, with values of 0.41 to 0.52 in years 7 through 9.

CONCLUSIONS

In this trial involving high-risk persons, lung-cancer mortality was significantly lower among those who underwent volume CT screening than among those who underwent no screening. There were low rates of follow-up procedures for results suggestive of lung cancer. (Funded by the Netherlands Organization of Health Research and Development and others; NELSON Netherlands Trial Register number, NL580. opens in new tab.)

通訊繼續教育

- 測驗回函截止日：109 年 7 月 15 日
- 當期作答分數須達 (含) 80 分以上 (第 1 題 10 分；第 2~7 題，每題 15 分)，每期給予教育積分 A 類 3 分，上限為 6 年內不得超過 60 分。
- 敬請會員踴躍參與作答，以便累積學會積分；僅限台灣胸腔暨重症加護醫學會會員作答。(正確解答請參閱下期會訊)。

胸腔暨重症案例：(本題 10 分)(請參閱 page 9)

A 66-years-old woman with diabetes mellitus and hypertension presented to a regional hospital with 3-day history of high fever and productive cough. The diagnosis of bilateral pneumonia was made after a series work-up. On the next day, she was intubated with mechanical ventilator support and was transferred to ICU. Initial antibiotic with Piperacillin/Tazobactam was administered. Sputum culture disclosed Klebsiella pneumoniae, which was susceptible to all antibiotics. Unfortunately, her consciousness deteriorated and septic shock developed, so her family requested transferal to our ICU for further treatment.

On arrival, her body temperature: 39.9^{o}C, the initial WBC: 24,360/μL, Neutrophil: 89.3%, lymphocyte: 2.5%, BUN/Cr: 78.6/2.4 mg/dL, Na/K: 170/3.9 mEq/L, AST/ALT: 44/21, Procalcitonin (PCT): 1.346 ng/mL. The first day Chest X ray (CXR) was presented.

Antibiotic combination with Meropenem + Levofloxacin were administered since the first day in our ICU. But fever persisted, and bilateral lung consolidation progressed 3 days later (the 11th day after onset of disease).

1. Which is the most possible diagnosis according to above clues:
   (A) Bacterial pneumonia + pulmonary cryptococcusl infection
   (B) Bacterial pneumonia + invasive pulmonary aspergillosis
   (C) Wegnerner's granulomatosis
   (D) Bacteria pneumonia + Lung cancer

選擇題：(每題 15 分)

2. NEJM 雜誌在 2019 年 12 月所刊的『Metoprolol 對於肺阻塞急性惡化的預防』一文，關於本臨床試驗特色的敘述，何者錯誤？
   (A) 病人族群挑選中度和重度的肺阻塞病人，並且在進入本試驗前一年必須有一次的急性惡化或有使用氧氣
   (B) 排除已經在使用 beta-blocker 的病人以及已經具有 beta-blocker indication 的病人
   (C) 前瞻性、隨機分配的臨床試驗，以治療期間發生第一次肺阻塞急性惡化的時間作為主要試驗終點，肺功能變化為次試驗終點
   (D) 最後有 532 位病人進入隨機分配

3. 關於上述臨床試驗的最後結果及相關討論，何者錯誤？
   (A) 本試驗因為無法達到臨床試驗終點以及治療相關的副作用而提早終止
   (B) metoprolol 組與安慰劑組的第一次肺阻塞急性惡化的中位數時間在統計上沒有差異，而且 metoprolol 組因肺阻塞急性惡化住院的頻率以及組內的死亡數都高於安慰劑組
   (C) 依本臨床試驗的結果，對於單純的中重度肺阻塞而且沒有鬱血性心衰竭及高血壓等 beta blocker 適應症的病人，給予 selective beta-1-blocker 對於降低病人肺阻塞第一次肺阻塞急性惡化是沒有好處的
   (D) 對於有鬱血性心衰竭及心血管疾病等有 beta blocker 適應症的肺阻塞病人，仍然不建議給 selective beta-1-blocker 治療

4. NEJM 雜誌在 2020 年所刊的『自發性氣胸的保守治療與介入治療』一文，關於本臨床試驗特色的敘述，何者錯誤？
   (A) 招募對象為 14 到 50 歲病人具有初次發現、單側且中量至大量原發性自發性氣胸
   (B) 此隨機試驗共有 154 位病人為介入組與 162 位病人為保守治療組
   (C) 病人追蹤 12 個月。主要指標 (primary outcome) 為 8 周內肺部重新擴張情況
   (D) 保守治療的病人接受介入治療則需退出研究

5. 關於上述臨床試驗的最後結果及相關討論，何者錯誤？
   (A) 研究結果，有 33% 保守治療的病人須接受介入治療而退出研究
   (B) 保守觀察組跟介入組 8 周內氣胸改善類似
   (C) 保守觀察組較介入組有較低的住院日及併發症
   (D) 保守觀察組較介入組有較低的 12 個月內的氣胸復發率

6. NEJM 雜誌在 2020 年所刊的『Reduced Lung-Cancer Mortality with Volume CT Screening in a Randomized Trial』一文，下列敘述何者錯誤？
   (A) 納入吸菸或已戒菸的族群
   (B) 篩檢族群年齡介於 50 到 74 歲
   (C) 篩檢組於第 1 年，第 2 年，及第 3 年接受電腦斷層追蹤
   (D) 所有參加的人至少追蹤十年

7. 關於上述臨床試驗的最後結果及相關討論，何者錯誤？
   (A) 這個研究結果與 NLST 的結果一致
   (B) 這篇 NELSON 研究與先前 NLST 研究皆顯示男性較女性可降低更多的肺癌死亡率
   (C) 本研究有 10% 的參加者被過度診斷 (overdiagnosis)
   (D) 先前研究指出約有 20% 接受篩檢的參加者會因無法排除惡性而多接受了至少一次以上的電腦斷層，但本研究只有 9.2%。可能是因為此研究是用體積測量的低劑量電腦斷層，評估結節體積 (volume) 及體積倍增時間 (volume doubling time)，而非僅是大小評估結節的變化

測驗回函 (2020 年 6 月第 31 期)

截止日：109 年 7 月 15 日

會員編號：_____　　姓名：_____

1		2		3		4	
5		6		7			

- 作答完畢後請以 E-mail 方式回覆至學會秘書處，以免損失權益。

★學會秘書處

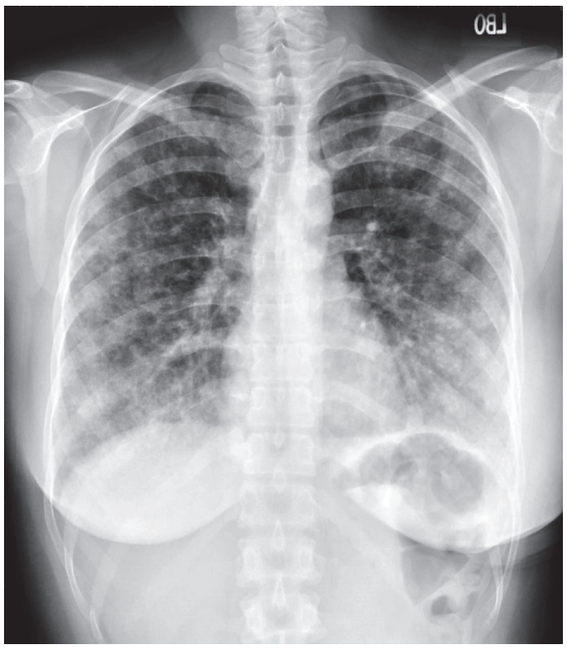
高雄聯絡電話：(07) 735-3917

台北聯絡電話：(02) 2314-4089

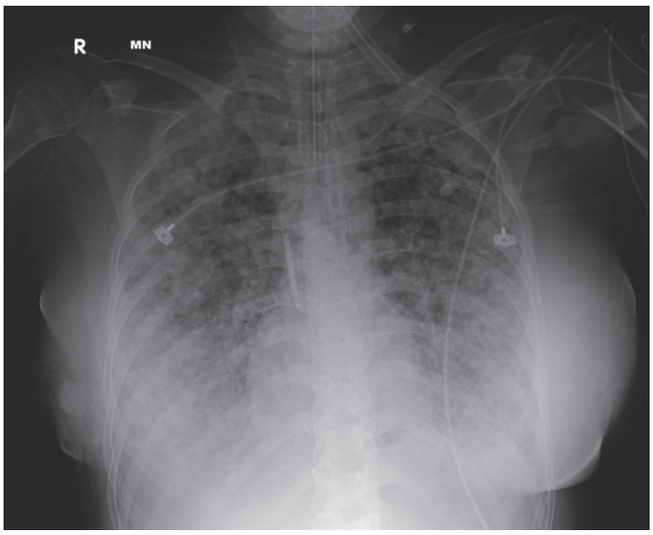
E-mail：tspccm.t6237@msa.hinet.net

上期解答

【Day 1】



【Day 3】



提供：台中榮民總醫院 重症醫學部 傅彬貴醫師

[Case]

A 27-year-old female with cough and blood-tinged sputum for 3 weeks. A lump in the left breast was noted since half a year ago and was progressed in size. She was sent to hospital due to progressive dyspnea and recurrent hemoptysis. Then she was intubated on the 3rd hospital day due to massive hemoptysis with acute respiratory failure.

[Question]

1. 從影像學您的臆測導致該病患大量肺出血 diffused alveolar hemorrhage (DAH) 可能的診斷為何？
   (A) Auto-immune disease with lung involvement
   (B) Pulmonary tuberculosis (disseminated)
   (C) Invasive Pulmonary aspergillosis
   (D) Breast cancer with lung metastasis (e.g Angiosarcoma)
   (E) Congenital heart disease with decompensated heart failure and pulmonary edema

[Answer]

(D) Breast cancer with lung metastasis (e.g Angiosarcoma)

The CT findings of multiple solid nodular lesions accompanied by ground-glass attenuation surrounding solid nodules could be an important hint of **"metastasis angiosarcoma in lung with alveolar hemorrhage"**. In addition, the pathologic finding of breast mass is consistent with high grade angiosarcoma due to the positive results of immunohistochemical stains for AE1/AE3, CD31, CD34, ERG and c-MYC.

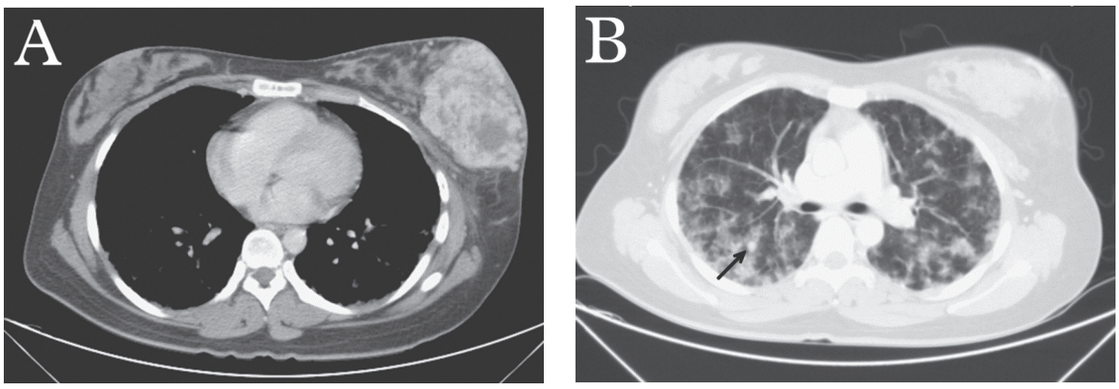


Figure 1. (A) Computed tomography scan image of breast with IV contrast showed a hypervascularity mass in the left breast. (B) On lung window setting, multiple nodular lesions (arrow) and diffuse ground-glass patches in both lung fields were found.

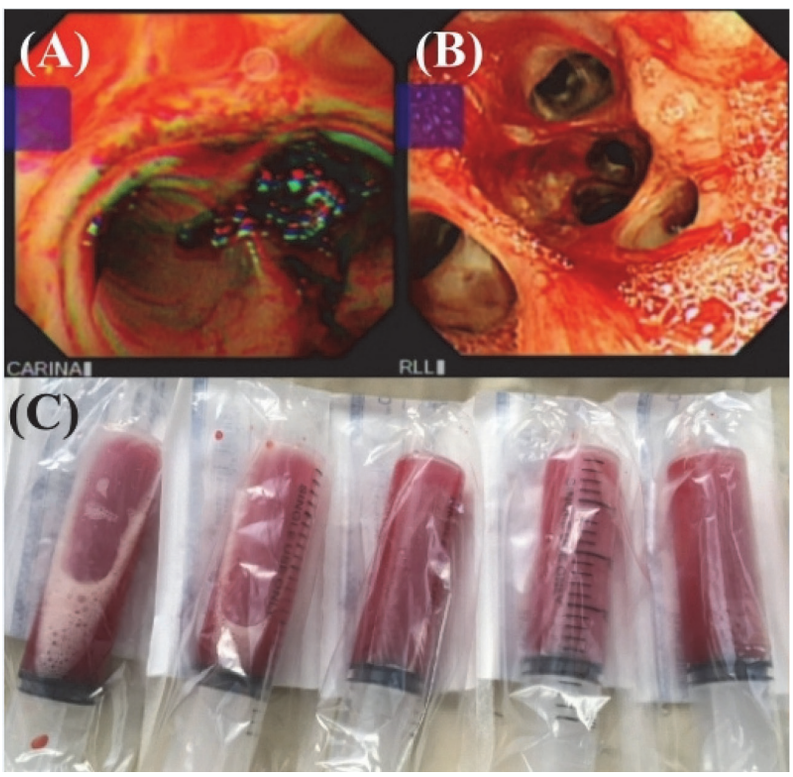


Figure 2. (A) Diffuse alveolar hemorrhage (DAH) in BAL (bronchoalveolar lavage), at carina. (B) DAH in BAL, at right lower lung (RLL). (C) Bloody specimen from BAL fluid.

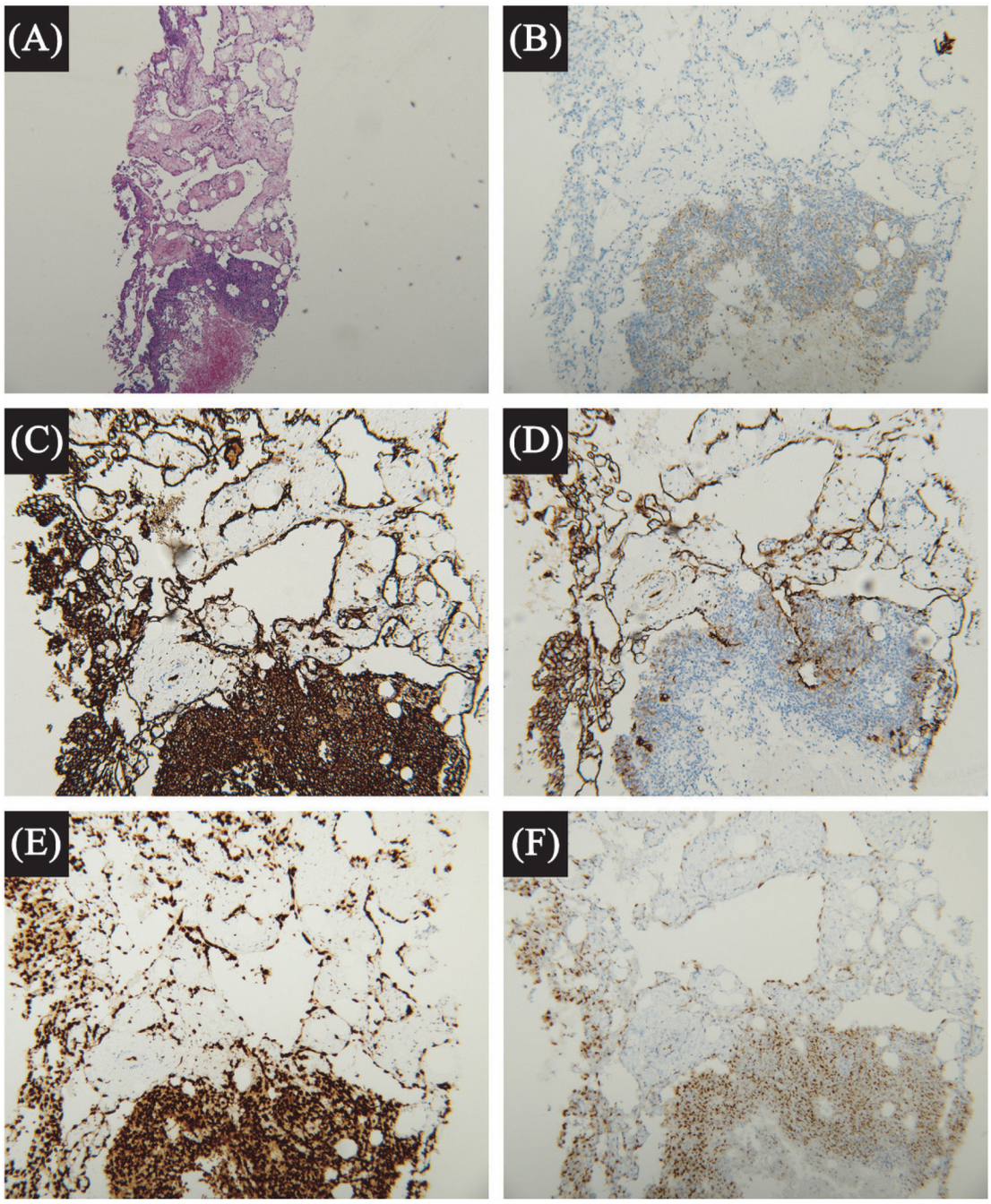


Figure 3. Histological features under Hematoxylin and eosin (H&E) stain (A): The tumor has vascular differentiation with irregular anastomotic vascular channels and solid appearance with necrosis which is consistent with high grade angiosarcoma. Immunohistochemical stains for AE1/AE3 (B), CD31 (C), CD34 (D), ERG (E) show variable degree of positive staining, indicating endothelial differentiation. Furthermore, c-MYC immunohistochemical stain (F) is positive.

選擇題：

2. 依聖喬治呼吸問卷評估症狀負荷支氣管擴張症病人，下列何者疾病惡化率最低？
   (A) >70 分
   (B) 50-70 分
   (C) 40-50 分
   (D) <40 分
   答案 (D)

3. 依聖喬治呼吸問卷評估症狀負荷支氣管擴張症病人，下列何者接受吸入性甘露醇治療後，減少疾病惡化的效益最好？
   (A) >70 分
   (B) 50-70 分
   (C) 40-50 分
   (D) <40 分
   答案 (A)

4. Lorlatinib 是治療 NSCLC 的第幾代 (酪氨酸激酶抑製劑) ALK-TKI 藥物？
   (A) 第一代 TKI
   (B) 第二代 TKI
   (C) 第 2.5 代 TKI
   (D) 第三代 TKI
   答案 (D)

5. Lorlatinib 研究證實能有效對抗那些常見的抗藥性突變？
   (A) EGFR mutation
   (B) ALK mutation
   (C) ROS-1 mutation
   (D) ALK and ROS-1 mutation
   答案 (D)

6. 傳統支氣管鏡、支氣管鏡超音波 (EBUS) 與支氣管鏡超音波合併虛擬影像導航 (EBUS+VBN) 在肺病灶的診斷率何者為正確？
   (A) EBUS 顯著優於 EBUS+VBN
   (B) EBUS 與 EBUS+VBN 顯著優於傳統支氣管鏡
   (C) EBUS+VBN 顯著優於 EBUS
   (D) 三者差異不大
   答案 (B)

7. 關於虛擬影像導航 (VBN) 的敘述何者為真？

(A) VBN 可有效縮短支氣管鏡探查病灶的時間

(B) VBN 可顯著增加 EBUS 的診斷率

(C) VBN 明顯增加支氣管鏡檢查的合併症

(D) VBN 可重組電腦斷層影像，但無法提供路徑選擇

答案 (A)

2018 國際會議論文發表

ATS

羅東博愛醫院 陳光裕 (Kuang-Yu Chen) 醫師：

- Use of Flow-Volume Curve Associated with Body Measurement as Real-World Evidence Severity Estimation in Adult Obstructive Sleep Apnea.

K. Chen
Poh-Ai Hosp, Yi-Lan County, Taiwan

Abstract

Purpose: Polysomnography (PSG) is essential for diagnosis of obstructive sleep apnea (OSA) but measurement of inspiratory flow limitation (IFL) with pulmonary function test (PFT) is still recommended when moderate or even more severe OSA is considered. While mandibular advancement splint was indicated, measurement of MEF_{50}:MIF_{50} ratio ($MEI_{50}R$) flow-volume curve offered only modest prediction of outcome (Biao Zeng et al, AJRCCM 2007;175:726-730), (Andrew S. L. Chan et al, Sleep & Breathing 2011;15(2):157-162). However, in real-world clinical practice, useful items obtained from PFT to predict the apnea-hypopnea index (AHI) is still warranted. Materials and methods: A cohort study was performed for patients of OSA in 2015/Jan/1 to 2017/Sep/30. Body mass index, expiratory flow rate at 50% of vital capacity (i.e. MEF_{50}), inspiratory flow rate at 50% of vital capacity (i.e. MIF_{50}) and maximal mid-expiratory flow (MMEF) were recorded for statistical analysis. ROC curves of AHI with AUC on neck circumference (NC), age and $MEI_{50}R$ were plotted. Results: N=45, Male: Female=28:17, mean Age=55.3 (15.6) years-old, BMI=27.9 (5.7) and NC=37.1 (4.0) cm. Mean FEV1% equaled to 93% (14%), MMEF= 78% (20%), RV%= 102% (19%), AHI=24.1 (3.4) and $MEI_{50}R$ equaled to 0.77 (0.3). MEI50R was found with Pearson's correlation to BMI, Age and MMEF ($r=0.576$, $p<0.001$). Compared with the 1^{st} to 4^{th} percentile MMEF revealed significantly difference, their mean $MEI_{50}R$ were 0.55 (0.26) and 0.99 (0.27). Logistic regression revealed significance ($r=0.671$, $p<0.001$) for correlation of AHI, selected whose MMEF < 0.6 together with MMEF >= 0.8, and both of NC and BMI as variety factors. While regression for AHI with combined TLC, FRC and $RV\%_{pred}$ and all BMI, age and NC together in whose MMEF >= 0.8 and < 0.6, a more significant result could be found ($r=0.721$, $p<0.01$). When ROC curve for AHI were plotted for different factors, the area under curve (AUC) for NC >= 38 together with $MEI_{50}R$ < 0.8 revealed 0.773 (0.117) (95%CI. 0.540,1.000) ($p=0.035$). For moderate OSA, combined $MEI_{50}R$ from PFT and NC offered PSG pre-test AHI (7.2) 81% and 80% and AHI (18.4) 64% and 100% for sensitivity and specificity. Conclusions: Either combined MEF_{50}:MIF_{50} ratio or together with MMEF value in flow-volume curve and body measurement as real-world practice for severity evaluation in adult obstructive sleep apnea is adequate for both diagnosis and further treatment decision making.

國立台灣大學醫學院附設醫院 李建鋒 (Chien-Feng Lee) 醫師：

- Management of Massive Pulmonary Hemorrhage with Extracorporeal Membrane Oxygenation (ECMO) and Temporary Clamping of the Endotracheal Tube: A Case Report.

C. Lee, S. Ruan, H. Wang

Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan

Abstract

Massive pulmonary hemorrhage is a life-threatening and difficult-to-manage event. Here we report a 64-year-old man admitted to the hospital because of malaise, bilateral leg edema, and progressive dyspnea for several weeks and impaired renal function. Hemodialysis was initiated due to uremic symptoms and fluid overload. Microscopic polyangiitis was diagnosed by high perinuclear anti-neutrophil cytoplasmic antibodies (P-ANCA) titer and other supportive evidences. However, severe pulmonary hemorrhage developed few days after the hospital admission and he was intubated for hypoxic respiratory failure. Soon after he was transferred to the ICU, massive pulmonary hemorrhage led to a long-lasting event of pulseless electrical activity. During the cardiopulmonary resuscitation, V-A ECMO was placed followed by an add-on V-V ECMO. To control the flooding of blood from his lungs, we clamped the endotracheal tube of the patient (Fig.1(A),(B) and (C)). His pulmonary hemorrhage was improved by the treatment with transfusion, immunosuppressants and plasmapheresis. Endotracheal tube clamping last 15 hours and was stopped after the pulmonary hemorrhage was confirmed stopped. V-A ECMO was removed two days later and V-V ECMO was removed after a 5-day use. This patient was successfully extubated on the 10th day of ICU stay and was then transferred to general ward without significant neurologic deficits. Pulmonary hemorrhage due to ANCA-associated vasculitis is a potentially fatal disease. Interventional angiography and bronchoscopy are considered to be the mainstay of management. In this case, however, neither bronchoscopy nor angiography could be safely and effectively performed to stop the bleeding. ECMO stabilized the vital signs of the patient and with its placement we could clamp the endotracheal tube for airway tamponade therapy. The successful experience in this case suggests that endotracheal tube clamping under the support of ECMO is an effective means to control life-threatening massive pulmonary hemorrhage. To our knowledge, this is the first case report of using endotracheal tube clamping as a primary intervention to stop vasculitis-related massive pulmonary hemorrhage adjunct to ECMO support. This case report provides an applicable method to treat massive pulmonary hemorrhage in case the traditional approaches for pulmonary hemorrhage are unable to be employed.

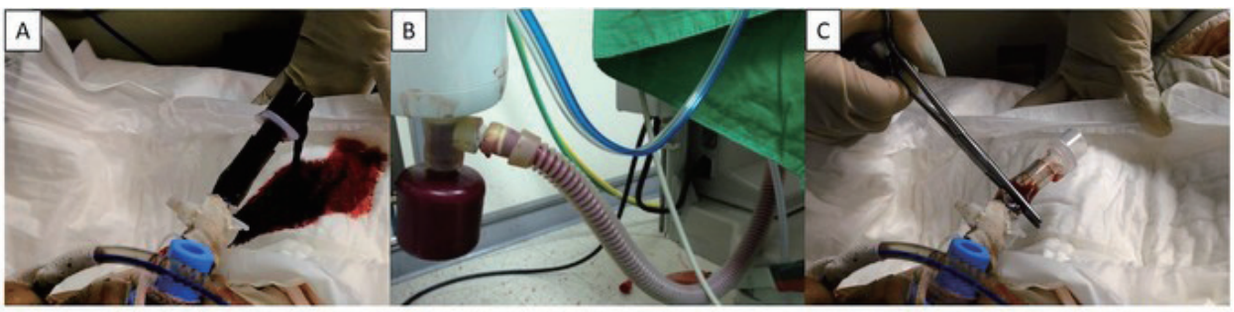


Figure 1. (A) The photo shows that fresh blood was flooding from the airway. (B) Ventilator tubing was filled with blood. (C) The endotracheal tube was clamped for airway tamponade therapy.

國立台灣大學醫學院附設醫院 黃俊凱 (Chun-Kai Huang) 醫師：

- Diagnostic performance of FDG PET in Critically Ill Patients with Sepsis of Unknown Origin: a systematic review and meta-analysis.

C. Huang[1], J. Huang[2], S. Ruan[3], K. Chien1

[1]Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan, [2]Nuclear Medicine, National Taiwan University Hospital, Taipei, Taiwan, [3]National Taiwan University Hospital, Taipei, Taiwan

Abstract

RATIONALE Sepsis is now defined as life-threatening organ dysfunction caused by a dysregulated host response to infection. Early identification of true infectious focus and appropriate management in the initial hours after sepsis develops improves outcomes. Several studies have assessed the diagnostic usefulness of nuclear imaging tests, including gallium scintigraphy and fludeoxyglucose (FDG) positron emission tomography (PET) for localizing a source of infection. However, few studies targeted on critically ill patients with sepsis of unknown origin. Therefore, this review attempted to address the evidence on the diagnostic performance and clinical utility of FDG PET and gallium scintigraphy for critically ill patients with sepsis of unknown origin. METHODS We searched PubMed and Embase through October 15, 2017, for studies evaluating gallium scintigraphy and FDG PET for finding infection focus in critically ill patients. Two reviewers extracted data. Methodologic quality was assessed using the Quality Assessment of Diagnostic Accuracy Studies tool. Pooled measures for diagnostic performance, including sensitivity, specificity, area under the curve (AUC) with 95% confidence intervals (CIs) and publication bias were calculated by STATA14. We also performed diagnostic odds ratio (DOR) and sensitivity analysis using R (with package “MADA”). RESULTS We screened 27 abstracts and evaluated 10 full-text articles. A total of 4 publications, (87 patients with 89 independent tests) met our eligibility criteria. Four studies all evaluated FDG PET and there was no study related to gallium scintigraphy. The summary sensitivity and specificity were 0.94 (95% CI, 0.79-0.99) and 0.66 (95% CI, 0.45-0.83), respectively. The summary receiver operating characteristic curve revealed AUC=0.83. The Deek’s funnel plot asymmetry test showed significant publication bias with p value 0.06(8). Sensitivity analysis for the 4 studies showed similar natural logarithm DOR ranged from 2.19 to 3.33. CONCLUSIONS Summary diagnostic performance showed that FDG PET was a very sensitive tool with acceptable specificity in detecting sepsis origin in critically ill patients. However, risk for transportation remained a major concern in these patients. Further prospective study should be done to evaluate the use of FDG PET in critically ill patients with sepsis of unknown origin.

國立台灣大學醫學院附設醫院 劉家榮 (Chia-Jung Liu) 醫師：

- Risk Factors of Radiographic Progression and Outcome of Patients with Mycobacterium Kansasii Pulmonary Infection.

C. Liu[1], H. Huang[2], M. Cheng[2], P. Lu[3], C. Shu[1], J. Wang[1], I. Chong[4]

[1]Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan, [2]Kaohsiung Medical University, Kaohsiung, Taiwan, [3]Laboratory Medicine, Kaohsiung Medical University, Kaohsiung, Taiwan, [4]Kaohsiung Medical Univ, Kaohsiung, Taiwan

Abstract

Rationale: Traditionally, Mycobacterium kansasii (MK) has been considered as the most virulent nontuberculous mycobacteria (NTM). Its presence in the respiratory specimen, however, does not always represent pulmonary infection (PI). Since treatment for MK-PI is toxic and lengthy, identifying the priority group is necessary. This study aimed to investigate the factors predicting radiographic progression and outcome of MK-PI within one year. Methods: Patients with MK-PI diagnosed according to current guidelines in six hospitals in Taiwan (three each in northern and southern Taiwan) from 2010 to 2014 were identified. Medical records were reviewed to retrieve clinical characteristics, laboratory data, and radiographic findings at the onset of MK-PI. Predictors of radiographic progression within one year was investigated using multivariate logistic regression. One-year mortality rate was also reported. Results: A total of 118 MK-PI episodes were included. Radiographic progression occurred in 71 (60.2%) episodes. Among them, the 1-year mortality rate was 42% with a median survival of 71 days. All episodes with sputum acid-fast smear (AFS) grade ≥3 experienced radiographic progression. For the remaining, independent risk factors of radiographic progression were old age (age >65; OR: 3.14 [1.11-8.88]), no diabetes mellitus (OR: 6.21 [1.30-29.6]), pure MK in sputum (no other co-existing NTM; OR: 3.16 [1.04-9.54]), fibrocavitary pattern (OR: 3.21 [1.04-9.92]), and leukocyte >9000 /ul (OR: 3.67 [1.22-11.06]). Using the two criteria, sputum AFS grade ≥3 and presence of ≥3 of the five risk factors in those with sputum AFS ≤2, 89% of the MK-PI episodes that progressed within one year can be identified at the initial. Conclusions: Within one year, about two-thirds of MK-PI episodes progressed; and more than one-third of them died rapidly. Anti-MK treatment should be considered if high-grade AFS positivity or presence of 3 or more of the risk factors.

國立台灣大學醫學院附設醫院 樹金忠 (Chin-Chung Shu) 醫師：

- The Roles of Programed Death-1, Regulatory T Cells and Myeloid Derived Suppressor Cells in Patients with Mycobacterium Avium Complex- or Mycobacterium Abscessus-Lung Disease.

C. Shu

Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan

Abstract

Background: Nontuberculous mycobacteria lung disease (NTN-LD) has become a clinical concern due to its increasing prevalence in recent decades. Although immune tolerance in NTM-LD patients has been reported, its role in clinical characteristics and outcomes remains uncertain. Methods: We enrolled 96 participants from two medical centers in Taiwan, including 46 with Mycobacterium avium complex (MAC)-LD, 23 with M. abscessus (MAB)-LD, and 27 controls. We measured expressions of programmed death-1 (PD-1), cytotoxic T-lymphocyte antigen-4 (CTLA-4) and regulatory T (Treg) cells on $CD4^+$ lymphocytes and myeloid-derived suppressor cells (MDSCs) and analyzed their association with clinical features and radiographic outcomes. Results: The percentage of PD-1 on $CD4^+$ ($PD\text{-}1^+CD4^+$) lymphocytes was higher in the MAC-LD group, and the MAC-LD and MAB-LD groups had higher levels of MDSCs than the controls. There were no intergroup differences in the expression of CTLA-4 on $CD4^+$ lymphocytes and Treg cells. Higher percentages of $PD\text{-}1^+CD4^+$ lymphocytes were found in M. intracellulare- and M. avium-LD than in other MAC-LD. Positive sputum acid fast stains and fibrocavitary radiographic lesions were correlated with elevated expressions of $PD\text{-}1^+CD4^+$ lymphocytes and Treg cells but not MDSCs. The percentage of $PD\text{-}1^+CD4^+$ lymphocytes significantly predicted radiographic progression. At 2 months of follow-up, the percentages of $PD\text{-}1^+CD4^+$ lymphocytes and MDSCs were associated with subsequent radiographic progression. Conclusion: As markers of immune tolerance, $PD\text{-}1^+CD4^+$ lymphocytes increased in patients with MAC-LD, and MDSCs increased in both patients with MAC-LD and MAB-LD. The levels of $PD\text{-}1^+CD4^+$ and Treg cells were correlated with high mycobacteria bacilli burden in NTM-LD. Monitoring the expressions of $PD\text{-}1^+CD4^+$ lymphocytes and MDSCs may predict radiographic progression and outcomes.

國立台灣大學醫學院附設醫院金山分院 林書永 (Shu-Yung Lin) 醫師：

- Genome-wide RNA-seq Analyses of O-glycan Glycosyltransferases for Molecular Prognostic Markers in Non-small Cell Lung Cancer.

S. Lin[1], Y. Chen[2], T. Yang[2], Y. Wu[3], G. A. Oswita[3], H. Lu[4], C. Yu[5], H. Tsai[6]

[1]Internal medicine, National Taiwan University Hospital Jin-Shan Branch, New Tapei City, Taiwan, [2]Graduate Institute of Toxicology, National Taiwan University, College of Medicine, Taipei, Taiwan, [3]Graduate Institute of Toxicology, National Taiwan University, College of Medicine, Tapei, Taiwan, [4]Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan, [5]Internal medicine, National Taiwan University Hospital, Taipei, Taiwan, [6]Internal medicine, National Taiwan University Hospital, Tapei, Taiwan

Abstract

Background:Aberrant O-glycosylation represents a common feature during oncogenesis in various tumor types. A number of glycosyltransferases are involved in the formation of complex structures of O-glycans. However, their prognostic relevance and the corresponding molecular alterations in cancer are mostly unknown. By utilizing genome-wide RNA-seq analysis, we aim to reveal the comprehensive picture of altered O-glycosyltransferases, their prognostic impact, and molecular signaling pathways in lung cancer patients. Methods:Eighty-one (adenocarcinoma n=44, squamous cell carcinoma n=37) archived non-small cell lung cancer surgical samples and 19 adjacent normal tissues from 1996 to 2008 underwent genome-wide RNA-seq analysis. We queried a total of 44 O-glycosyltransferases, including core forming, branching, terminal sialyation and fucosylation enzymes. Principle component analysis (PCA) were performed to visualize global changes in tumors and normal tissues. Differentially-expressed O-glycosyltransferases between tumors and normal tissues were statistically derived, and correlated with clinicopathological features and overall survivals. Finally, we performed co-expression analysis, gene ontology enrichment and pathway identification on these gene-sets for functional classification. Results:The unsupervised hierarchical cluster analysis of the O-glycosyltransferases and PCA analysis showed distinct expression patterns between lung cancer and normal adjacent tissues. Core 1-3 forming enzymes showed statistically significant up-regulation, while terminal sialyation enzymes showed down-regulation in lung cancer tissues. Decreased expression of ST6GALNAC3 (ST6 GalNAc α-2,6-Sialyltransferase 3) was associated with positive nodal status. ST6GALNAC6 and ST3GAL3 (ST3 β-Galactoside Alpha-2,3-Sialyltransferase 3), two terminal sialyltransferases were negatively associated with overall survival. Co-expression analysis showed distinct pathways involved in each glycosyltransferase. Notably, immune process-related pathways were negatively correlated with ST3GAL3, while cellular movement pathways were positively correlated with ST6GALNAC3. Conclusions:We have unraveled the complex alterations of O-glycosyltransferases in non-small cell lung cancer, which favored the formation of core structures and suppressed terminal sialyation. In addition, the decreased activity of terminal sialyltransferases were associated with nodal stage and poor survival.

國立台灣大學醫學院附設醫院雲林分院 陳彥甫 (Yen-Fu Chen) 醫師：

- Risk Factors and Clinical Outcomes of Noninvasive Positive Pressure Ventilation Failure After Extubation in Critically Ill Adult Patients.

Y. Chen[1], Y. Chen[1], I. Wang[1], C. Chen[2], J. Chien[3], J. Jerng[4], C. Yu[5]

[1]Internal Medicine, National Taiwan University Hospital, Yun-Lin Branch, Yun-Lin, Taiwan, Yun-Lin, Taiwan, [2]National Taiwan Univ Hospital Yun-Lin Branch, Douliou City Yunlin 640, Taiwan, [3]National Taiwan University Hospital, Taipei, Taiwan, Douliu City 640, Taiwan, [4]National Taiwan University Hospital, Taipei, Taiwan, [5]Natl Taiwan Univ Hosp, Taipei10016, Taiwan

Abstract

Rationale: We aim to investigate the use of noninvasive positive pressure ventilation (NIPPV) after extubation in intensive care units (ICUs) and to identify the risk factors of NIPPV failure and also evaluate the associated clinical outcomes. Methods: We retrospectively review adult patients (age >20 years) admitted to ICUs who received NIPPV support within 48 hours after extubation in a single institute between December 2014 and September 2016. The clinical characteristics, laboratory data and respiratory parameters were recorded. The primary outcome was NIPPV failure (defined as re-intubation or death after NIPPV use in ICU). Results: A total of 1496 patients admitted to ICU and received mechanical ventilation were screened and 99 adult patients (6.61%) required NIPPV after post-extubation were included for analysis. Of them, the overall mean age was 74 + 11 years, and 58.6% of patients were male. The failure rate of NIPPV support was 32.3% and also associated with higher ICU mortality (12.5% vs. 0%, p=0.01). The respiratory parameters: Pi max (-27.2 vs -32.3 cmH2O, p=0.046), Pe max (25.7 vs, 40.0 cmH2O, p=0.007), cough power (sputum could be expectorated to the tube, 34.4% vs. 65.7%, p=0.003), medical research council (MRC) scale for muscle strength (18.8 vs 23.2, p=0.004), NIPPV applied indication (indicative for new respiratory distress vs, preventive use, p=0.004) and laboratory data: lower Albumin (2.68 vs.3.04 g/dl, p=0.031), lower Hb (9.4 vs. 10.3 g/dl, p=0.052) and lower HCO3 (22.7 vs. 25.6 mmHg ,p=0.043) level were associated with NIPPV failure. Further logistic regression analysis showed that only poor cough power (Odd Ratio [OR]:10.49, 95% CI 1. 1.545-71.297, p=0.016), and indicative NIPPV use (OR: 11.170, 95% CI: 1.432-87.148, p=0.021) were the independent risk factors for NIPPV failure. The outcomes of post-extubation NIPPV use in ICU were as followings: weaning off NIPPV in ICU (49.5%), re-intubation (29.3%), prolong NIPPV use beyond ICU (18.2%) and death in ICU (3.0%). Conclusions: The NIPPV failure was occurred in one-third critically ill patients who received NIPPV as post-extubation support. Poor cough power and indicative NIPPV use for new respiratory distress are the predictive risk factors.

臺北榮民總醫院 邱華彥 (Hwa-Yen Chiu) 醫師：

- Correlation between Small Airway Disease Parameters: Impulse Oscillometry and Spirometry.

H. Chiu, Y. Hsiao, D. Perng

Taipei Veterans General Hospital, Taipei, Taiwan

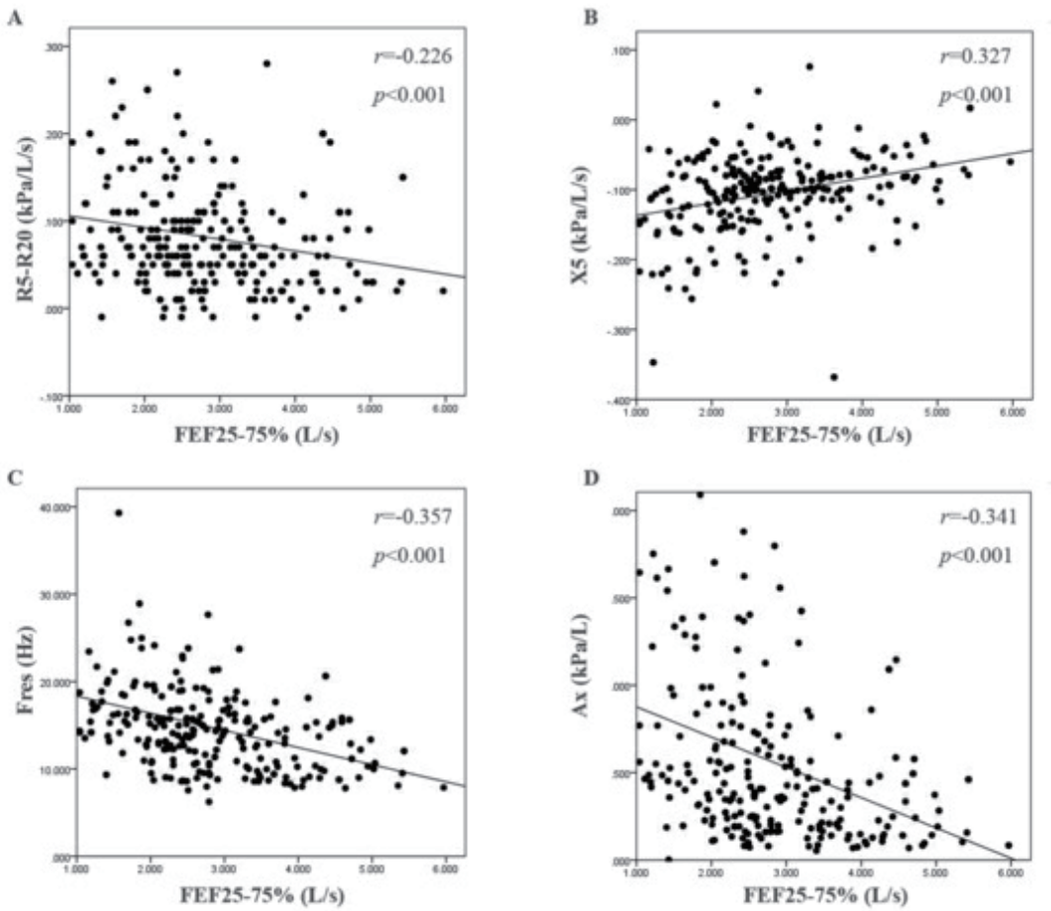
Abstract

RATIONALE Obstructive lung diseases such as chronic obstructive pulmonary disease (COPD) and asthma are small airway diseases (SADs) which initially involve airways less than 2mm in diameter. However, early detection of COPD/asthma remains a challenge in the current clinical practice. Forced expiratory flow between 25% and 75% of vital capacity ($FEF_{25-75\%}$) in spirometry is often used to facilitate the diagnosis of SAD. Impulse oscillometry (IOS) is an effort-independent pulmonary function technique which provides the detailed analysis of respiratory resistance and reactance at different oscillatory frequencies during tidal breathing. The aim of our study is to investigate the correlation between $FEF_{25-75\%}$ and IOS parameters in adult patients with suspected SADs who have normal forced expiratory volume in 1 second to forced vital capacity ratio (FEV_1/FVC > 70%). METHODS From Mar. 2017 to July 2017, total 258 symptomatic Taiwanese participants (139 male, mean age: 58±15 years old) who received spirometry and IOS with FEV_1/FVC > 70% and FVC > 80% predicted value (to exclude restrictive lung diseases) were enrolled. The correlation between $FEF_{25-75\%}$ and IOS parameters including respiratory resistance at 5Hz(R_5), respiratory resistance at 20Hz(R_{20}), R_5-R_{20}, respiratory reactance(X_5), resonance frequency(Fres), and reactance area(Ax) were analyzed. RESULTS The mean (±standard error of the mean [SEM]) of spirometry parameters were FEV_1/FVC : 82(±6.0)%, FEV_1 (L): 97(±11.1) %predicted value, and FVC (L): 101(±12.0) %predicted value. Significant correlation between $FEF_{25-75\%}$ and six IOS parameters including R_5, R_{20},R_5-R_{20}, X5, Fres and Ax were found (Table 1). R_5, R_{20},R_5-R_{20}, Fres and Ax were negatively correlated with $FEF_{25-75\%}$ (L/sec)(r= -0.276, -0.241, -0.226, -0.357, and -0.341, respectively, all p<0.001) and X_5 was positively correlated with $FEF_{25-75\%}$ (L/sec) (r= +0.327, p<0.001) (Fig. 1). CONCLUSIONS IOS provided an accurate, and patient-friendly technique with a good correlation with $FEF_{25-75\%}$ in adult patients with suspected SADs.

IOS parameters	Mean±SD	Correlation with $FEF_{25-75\%}$ (L/sec)(*r*, *p* value)
R_5 (kPa/L/s)	0.376±0.118	-0.276, *p*<0.001
R_{20} (kPa/L/s)	0.294±0.078	-0.241, *p*<0.001
R_5-R_{20} (kPa/L/s)	0.081±0.062	-0.226, *p*<0.001
X_5 (kPa/L/s)	-0.104±0.057	0.327, *p*<0.001
Fres (Hz)	14.73±5.74	-0.357, *p*<0.001
Ax (kPa/L)	0.561±0.532	-0.341, *p*<0.001

Table 1 Correlation between $FEF_{25-75\%}$ and IOS parameters

Figure 1


A
r=-0.226
p<0.001
R5-R20 (kPa/L/s)
FEF25-75% (L/s)
B
r=0.327
p<0.001
X5 (kPa/L/s)
FEF25-75% (L/s)
C
r=-0.357
p<0.001
Fres (Hz)
FEF25-75% (L/s)
D
r=-0.341
p<0.001
Ax (kPa/L)
FEF25-75% (L/s)

臺北榮民總醫院 洪緯欣 (Wei-Hsin Hung) 醫師：

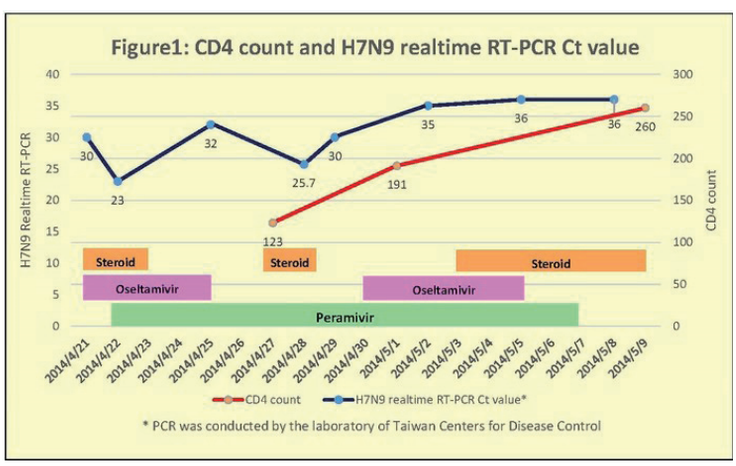
- CD4 Lymphocyte Count as a Treatment Guide for the Use of Corticosteroid and Neuraminidase Inhibitors in Patient with Avian Influenza A (H7N9) Pneumonia: A Case Report.

W. Hung, H. Ko

Chest department, Taipei Veterans General Hospital, Taipei, Taiwan

Abstract

Avian influenza A (H7N9) is a novel influenza A virus that has caused severe human illnesses in China since 2013. Neuraminidase inhibitor (NI) treatment, systemic steroid use, and intensive respiratory care have been applied to manage severe avian influenza infection, but no biological marker has been established to guide the treatment strategy. We reported a case of H7N9 infection in a patient with acute respiratory distress syndrome (ARDS) who was supported with extracorporeal membrane oxygenation (ECMO) and given a NI and steroid in accordance with the CD4 lymphocyte count. A 45-year-old woman had a high fever and myalgia for 7 days before she traveled from Nanjing, China, to Taiwan on April 17, 2014. Although the NI oseltamivir had been administered, pneumonia with ARDS developed quickly. Intubation with mechanical ventilator support was performed on April 21, 2014, and peramivir had also been prescribed. H7N9 infection was confirmed using quantitative real-time polymerase chain reaction (qPCR), and an exposure history in a poultry market was mentioned by the patient's husband. Ventilator management with a lung recruitment maneuver for severe hypoxemia (PaO_2/FiO_2 = 58 mm Hg) was initiated on April 22, 2014. ECMO was applied because of rapid progression of pneumonia with persistent hypoxemia. We frequently obtained a nasopharyngeal swab for H7N9 qPCR to monitor the patient's viral load (Figure 1). The threshold cycle(Ct) value of the M gene qPCR was collected and revealed a fluctuation initially. A systemic steroid was prescribed for the ARDS and was discontinued twice because of high viral load and high possibility of hospital-acquired infection at a low CD4 count. The undetectable (Ct value of >35) viral load of H7N9 after 15 days' treatment with the NIs was observed on May 2, 2017, and the CD4 count increased gradually with the decreased viral load. We restarted systemic steroid use to reduce the risk of ARDS-related pulmonary fibrosis. ECMO and invasive mechanical ventilation were applied for 10 and 31 days, respectively. The NI treatment was discontinued after the confirmation of the undetectable viral load of H7N9. Current reviews of corticosteroids used in the treatment of severe influenza pneumonia are controversial. We found a correlation between increased CD4 count and decreased viral load of H7N9. It is important to mention that we used CD4 count as a method to detect immune system restoration that could be a treatment guide for corticosteroid use and NI discontinuation in future influenza treatments.



臺北榮民總醫院 陳沛谷 (Pei-Ku Chen) 醫師：

- Prolonged non-invasive positive pressure ventilation after cardiac surgery: predictor and outcomes.

P. Chen[1], H. Ko[2]

[1]Chest department, Taipei Veterans General Hospital, Taipei, Taiwan, Taipei, Taiwan, [2]Division of respiratory therapy, Department of Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwan. School of Medicine, National Yang-Ming University., Taipei, Taiwan

Abstract

Objectives: The objective was to determine the risk factors for prolonged use of non-invasive positive pressure ventilation (NIPPV) after open heart surgery. Design: Retrospective, observational, case-control, single center study. Setting: Total 16-bed cardiovascular surgery intensive care unit Patients: Patients admitted to cardiovascular intensive care unit after cardiac surgery between October 2014 and October 2015. Measurements and Main Results: Of 188 patients enrolled, 97 patients who required NIPPV more than six hours-per day and greater than two days were defined as prolonged NIPPV group. As compared with non-prolonged group, the prolonged group significantly had older age, lower forced expiratory volume in one second% (FEV1%) and lower forced vital capacity% (FVC%) predicted value, higher residual volume/total lung capacity (RV/TLC) ratio, lower pre-operative left ventricular ejection fraction(LVEF), higher baseline Cr level, lower albumin level, lower baseline hemoglobin, higher APACH II score, longer duration of invasive mechanical ventilator, more incidence of post-operative related complication and acute kidney injury (AKI) in KDIGO (Kidney Disease: Improving Global Outcomes) stage 2or3 (all P value < 0.05). Independent risk factors for prolonged NIPPV, identified from adjusted model of multivariable logic regression, were RV/TLC ratio (adjusted odds ratio 1.085, 95% CI: 1.027-1.147, P=0.004) and AKI in KDIGO stage 2 or 3 (adjusted odds ratio 3.482, 95% CI: 1.188-10.205, P=0.023). The odds ratio(OR) for risk of prolonged group was 26.67(95% CI:2.592-274.468, P=0.006) for patients with both risk factors (RV/TLC>46.5% and AKI in KDIGO stage 2/3) as compared with those without. For the prolonged group had more total post-procedure complications (including infection, stroke, ischemic bowel, arrhythmia), hospital acquired pneumonia, stroke event, re-intubation rate, ICU stay and hospital stay . Multivariate logic regression analysis for patient outcomes revealed study patients with prolonged NIPPV had more total complications (adjusted OR 3.625, 95%CI:1.249-10.682), ICU stays more than 5 days (adjusted OR 13.122, 95%CI:2.056-83.768), and hospital stay more than 21 days (adjusted OR 3.907, 95%CI:1.121-13.619). Conclusions: Both AKI within 48 hours after cardiac surgery based on KDIGO stage and high RV/TLC ratio are two independent risk factors for prolonged NIPPV support more than 2 days after extubation following open heart surgery. These two risk factors were synergistically increased the risk of prolonged NIPPV that was independently associated with more total complications, ICU stays more than 5 days, and hospital stay more than 21 days.

臺北榮民總醫院 蘇維鈞 (Wei-Juin Su) 醫師：

- The Effect Of Metformin Versus Sulfonylurea On The Risk Of Tuberculosis Disease In Patients With Type 2 Diabetes Mellitus: A Population based Cohort Study.

W. Su[1], S. Pan[1], Y. Yen[2], V. Su[3], P. Chuang[4], J. Feng[5]

[1]Chest Department, Taipei Veterans General Hospital; School of Medicine, National Yang-Ming University, Taipei, Taiwan, [2]Section of Infectious Diseases, Taipei City Hospital, Taipei, Taiwan; School of Medicine, National Yang-Ming University, Taipei, Taiwan, Taipei, Taiwan, [3]Department of Internal Medicine, Taipei City Hospital, Taipei, Taiwan; School of Medicine, National Yang-Ming University, Taipei, Taiwan, Taipei, Taiwan, [4]Center for Prevention and Treatment of Occupational Injury and Diseases, Taipei Veterans General Hospital, Taipei, Taiwan; Division of Clinical Toxicology and Occupational Medicine, Department of Medicine, Taipei Veterans General Hospital, Taipei, Taiwan, Taipei, Taiwan, [5]Department of Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwan; School of Medicine, National Yang-Ming University, Taipei, Taiwan, Taipei, Taiwan

Abstract

Rationale: Metformin and sulfonylureas are common initial antidiabetic agents; the former has anti-TB action in in vitro and animal studies. The effects of these drugs on TB risk in the type 2 diabetes mellitus (T2DM) population remains unclear. Objective: To investigate the impact of metformin versus sulfonylurea on TB development in T2DM patients Methods: A sample of 47,740 T2DM patients without chronic kidney disease and matched controls (1:1) in the Taiwan National Health Insurance Research Database were identified from 2005 to 2013 and observed for TB until December 2013 or withdrawal from insurance. Diabetic severity was assessed by the adapted diabetes complication severity index (aDCSI). Metformin initiators with ≥15 defined daily dose (DDD) of metformin in the initial year and the propensity-score matched sulfonylureas initiators (1:1) were compared for TB risk using Cox regression analysis and censored until endpoints. Measurements and Main Results: TB incidences in non-DM controls and T2DM patients with aDCSI of 0, 1 and ≥2 scores were 98, 129, 172 and 263 per 100,000 person-years. In the T2DM cohort, the independent predictors for TB were older age (10-year increase, adjusted HR 1.291 [1.182-1.412]), male (3.752 [2.851-4.938]), low income (1.636 [1.138-2.351]) and metformin use (time-varying mean DDD within each 90-day interval, 0.952 [0.938-0.966]) after adjustment by aDCSI and cofactors. Metformin initiators (n =8157) had a significantly lower TB risk than sulfonylurea initiators (0.329 [0.174-0.625]) after adjustment. Conclusions: Metformin use carried a decreased risk for TB development, and metformin initiators had a 67% reduced risk compared to sulfonylurea competitors.

天主教輔仁大學附設醫院 李麗娜 (Li-Na Lee) 醫師：

- Mitochondrial DNA Variations in Patients with Drug-Induced Liver Injury Due to Anti-Tuberculosis Agents.

L. Lee[1], H. Chang[2], C. Hsu[3], H. Wu[4], J. Liu[5], I. Jan[4], J. Wang[3]

[1]Laboratory Medicine, Fu-Jen Univ Hosp, New Taipei City, Taiwan, [2]Department of Laboratory Medicine, National Taiwan University, Taipei, Taiwan, [3]Internal Medicine, National Taiwan Univ Hosp, Taipei, Taiwan, [4]Laboratory Medicine, National Taiwan Univ Hosp, Taipei, Taiwan, [5]Biotechnology, OneStar Laboratory, New Taipei City, Taiwan

Abstract

RATIONAL Drug-induced liver injury (DILI) is often a serious complication during anti-tuberculosis (TB) therapy. Mitochondrial dysfunction is a possible mechanism of DILI. Variants in mitochondrial DNA may affect proteins in electron transfer chain, impair energy supply, and contribute to hepatic cell death in DILI. We conducted this study to investigate mitochondrial DNA (mtDNA) variants in TB patients with DILI due to anti-TB drugs (INH, RIF, PZA), and those without. METHODS We analyzed the entire mitochondrial genome of leukocytes using Next-Generation Sequencing technique and compared results between 39 TB patients (male: 21) with, and 39 TB patients (male: 21) without DILI due to anti-TB agents (the control group). DILI was defined as drug-induced increase in transaminase >3 times the upper limit of normal (ULN) with symptoms, or >5 times ULN without symptoms. RESULTS Among 39 patients with DILI, 16 were due to PZA, 15 RIF, and 8 INH. The number of mtDNA variants detected in DILI and control group were shown in Table. We found 1110 and 2630 variants in 39 DILI and 39 control patients respectively, located at 431 different sites. D-loop has the highest number of variations (17-20%), followed by ND5 (9%). mtDNA deletions were significantly more common in control than DILI patients. However, single nucleotide polymorphisms (SNPs) were significantly more common in coding regions of DILI patients, including ND1, ND2, COX1, ATP8, ATP6, COX3, ND4L, ND4, ND5 and CYTB. We found 77 (18%) non-synonymous SNPs, and 12 (2.8%) were damaging as predicted by SIFT or Polyphen descriptor. They were distributed in ND1 (5), ND2 (3), and one each in ATP8, ATP6, ND5 and CYTB gene. Percentages of subjects with damaging SNP were similar between DILI and control group for all the 12 sites. CONCLUSION mtDNA is frequently altered in TB patients with DILI due to anti-TB agents and those without. mtDNA deletions were more common in TB patients without DILI, while SNPs in coding regions ND1, ND2, COX1, ATP8, ATP6, COX3, ND4L, ND4, ND5 and CYTB were more common in patients with DILI due to anti-TB drugs. mtDNA SNPs could be associated with DILI due to anti-TB drugs.

mtDNA region	Nucleotide	No.(%)** of variations in each group		*P*
		DILI (n=39)	Control (n=39)	
D-loop	1..577, 16024..16069	185 (17)	515 (20)	0.037
tRNAs and ribosomal RNAs	578..3304	117 (10.5)	255 (9.7)	0.000
ND1 (NADH dehydrogenase subunit 1 gene)	3307..4262	SNP 58 (5.2)	63 (2.4)	0.000
		Delet 4 (0.4)	100 (3.8)	0.038
tRNAs	4263..4469	3 (0.3)	23 (0.8)	0.130
ND2 (NADH dehydrogenase subunit 2 gene)	4470..5511	SNP 95 (8.6)	SNP 119 (4.5)	0.000
		Delet 2 (0.2)	Delet 52 (2.0)	0.000

tRNAs and intron	5512..5903	5 (0.4)	5 (0.2)	0.455
COX1 (Cytochrome c oxydase subunit 1 gene)#	5904..7445	SNP 63 (5.7)	SNP 64 (2.4)	0.000
		Delet 3 (0.3)	Delet 95 (3.6)	0.000
tRNAs	7445..7585	1 (0.1)	21 (0.8)	0.021
COX2 (Cytochrome c oxydase subunit 2 gene)	7586..8269	SNP 19 (1.7)	SNP 23 (0.9)	0.053
		Delet 1 (0.1)	Delet 64 (2.4)	0.000
Intron & tRNA	8270..8294	1 (0.1)	35 (1.3)	0.001
ATP8 (ATP synthase F0 subunit 8 gene)	8365..8527	SNP 12 (1.1)	SNP 10 (0.4)	0.022
		Delet 1 (0.1)	Delet 41 (1.6)	0.000
ATP6 (ATP synthase F0 subunit 6 gene)	8528..9207##	SNP 68 (6.1)	SNP 66 (2.5)	0.000
		Delet 3 (0.3)	Delet 27 (1.0)	0.045
COX3 (Cytochrome c oxydase subunit 3 gene)	9207..9990	SNP 37 (3.0)	SNP 36 (1.4)	0.002
		Delet 2 (0.2)	Delet 58 (2.2)	0.000
ND3 (NADH dehydrogenase subunit 3 gene)	10059..10404	SNP 54 (4.9)	SNP 53 (2.0)	0.000
		Delet 0	Delet 24 (0.9)	0.003
ND4L (NADH dehydrogenase subunit 4L gene)	10470..10766	SNP 16(1.4)	SNP 10 (0.4)	0.000
		Delet 0	Delet 5 (0.2)	0.311
ND4 (NADH dehydrogenase subunit 4 gene)	10761..12137	SNP 69 (6.2)	SNP 61 (2.3)	0.000
		Delet 8 (0.7)	Delet 164 (6.2)	0.000
tRNAs	12138..12336	5 (0.4)	34 (1.3)	0.021
ND5 (NADH dehydrogenase subunit 5 gene)	12337..14148	SNP 102 (9.2)	SNP 77 (2.9)	0.000
		Delet 9 (0.8)	Delet 155 (5.9)	0.000
ND6 (NADH dehydrogenase subunit 6 gene) (light strand)	14149..14673	SNP 8 (0.7)	SNP 17 (0.7)	0.830
		Delet 4 (0.4)	Delet 127 (4.8)	0.000
CYTB (Cytochrome b gene)	14747..15887	SNP 145 (13)	SNP 150 (5.7)	0.000
		Delet 4 (0.4)	Delet 59 (2.2)	0.000
Total		1110	2630	

桃園聖保祿醫院 張志豪 (Chih-Hao Chang) 醫師：

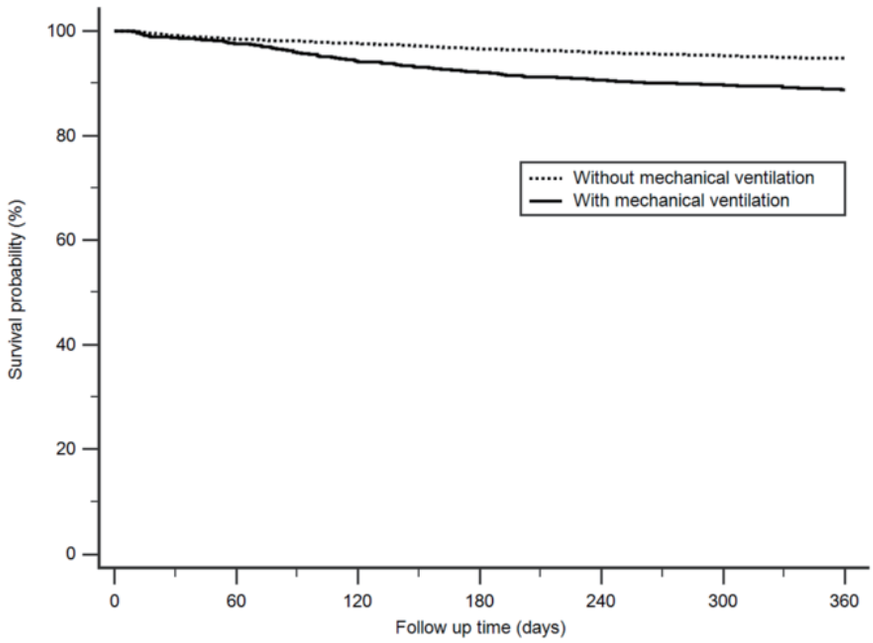
- Outcome of Organophosphate Poisoning with Acute Respiratory Failure: A 10-Year Study.

C. Chang[1], M. Chuang[2], C. Lee[1], M. Hsieh[3]

[1]Division of Pulmonary and Critical Care, Department of Internal Medicine, Saint Paul's Hospital, Taoyuan, Taiwan, [2]Department of Pulmonary and Critical Care Medicine, Chiayi Chang Gung Memorial Hospital, Pu-Tz, Taiwan, [3]Chang-Gung Memorial Hosp, Taipei, Taiwan

Abstract

Background Oganophosphate and carbamate poisoning is a major problem in developing countries. Patients with acute intoxication developed cholinergic crisis, neurological symptoms or respiratory failure. However, the short-term and long-term outcomes of respiratory failure after organophosphate poisoning are seldom reported. Methods The National Health Insurance Research Database was used to investigate the outcome after organophosphates and carbamate poisoning. Patients who were hospitalized for the first episode of organophosphate poisoning between 2003 and 2012 were enrolled in this retrospective cohort study. Outcomes of organophosphate and carbamate poisoning with or without mechanical ventilation were analyzed. Results Among 6832 patients with organophosphate and carbamate poisoning, 2010 patients had a respiratory failure with mechanical ventilation, and the other 4822 patients were without mechanical ventilation. The hospital mortality rate in the patient with mechanical ventilation was higher than those without mechanical ventilation (33.3% versus 4.7%, $p<0.0001$). The overall hospital mortality was 13.2%. Among survivors after cholinesterase inhibitor poisoning, the one-year mortality rate in patients with mechanical ventilation during hospitalization was higher than those without mechanical ventilation during hospitalization (11.4% versus 5.4% respectively, $p<0.0001$). Conclusions In patients hospitalized with cholinesterase inhibitor poisoning, the hospital mortality was 13.2%. For the survivors after cholinesterase inhibitor poisoning, the one-year overall mortality rate was higher in patients with respiratory failure underwent mechanical ventilation than those without mechanical ventilation.



臺北榮民總醫院 李雨哲 (Yu-Che Lee) 醫師：

- Early High Glycemic Variability Was Associated with an Increased 30-Day Mortality in Patients with Sepsis.

Y. Lee[1], Z. Zheng[1], W. Chao[1], C. Tseng[2], M. Chan[1]

[1]Division of of Chest Medicine, Department of Internal Medicine, Taichung Veterans General Hospital, Taichung, Taiwan, [2]Division of of Chest Medicine, Department of Internal Medicine, Taipei Medical University - Shuang Ho Hospital, Taipei, Taiwan

Abstract

Background: A high glycemic variability (GV) is frequent in critically ill patients; however, the prevalence and impacts of early GV on mortality in patients with sepsis remains unclear. Methods: This retrospective cohort study was conducted in a medical intensive care unit (ICU) located in central Taiwan and enrolled consecutive patients with sepsis between January 2014 and December 2015 receiving protocol-based managements including blood sugar monitoring every two hours for 24 hours. Mean Amplitude of Glycemic Excursions (MAGE) and coefficient of variation (CoV) were used to assess GV. Results: A total of 452 patients (mean age: 71.4±14.7 years; 76.7% men) were enrolled for analysis and were divided into high-GV (43.4%, 196/452) and low-GV (56.6%, 256/512) by using MAGE 65 mg/dL as the cut-point. Those with high GV had a higher HbA1c (6.7±1.8 vs. 5.9±0.9, p <0.01) and were more likely to have DM (50.0% vs. 23.4%, p<0.01) compared with those in low GV group. Kaplan-Meier analysis showed that a high GV was associated with 30-day mortality (log-rank test, P=0.018), and the association remained strong in non-DM (log-rank test, p=0.035), but no longer existed (log-rank test, p=0.254) in DM. Multivariate Cox proportional hazard regression model identified that a high APACHE II score (adjusted hazard ratio (aHR) 1.046, 95% confidence interval (CI) 1.013-1.079), a high serum lactate level at 0-hr (aHR 1.008, 95%CI 1.002-1.013), having chronic airway disease (Ahr 0.478, 95%CI 0.302-0.756), and high GV (aHR 1.520, 95% CI 1.050-2.200) were independently associated with 30-day mortality. Consistent impacts on 30-day mortality were found while using CoV to assess GV. Conclusions: We found that approximately 40% of septic patients had a high early GV, defined by MAGE higher than 65 mg/dL and the high day-1 GV was independently associated with a high 30-day mortality. These findings highlight the crucial need of surveillance for early glycemic variability in patients with sepsis.

衛生福利部臺中醫院 鐘威昇 (Wei-Sheng Chung) 醫師：

- Effective And Economic Evaluation of Screen for Obstructive Sleep Apnea Syndrome by Using Overnight Oximetry.

W. Chung[1], Y. Chen[2], L. Hang[3]

[1]Department of Internal Medicine, Taichung Hospital, Ministry of Health and Welfare, Taichung City, Taiwan, [2]Department of Dental Technology and Materials Science, Central Taiwan University of Science and Technology, Taichung City, Taiwan, [3]Sleep Medicine Center, Department of Internal Medicine, China Medical University Hospital, Taichung, Taiwan

Abstract

RATIONALE Obstructive sleep apnea syndrome (OSAS) has been increasingly associated with medical morbidity and mortality. Patients with OSAS who were undiagnosed or unmanaged are abundant because in- laboratory polysomnography (PSG) examination is expensive and needs a long waiting time. In contrast, overnight oximetry is a simple technique which can be easily conducted to detect oxygen desaturation index (ODI). In this study, we evaluated the effectiveness and cost of OSAS screening by using overnight oximetry. METHODS We evaluated the patients under the impression of OSAS by clinical examination and the Epworth sleep score ≥ 10 in a tertiary sleep center between 2011 and 2015. Alice 4 PSG recorder (Respironics Inc., USA) was used to monitor patients with suspected OSAS and to record their PSG data. Apnea hypoxia index (AHI) is an index to measure the events of apnea and hypopnea per hour of sleep and a sleep apnea event is marked when AHI ≥ 5/h. A PSG examination and an overnight oximetry examination were charged 4,500 NTD and 380 NTD, respectively, according to Taiwanese National Health Insurance claims. We conducted cost-effectiveness analysis by using TreeAge Pro Health Care software package (TreeAge Software, inc. 2008). (1 USD = 30.025 NTD on September 13, 2017) RESULTS In total, 2174 patients (1720 men and 454 women) received PSG and overnight oximetry examination between 2011 and 2015. The correlation coefficient between ODI and AHI was 0.841 ($P < 0.01$). The sensitivity and specificity of ODI for screening OSAS was 91.3% and 94.7%, respectively. The cost to diagnose a patient with OSAS by direct PSG was 6,316 NTD. The cost to diagnose a patient with OSAS by overnight oximetry followed by PSG was 5,778 NTD. CONCLUSIONS Overnight oximetry/ PSG is cost effective to screen patients with suspicious OSAS.

衛生福利部臺中醫院 鐘威昇 (Wei-Sheng Chung) 醫師：

- Comparison of Acute Respiratory Events Between Patients with Bronchiectasis-COPD Overlap and Patients with COPD Alone.

W. Chung

Department of Internal Medicine, Taichung Hospital, Ministry of Health and Welfare, Taichung City, Taiwan

Abstract

RATIONALE: COPD is a heterogeneous disorder and may present diverse respiratory consequences at various clinical phenotypes. We investigated the risk of acute respiratory events in patients with bronchiectasis-COPD overlap (BCO) in Taiwan. METHODS: We identified 3955 patients who received diagnoses of COPD and bronchiectasis between 2000 and 2007 from the Taiwan Longitudinal Health Insurance Database as the BCO cohort. We included patients with COPD but without bronchiectasis at a ratio of 4:1, frequency matched by age, sex, and index year with each patient with BCO as the comparison cohort. We followed both cohorts for 5 years to investigate the risk of acute respiratory events in the BCO cohort relative to the comparison cohort presenting by the incidence rate ratios (IRRs) and corresponding 95% confidence intervals (CIs) were determined using Poisson regression models. RESULTS: The BCO cohort exhibited more episodes of acute respiratory events than did the comparison cohort (16.4 vs 5.52 per 100 person-y). After adjustment for potential covariates, the BCO cohort had a 2.20-fold higher risk of pneumonia (adjusted IRR = 2.20, 95% CI = 2.06-2.34), a 3.88-fold higher risk of acute exacerbation (adjusted IRR = 3.88, 95% CI = 3.64-4.13), a 1.74-fold higher risk of acute respiratory failure (adjusted IRR = 1.74, 95% CI = 1.47-2.06), and a 1.99-fold higher risk of cardiopulmonary arrest (adjusted IRR = 1.99, 95% CI = 1.81-2.20) than did the comparison cohort. (Table 1) CONCLUSIONS: The patients with BCO experienced a higher risk of acute respiratory events than did COPD patients without bronchiectasis.

Table 1 Comparison of acute respiratory events between patients with bronchiectasis-COPD overlap and COPD patients without bronchiectasis

	Bronchiectasis-COPD overlap syndrome					
	No		Yes			
Variables	Event	Rate[#]	Event	Rate[#]	IRR[$](95% CI)	Adjusted IRR[†] (95% CI)
Emergency room and Hospitalization						
All	3870	5.52	2782	16.4	2.98(2.80, 3.16)***	2.90(2.74, 3.08)***
Pneumonia	1928	2.75	1055	6.23	2.26(2.12, 2.43)***	2.20(2.06, 2.34)***
Acute exacerbation	1912	2.73	1857	11.0	4.02(3.76, 4.30)***	3.88(3.64, 4.13)***
Acute respiratory failure	457	0.65	196	1.16	1.78(1.62, 1.94)***	1.74(1.47, 2.06)***
Cardiopulmonary arrest	84	0.12	42	0.25	2.07(1.87, 2.29)***	1.99(1.81, 2.20)***

Rate[#], incidence rate per 100 person-years; IRR[$],incidence rate ratio; adjusted IRR[†]: multivariable analysis including age, sex, and comorbidities of malignancy, autoimmune disease, stroke, diabetes, heart failure, and tobacco use; ***P < .001

國立成功大學醫學院附設醫院 黃堂修 (Tang-Hsiu Huang) 醫師：

- Patients with Chronic Obstructive Pulmonary Disease Have Increased Risk of Developing Traumatic Brain Injury.

T. Huang

Department of Internal Medicine, Division of Pulmonary Medicine, National Cheng Kung University Hospital, Tainan, Taiwan

Abstract

RATIONALE Chronic obstructive pulmonary disease (COPD) causes cognitive dysfunctions and sarcopenic cachexia, both of which have been associated with fall. Previous studies also described impaired driving performance in COPD patients. Epidemiological surveys repeatedly identified fall and transport-related injury as leading causes of traumatic brain injury (TBI). We therefore hypothesized that COPD patients have increased susceptibility to TBI. METHODS We tested the hypothesis by a retrospective cohort study, utilizing a subset of Taiwan's National Health Insurance (NHI) Research Database containing data of 1 million randomly-selected beneficiaries. We defined a COPD patient as: age > 40 years, receiving COPD diagnosis in > two outpatient records (within one year apart) or one inpatient record, and receiving COPD-specific medicinal prescriptions within two years since diagnosis. We excluded patients who was diagnosed with COPD or TBI before 2000, patients who was diagnosed with TBI earlier than COPD, patients with ventilator-dependence, and patients with incompatible medicinal prescriptions. COPD patients were classified as severe COPD (receiving any long-acting inhalational dual bronchodilators or inhaled or oral corticosteroids) and less-severe COPD (the remaining). Equivalent control subjects were randomly selected and matched. Stratified Cox proportional hazard regression and competing risk regression (controlling risk of death) models were constructed to derive adjusted hazard ratios for TBI. Subgroup analyses were conducted with respect to sex, age, and subtypes of TBI. RESULTS We identified 23,703 patients with less-severe COPD, 7,901 patients with severe COPD, and 23,703 matched control subjects. Kaplan-Meier analyses revealed significantly reduced probabilities of TBI-free survival in all COPD patients as compared with control. For less-severe COPD and severe COPD, adjusted subdistribution hazard ratios derived from multi-variable competing-risk regression models for TBI were 2.74 (95% CI, 2.40 - 3.14) and 2.59 (95% CI, 2.18 - 3.08) at three-year follow-up, and 2.87 (95% CI, 2.58 - 3.20) and 2.77 (95% CI, 2.41 - 3.18) at five-year follow-up, respectively. No significant difference in the three-year and five-year risks for TBI was detected between severe COPD and less-severe COPD. Subgroup analysis showed that COPD patients, regardless of disease severity, either male or female, and either old (> 60) or young (> 40 and < 60), consistently exhibited increased crude, adjusted, and subdistribution hazard ratios for both hemorrhagic and non-hemorrhagic TBI. CONCLUSION We showed for the first time that COPD patients had increased risk of traumatic brain injury, both hemorrhagic and non-hemorrhagic, regardless of differences in sex, age, and COPD severity.

國立成功大學醫學院附設醫院 廖信閔 (Xin-Min Liao) 醫師：

- People with Asthma COPD Overlap Syndrome Have Higher Risk of Obstructive Sleep Apnea Development.

X. Liao[1], P. Su[1], T. Huang[1], S. Lin[2], C. Shieh[2]

[1]Internal medicine, National Cheng Kung University Hospital, Tainan, Taiwan, [2]Institute of clinical medicine, National Cheng Kung University, Tainan, Taiwan

Abstract

Rationale: The present study aimed to determine the risk of obstructive sleep apnea (OSA) development induced by asthma-COPD overlap syndrome (ACOS) and the severity of OSA would influence the acute exacerbation rate of ACOS patients.Methods: We conduct a retrospective cohort study. People who had been diagnosed as ACOS during 2000-2011 and had received polysomnography (PSG) for diagnosing obstructive sleep apnea from National Health Insurance Research Database (NHIRD) in Taiwan were enrolled. The Cox proportional hazard regression analysis with adjustment and competing risk regression (CRR) was computed to compare the risk of OSA development in ACOS and non-ACOS patients. The severity of OSA in terms of continuous positive airway pressure (CPAP) use is assessed if it is related to the acute exacerbation rate in ACOS subjects with OSA.Results: 10,622 individuals with ACOS during the period of 2000-2011 is included. The risk of OSA development is calculated for asthma, COPD, ACOS when compared with healthy control, and the adjusted hazard ratios were 3.55 for ACOS (95% CI: 2.89-4.35), 2.54 for asthma and 2.19 for COPD. The ACOS patients who have OSA as well will suffer higher risk at 2.07 folds (95% CI: 1.11-3.85) of acute exacerbation in the future compare with ACOS-alone subjects.Conclusions: In the present study, we demonstrated the risk of OSA development is higher in AOCS group compare with COPD-alone or asthma-alone population. ACOS with OSA will suffer more acute exacerbations compare with ACOS only subjects.

高雄長庚紀念醫院 方文豐 (Wen-Feng Fang) 醫師：

- IncrementalPulse Pressure Predicts Better Short-term Outcomes in Patients with Sepsis Admitted to ICU.

W. Fang, K. Hung, Y. Chen, Y. Chong, Y. Fang, K. Huang, Y. Wang, H. Yeh, Y. Chang, C. Wang, M. Lin
Kaohsiung Chang Gung Memorial Hospital, Kaohsiung, Taiwan

Abstract

Purpose: To determine whether increased pulse pressure at day 3 compared to day 1 affect outcomes in patients with severe sepsis. Materials and methods: This study evaluated adult medical ICU patients (18 y/o) with sepsis in Kaohsiung Chang Gung Memorial Hospital. 749 consecutive patients met the criteria of sepsis-3 and with complete pulse pressure data were enrolled. All possible clinical factors were prospectively recorded. Cytokine expressions were measured with a MILLIPLEX MAP Human Cytokine/Chemokine Panel (Merck Millipore, Billerica, MA, USA) in 165 patients enrolled to biomarker study. Expression of cell surface TLR4 MFI and HLADR MFI on monocytes was measured by flow cytometry (Cytomics FC500; Beckman Coulter, Inc., Fullerton, CA, USA). Results: Patients were defined as increased pulse pressure group (day 3 pulse pressure increased compared to day 1 pulse pressure, n=347) and not increased group (n=407). With compatible age, sex, APACH II score, Charlson comorbidity index, and initial sequential organ failure assessment (SOFA) score, there were more patients with hypertension in increased pulse pressure group (59.3% vs 51.9%, $p<0.05$). The short-term outcomes (7-day survival, 14-day survival) were better in in increased pulse pressure group (7-day: 95.6 % v.s. 89.4%; 14- day: 87.8% v.s 81.1%, $p<0.05$). However, there were compatible 28-d, and ICU and over all hospital mortality and length of ICU stay. Except for systolic pressure and pulse pressure, the vital signs, SOFA scores, lactate, procalcitonin and oxygen index were almost comparable between the 2 groups over day 1, day 3 and day 7. Increased pulse pressure group had comparable cytokine expression (including IL1, IL6, IL10, IL12, TNFa, VEGF) and TLR4 expression on monocyte within 7 days. However, increased pulse pressure group patients had higher day 1 HLADR expression (87.62% v.s 84.82%, $p<0.05$)(indicating greater immune response) and less day 3 HLADR expression (27.13% v.s. 36.84%, $p<0.05$). The oxygen index improvement was also more obvious in patients with increased pulse pressure group (-3.79 v.s. -1.69, $p<0.05$). Conclusions: Increased pulse pressure compared to day 1 predicts better short-term outcomes in patients with sepsis admitted to ICU. Immune reaction may play a role in the difference.

高雄長庚紀念醫院 陳永哲 (Yung-Che Chen) 醫師：

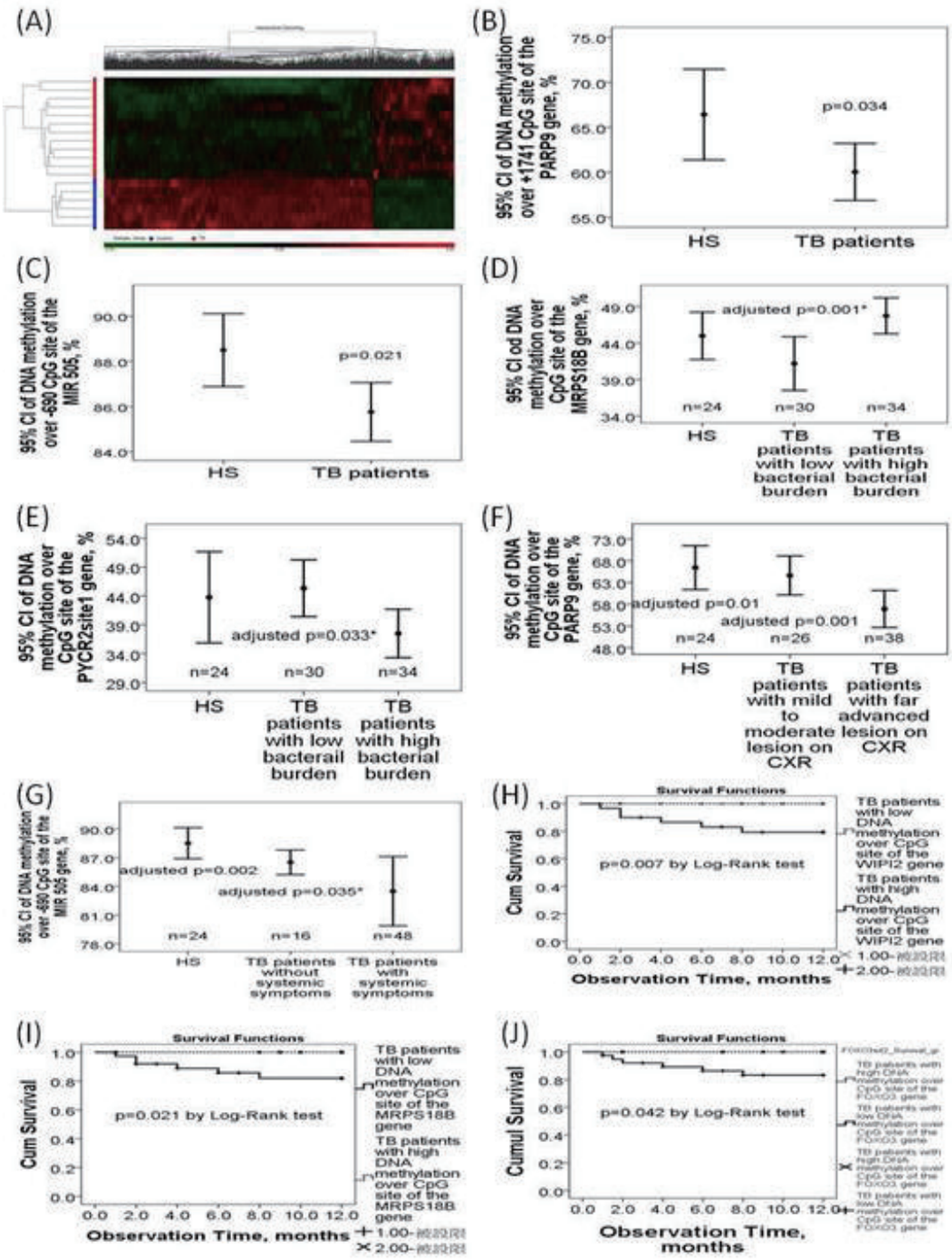
- Whole Genome DNA Methylation Analysis of Active Pulmonary Tuberculosis Disease Identifies Novel Epigenetic Signatures.

Y. Chen[1], M. Lin[1], C. Wu[1], S. Leung[2], W. Fang[3], H. Chang[4]

[1]Division of Pulmonary and Critical Care Medicine, Kaohsiung Chang Gung Memorial Hospital and Chang Gung University College of Medicine, Kaohsiung, Taiwan, [2]Thoracic Medicine, Chang Gung Memorial Hosp, Kaohsiung, Taiwan, [3]Chang Gung Memorial Hosp, Kaohsiung, Taiwan, [4]Division of Pulmonary & Critical Care Medicine, Department of Internal Medicine, Kaohsiung Chang Gung Memoria Hospital, Kaohsiung, Taiwan

Abstract

Background: We hypothesized that DNA methylation patterns may contribute to disease severity or the development of systemic symptoms in patients with active pulmonary tuberculosis (TB) disease. Methods: Illumina's DNA methylation 450 K assay was used to identify differentially methylated loci (DML) in a discovery cohort of 12 TB patients and 6 healthy subjects (HS). DNA methylation levels were validated by pyro-sequencing in a validation cohort of 64 TB patients and 24 HS. Results: Microarray analysis identified 1028 DMLs in TB patients versus HS, and 3747 DMLs in TB patients after 6-month anti-TB treatment versus before treatment. DNA methylation levels over 14 CpG sites of 10 selected genes, including RNASE3,MRPS18B,MIR223,LGALS3,ICAM2,GHRL,ICOS,MIR505,PARP9,PLCL2, were verified by pyrosequencing. In the validation cohort, DNA methylation levels of both the PARP9 (+1741 CpG site) and MIR505 (-696/690 CpG sites) genes were significantly decreased in the TB patients versus HS. Subgroup analyses showed that DNA methylation levels of the MRPS18B was significantly increased in TB patients with high bacterial burden versus that in those with low bacterial burden, while DNA methylation levels of the DNA methylation levels of +4145/+4141 CpG sites of the PYCR2 gene were decreased. Furthermore, DNA methylation levels over the MIR505 (-690) were significantly decreased in TB patients with systemic symptoms versus either those without systemic symptoms or HS. DNA methylation levels of the PARP9 gene was significantly decreased in TB patients with far advanced lesions on CXR versus that in those with mild tomoderate lesions on CXR or HS. TB patients with low DNA methylation of theWIPI2, MARPS18B, or FOXO3 gene had lower one-year survival. Conclusions: PARP9 and MIR505 hypomethylation may contribute to the development of active pulmonary TB disease, while MRPS18B hypermethylation may constitute an important determinant of high bacterial burden.


(A)
(B)
95% CI of DNA methylation over +1741 CpG site of the PARP9 gene, %
75.0
70.0
65.0
60.0
55.0
p=0.034
HS
TB patients
(C)
95% CI of DNA methylation over -690 CpG site of the MIR 505, %
90.0
88.0
86.0
84.0
p=0.021
HS
TB patients
(D)
95% CI od DNA methylation over CpG site of the MRPS18B gene, %
49.0
44.0
39.0
34.0
adjusted p=0.001*
n=24
n=30
n=34
HS
TB patients with low bacterial burden
TB patients with high bacterial burden
(E)
95% CI of DNA methylation over CpG site of the PYCR2site1 gene, %
54.0
49.0
44.0
39.0
34.0
29.0
adjusted p=0.033*
n=24
n=30
n=34
HS
TB patients with low bacterail burden
TB patients with high bacterial burden
(F)
95% CI of DNA methylation over CpG site of the PARP9 gene, %
73.0
68.0
63.0
58.0
53.0
48.0
adjusted p=0.01
adjusted p=0.001
n=24
n=26
n=38
HS
TB patients with mild to moderate lesion on CXR
TB patients with far advanced lesion on CXR
(G)
95% CI of DNA methylation over -690 CpG site of the MIR 505 gene, %
90.0
87.0
84.0
81.0
78.0
adjusted p=0.002
adjusted p=0.035*
n=24
n=16
n=48
HS
TB patients without systemic symptoms
TB patients with systemic symptoms
(H)
Survival Functions
Cum Survival
1.0
0.8
0.6
0.4
0.2
0.0
p=0.007 by Log-Rank test
0.0 2.0 4.0 6.0 8.0 10.0 12.0
Observation Time, months
TB patients with low DNA methylation over CpG site of the WIPI2 gene
TB patients with high DNA methylation over CpG site of the WIPI2 gene
1.00-
2.00-
(I)
Survival Functions
Cum Survival
1.0
0.8
0.6
0.4
0.2
0.0
p=0.021 by Log-Rank test
0.0 2.0 4.0 6.0 8.0 10.0 12.0
Observation Time, months
TB patients with low DNA methylation over CpG site of the MRPS18B gene
TB patients with high DNA methylation over CpG site of the MRPS18B gene
1.00-
2.00-
(J)
Survival Functions
Cumul Survival
1.0
0.8
0.6
0.4
0.2
0.0
p=0.042 by Log-Rank test
0.0 2.0 4.0 6.0 8.0 10.0 12.0
Observation Time, months

國軍高雄總醫院 林凡閔 (Fan-Min Lin) 醫師：

- Impact of Prior Pulmonary Tuberculosis in Treatment Outcomes of HCAP and CAP Patients in Intensive Care Units.

F. Lin[1], J. Feng[2], W. Fang[3], C. Wu[4], C. Yu[5], M. Lin[6], S. Ku[5], C. Chen[7], C. Tu[8], K. Yang[9]

[1]Division of Pulmonary Medicine, Department of Internal Medicine, Kaohsiung Armed Forces General Hospital, Kaohsiung, Taiwan, [2]Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwan, [3]Chang Gung Memorial Hosp, Kaohsiung, Taiwan, [4]Taichung Veterans Hosp General, Taichung, Taiwan, [5]National Taiwan University Hospital, Taipei, Taiwan, [6]Chang Gung Memorial Hosp-kaohsiung, Kaohsiung City, Taiwan, [7]Internal Medicine, National Cheng-Kung University Hospital, Tainan, Taiwan, [8]Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, China Medical University Hospital, Taichung, Taiwan, [9]Department of Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwann

Abstract

Background and objective It is controversial whether healthcare-associated pneumonia (HCAP) belongs to a unique clinical entity or it shares common characteristics with community-acquired pneumonia (CAP). The impact of prior pulmonary tuberculosis (PTB) in clinical presentation and treatment outcome of ICU-admitted CAP and HCAP patients also remains unknown. Methods We report a nationwide, multi-center, retrospective study. ICU-admitted CAP and HCAP patients from six medical centers in Taiwan were enrolled for analysis. Patients were defined as either CAP or HCAP cases, and with and without prior PTB, according to the database of Taiwan CDC. The disease severity, microbiologic characteristics, and treatment outcomes between CAP and HCAP patients with or without prior PTB were compared and analyzed. Results A total of 414 ICU-admitted patients, including 176 CAP cases and 238 HCAP cases were included for analysis during the study period. In both CAP and HCAP subgroups, the pneumonia severities, proportions of organ dysfunction, and microbiologic characteristics were similar between patients with and without prior PTB. In survival analysis, patients with prior PTB had higher 30-day mortality than those without prior PTB (38.9% vs. 16.5%, p = 0.021) in the CAP population. Multivariate analysis revealed that a history of prior PTB was an independent clinical factor associated with higher 30-day mortality rate in CAP patients (HR = 4.45, 95% CI: 1.81-10.98, P = 0.001). Conclusions History of prior PTB is an independent clinical factor for increased 30-day mortality rate in ICU-admitted CAP patients, but not in ICU-admitted HCAP patients.

吐納園地

…在充實嚴肅的會務活動與學術交流之後，我們特留一畦園地，讓會員在為病患爭一口氣之餘，也能喘息一下，交換對專科醫療的所見、所聞、所思、所樂及所憂。期待您的珠璣片羽來串連彼此…

[開放投稿] 本園地屬於大家的心聲園地，任何非學術性文章皆歡迎各位會員們踴躍投稿。
(投稿方式：請將文章檔案、8 張以內的照片及投稿者聯絡資訊 E-mail 至 chest_medicine@yahoo.com.tw，編輯部將依照順序安排刊登。)

一萬英里的期待：外國醫學生的見習教學經驗談

陳鍾岳醫師 義大醫院 呼吸胸腔內科

臨床、研究、教學是教學醫院醫師的三大任務。把臨床醫療的知識和經驗傳承下去，是非常艱鉅且重要的使命。見實習是一位醫師養成的重要階段，臨床教師在忙碌的工作中，如何利用有限的時間因材施教是一大挑戰。而在義大醫院，我們的挑戰更多了一項：外國醫學生的臨床見習教育。

義守大學自 2013 年開辦學士後醫學系外國學生專班，主要配合政府培育友邦醫療人才政策規劃之 4 年制全英醫學教育，期待培育具國際醫療水準與服務熱忱之醫療人才，並於畢業後返回原國家服務，解決醫療資源不足的問題。我們的學生分別從非洲、中南美洲、南太平洋等地的邦交國來到台灣接受教育；這些學生的教育背景、語言及文化差異很大，甚至有些學生已經在國外拿到研究所學位。這些學生學成歸國後大部分要肩負改善當地醫療環境的重責大任，因此授課的我們可謂任重道遠。

要帶這群來自世界各地的學生認識台灣的醫療真的不容易；用全英文授課雖然不輕鬆，但勉強可以應付 (每天練習英文算是意外的收穫)；一開始最困難的其實是了解這些學生想要以及需要學哪些東西。舉例來說，非洲的史瓦帝尼 (以前的史瓦濟蘭)，國民平均壽命只有三十多歲，對他們而言，肺癌的最新發展及治療遠不如肺炎及肺結核的治療來得實用；我們再熟悉不過的電腦斷層核磁共振等診斷技術，在他們國家可能不易取得。學生們希望我們多讓他們練習理學檢查，因為回到他們國家，雙手可能是最重要的診斷武器。這時我才發覺，對我們的邦交國，除了地名，其他的一切我們都很陌生。

因此不同於國內醫學生，外國學生在報到的時候我們會先了解他們國家的醫療現況以及學生對於哪類疾病比較有興趣，再分配教授內容的比例。大部分學生對於肺炎、肺結核以及氣喘比較有興趣，於是我們利用空檔時間，用心智圖的方法，請學生們挑選一個主題腦力激盪，由診斷、治療、預防等面向延伸討論。藉由這樣的方式可以讓學生更有興趣去深入研究，避免只是單純片面的記憶。此外，由於語言障礙，外國學生無法直接向病患詢問病史，這時就需要我們當作翻譯協助，同時進行理學檢查的教學。

每週一次的影像判讀教學，按部就班指導學生如何判讀胸部X光，也是外國學生期待的課程。另一個教學的重點是吸入藥物介紹，利用教具和影片幫助學生學習正確操作吸入藥物，並且在最後用類似“大家來找碴”的方式讓學生發覺使用吸入劑錯誤的地方並改正。

當然胸腔超音波及肺功能檢查也是見習的重點；讓學生體驗肺功能檢查的過程並判讀，以及互相當對象操作超音波，對他們來說是個有趣的經驗。雖然他們畢業之後不會留在台灣執業，但是身為老師，我們有義務也有責任好好的指導這些懷抱著理想，遠渡重洋來到台灣的學生，讓他們能夠有機會獨當一面，將所學回饋給自己的國家，幫助自己的人民。

外國醫學生的床邊理學檢查教學

外國學生見習個案報告

介紹胸腔超音波並實際讓學生操作

活動集錦

109 年 5 月 5 日世界氣喘日暨合作備忘錄簽署 (氣喘卓越計畫)

109 年 5 月 5 日世界氣喘日暨合作備忘錄簽署 (氣喘卓越計畫)

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