

ISSN 1023-9855



胸腔醫學

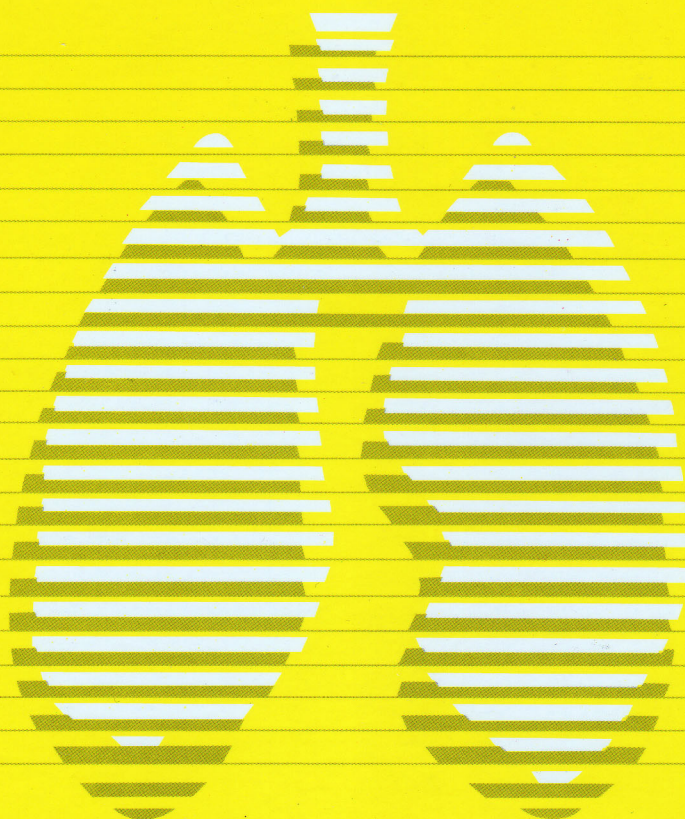
Thoracic Medicine

The Official Journal of Taiwan Society of
Pulmonary and Critical Care Medicine

Vol.34 No.3 June 2019

第三十四卷 第三期

中華民國一〇八年六月



台灣胸腔暨重症加護醫學會

83301 高雄市鳥松區大埤路 123 號

No. 123, Dapi Rd., Niasong Dist.,

Kaohsiung City 83301, Taiwan



ISSN 1023-9855



Vol.34 No.3 June 2019

胸腔醫學

Thoracic Medicine

The Official Journal of Taiwan Society
of Pulmonary and Critical Care Medicine

原著

- 探討低潮氣容積通氣下之敗血症病人合併急性呼吸衰竭其Driving Pressure（驅動壓力）與死亡率之相關性 92~102
林彥岑，詹明澄，曾政森，施素真，尹基媛，尤琇慧，吳杰亮，黃彥翔

病例報告

- 同時感染肺囊蟲肺炎和肺結核於非人類免疫缺乏病毒感染症病患－病例報告 103~109
葉雲凱，林芳綺
- 利用電阻抗斷層攝影找出單側急性肺損傷併嚴重低血氧患者最佳吐氣末正壓：一案例報告 110~118
張建群，高劍虹，許永隆
- 第二型糖尿病中年女性之黴漿菌肺炎併發冷凝集素溶血性貧血，缺血性中風，及急性腎衰竭：病例報告和文獻回顧 119~125
詹家榮，劉景隆
- 退伍軍人病與橫紋肌溶解症：一個案例報告與文獻回顧 126~132
陳彥昌，王喬弘，陳寬榮，彭瑞鵬
- 子宮肌瘤導致靜脈血栓形成及急性肺栓塞：病例報告 133~138
余秉宗，陳俊延，林長怡



Vol.34 No.3 June 2019

胸腔醫學

Thoracic Medicine

The Official Journal of Taiwan Society
of Pulmonary and Critical Care Medicine

Original Article

- Driving Pressure Greater than 14 cmH₂O is Associated with Increased Mortality When Tidal Volume is Less than 8 ml/kg in Sepsis Patients with Acute Respiratory Failure92~102
Yen-Tseng Lin, Ming-Cheng Chan, Jeng-Sen Tseng, Sou-Jen Shih, Chi-Yuan Yi, Hsiu-Hui Yu, Chieh-Liang Wu, Yen-Hsiang Huang

Case Reports

- Coinfection of *Pneumocystis jiroveci* and *Mycobacterium tuberculosis* in a Patient without Human Immunodeficiency Virus Infection: A Case Report103~109
Yun-Kai Yeh, Fang-Chi Lin
- Electrical Impedance Tomography for Optimal Positive End-Expiratory Pressure Application in Unilateral Acute Lung Injury with Profound Hypoxemia: A Case Report110~118
Chan-Chun Chang, Chien-Hung Gow, Yeong-Long Hsu
- Mycoplasma Pneumonia Complicated with Cold Agglutinin Hemolysis, Ischemic Stroke, and Acute Kidney Injury in a Middle-Aged Woman with Type II Diabetes: A Case Report and Literature Review119~125
Chia-Jung Chan, Ching-Lung Liu
- Legionnaires' Disease and Rhabdomyolysis: A Case Report and Literature Review126~132
Yen-Chang Chen, Chiao-Hung Wang, Kuan-Jung Chen, Ruery-Perng Perng
- Uterine Myoma -- Induced Venal Thrombosis and Acute Pulmonary Thromboembolism: 2 Case Reports133~138
Ping-Tsung Yu, Chun-Yen Chen, Chang-Yi Lin

Driving Pressure Greater than 14 cmH₂O is Associated with Increased Mortality When Tidal Volume is Less than 8 ml/kg in Sepsis Patients with Acute Respiratory Failure

Yen-Tseng Lin*, Ming-Cheng Chan*, **, ***, Jeng-Sen Tseng*, ****, Sou-Jen Shih*****, Chi-Yuan Yi*****, Hsiu-Hui Yu*****, Chieh-Liang Wu*****, *****, Yen-Hsiang Huang*

Background: Driving pressure is associated with outcome in acute respiratory distress syndrome patients; it can be determined by both ventilator setting and lung compliance. In order to clarify this, we conducted a retrospective analysis to determine the relationship between tidal volume setting, driving pressure and patient outcome.

Materials and Methods: This was a retrospective analysis of prospectively acquired data from an intensive care unit of a tertiary referral hospital in central Taiwan. Patients with respiratory failure needing invasive mechanical ventilation due to sepsis, from April 2008 to November 2009, were included for analysis.

Results: A total of 220 patients were included for analysis. The median age of these patients was 76 years, and they had a mean Acute Physiology and Chronic Health Evaluation II score of 25.0±6.5. The hospital mortality rate was 39.1%. Driving pressure at 8 hours after intensive care unit admission (driving pressure-8) greater than 14 cmH₂O was associated with an increased risk of hospital mortality. Also, in a multivariate logistical regression analysis, driving pressure-8 was an independent risk factor for mortality. Patients with driving pressure-8 greater than 14 cmH₂O while ventilated, with a tidal volume less than 8 ml/kg of predicted body weight, had the highest risk of hospital mortality.

Conclusion: Driving pressure is a valuable predictor of hospital mortality in septic patients with acute respiratory failure needing mechanical ventilation. Those patients with a higher driving pressure while ventilated with a lower tidal volume were at an increased risk of hospital mortality. (*Thorac Med* 2019; 34: 92-102)

Key words: acute respiratory failure, driving pressure, tidal volume, sepsis

*Division of Chest Medicine, Department of Internal Medicine, Taichung Veterans General Hospital, Taichung, Taiwan; **Central Taiwan University of Science and Technology, Taichung, Taiwan; ***Division of Respiratory Therapy, Department of Internal Medicine, Taichung Veterans General Hospital, Taichung, Taiwan; ****School of Medicine, National Yang-Ming University, Taipei, Taiwan; *****Department of Nursing, Taichung Veterans General Hospital, Taichung, Taiwan; *****Center of Quality Management, Taichung Veterans General Hospital, Taichung, Taiwan; *****Office of Medical Administration, Taichung Veterans General Hospital, Taichung, Taiwan
Address reprint requests to: Dr. Yen-Hsiang Huang, Division of Chest Medicine, Department of Internal Medicine, Taichung Veterans General Hospital, 1650 Taiwan Boulevard Sect. 4, Taichung, Taiwan 40705

探討低潮氣容積通氣下之敗血症病人合併急性呼吸衰竭其 Driving Pressure（驅動壓力）與死亡率之相關性

林彥岑* 詹明澄*, **, *** 曾政森*, **** 施素真***** 尹基媛***** 尤琇慧*****
吳杰亮***** , ***** 黃彥翔*

前言：驅動壓力（driving pressure）取決於呼吸器設定與肺部順應性，且影響急性呼吸窘迫症候群病人的預後。因此，我們設計了一個回溯性研究來探討潮氣容積設定、driving pressure 與病人預後三者之關係。

方法：此回溯性研究分析，納入台中榮民總醫院呼吸加護病房於 2008 年 4 月 1 日至 2009 年 11 月 30 日，因敗血症造成急性呼吸衰竭並接受侵入性機械通氣之病人，我們研究探討呼吸器設定參數與病人預後之關聯。

結果：本研究共收案 220 位因敗血症接受侵入性機械通氣之病人。病人年齡中位數為 76 歲，平均 APACHE II 分數為 25.0 6.5 分。住院中死亡率為 39.1%。病人轉入加護病房後第八小時之驅動壓力大於 14cmH₂O 為獨立風險因子。在低潮氣容積設定下（小於 8 ml/kg 預測體重，predict body weight, PBW），第八小時之驅動壓力大於 14cmH₂O 之病人群住院中死亡最高。

結論：Driving pressure 對於敗血症造成呼吸衰竭且接受侵入性機械通氣之急重症病人而言，是預測住院中死亡率的重要風險因子。低潮氣容積通氣設定下有高驅動壓力的病人其住院中死亡率有顯著上升。（*胸腔醫學 2019; 34: 92-102*）

關鍵詞：急性呼吸衰竭，驅動壓力，潮氣容積，敗血症

* 台中榮民總醫院 內科部胸腔內科，** 中臺科技大學，*** 台中榮民總醫院 內科部呼吸治療科，**** 國立陽明大學，
***** 台中榮民總醫院 護理部，***** 台中榮民總醫院 品質管理中心，***** 台中榮民總醫院 醫務企管部
索取抽印本請聯絡：黃彥翔醫師，台中榮民總醫院 胸腔內科，台中市西屯區台灣大道四段 1650 號

Coinfection of *Pneumocystis jiroveci* and *Mycobacterium tuberculosis* in a Patient without Human Immunodeficiency Virus Infection: A Case Report

Yun-Kai Yeh, Fang-Chi Lin*

Coinfection with *Pneumocystis jiroveci* (Pj) and *Mycobacterium tuberculosis* (MTB) is not rare, and is more common among patients with cellular immunodeficiency, such as human immunodeficiency virus (HIV) infection. Risk factors associated with co-incidence of *Pneumocystis jiroveci* pneumonia and active tuberculosis in patients without HIV infection include corticosteroid use, chemotherapy, alcohol-related hepatic cirrhosis, severe malnutrition, pancytopenia, and depletion of CD4+ T-cells. We report a 96-year-old, HIV-uninfected man who presented with community-acquired pneumonia and acute hypoxemic respiratory failure. He was diagnosed with Pj and MTB coinfection by the presence of Pj and MTB in respiratory specimens via bronchoalveolar lavage. We discussed the clinical characteristics of Pj and MTB coinfection, and factors associated with onset of *Pneumocystis jiroveci* pneumonia from colonization of Pj in the respiratory tract, if a patient is coinfecting with MTB. (*Thorac Med* 2019; 34: 103-109)

Key words: *Pneumocystis jirovecii* pneumonia, *Mycobacterium tuberculosis*, human immunodeficiency virus, corticosteroid, bronchoalveolar lavage

Department of Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwan; *Division of Clinical Respiratory Physiology, Department of Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwan
Address reprint requests to: Dr. Fang-Chi Lin, Division of Clinical Respiratory Physiology, Department of Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwan, No. 201, Sec. 2, Shih-Pai Rd., Beitou District, Taipei 11217, Taiwan, ROC

同時感染肺囊蟲肺炎和肺結核於非人類免疫缺乏 病毒感染症病患一病例報告

葉雲凱 林芳綺 *

同時感染肺囊蟲肺炎和結核菌的案例並不算少見，尤其是細胞免疫缺陷的病人身上更是常見。危險因子有使用類固醇，化學治療，酒精性肝硬化，嚴重營養不良，全血球低下症，CD4+ T細胞淋巴球缺乏症等因素。此外，肺囊蟲移生現象無論在免疫健全和免疫缺乏的人身上皆可以觀察到。被肺囊蟲移生的個體可能有發展成肺囊蟲感染的風險。我們在這裡展現一個案例，一個 96 歲的非人類免疫缺乏病毒感染病患，因肺炎以及呼吸衰竭，住進加護病房。並經由氣管鏡肺泡沖洗術和痰液培養，證實了同時感染肺結核和肺囊蟲肺炎。(*胸腔醫學* 2019; 34: 103-109)

關鍵詞：肺囊蟲肺炎，結核菌，人類免疫缺乏病毒，類固醇，氣管鏡肺泡沖洗術

Electrical Impedance Tomography for Optimal Positive End-Expiratory Pressure Application in Unilateral Acute Lung Injury with Profound Hypoxemia: A Case Report

Chan-Chun Chang, Chien-Hung Gow, Yeong-Long Hsu

Massive aspiration pneumonia with unilateral acute lung injury and profound hypoxemia is a common condition seen in the intensive care unit (ICU). Application of optimal positive end-expiratory pressure (PEEP) based on acute respiratory distress syndrome network guidelines may over-distend the uninvolved, more compliant lung. Some of these patients may require double lumen endotracheal intubation and independent lung ventilation to rescue the worsening ventilation/perfusion mismatch and decreasing oxygenation during suboptimal PEEP titrations. Electrical impedance tomography (EIT) is a non-invasive and portable lung imaging technique for dynamic evaluation of lung volume distribution. The reliability of EIT has been validated by comparing it with different conventional methods. Application of EIT in the ICU has been proposed for patients with mild, moderate, and severe lung disease, for assessing ventilation distribution, or even for guiding respiratory therapies. Here, we presented a patient with massive aspiration pneumonia with unilateral acute lung injury. Under real-time EIT, the PEEP was adjusted to optimal levels, and the patient was eventually successfully extubated without sequelae. (*Thorac Med* 2019; 34: 110-118)

Key words: electrical impedance tomography, optimal positive end expiratory pressure, unilateral acute lung injury

Division of Chest Medicine, Department of Internal Medicine, Far Eastern Memorial Hospital, New Taipei City, Taiwan

Address reprint requests to: Dr. Yeong-Long Hsu, Division of Chest Medicine, Department of Internal Medicine, Far Eastern Memorial Hospital, No. 21, Sec. 2, Nanya S Rd., Banchiao Dist., New Taipei City 220, Taiwan (R.O.C.)

利用電阻抗斷層攝影找出單側急性肺損傷併嚴重低血氧患者最佳吐氣末正壓：一案例報告

張建群 高劍虹 許永隆

單側急性肺損傷併嚴重低血氧在加護病房並非不常見。若是根據急性呼吸窘迫症候群聯網所建議之最佳吐氣末正壓值使用在這些病人的呼吸器設定上，可能會造成正常順應性的單側肺過度充氣。一部分這類病人在上述不適當之吐氣末正壓設定下，可能造成加重通氣／灌流與血氧和之惡化，甚至需使用到雙側肺獨立通氣之機械通氣設定。肺部電阻抗斷層攝影，一種新式無輻射、非侵入性、可重覆操作且可提供即時肺部氣體容積分佈的影像檢查，其可靠性在國內外的研究皆已證實與許多傳統檢查不相上下。在加護病房，肺部電阻抗斷層攝影的臨床運用已逐漸普及到評估與調整多種呼吸治療的儀器設定上。在此，我們敘述了如何使用電阻抗斷層攝影，在不插雙腔氣管內管與使用雙側肺獨立通氣的情況下，即時找到最佳吐氣末正壓值，幫助病人成功脫離呼吸器。(*胸腔醫學* 2019; 34: 110-118)

關鍵詞：電阻抗斷層攝影，最佳吐氣末正壓，單側急性肺損傷

Mycoplasma Pneumonia Complicated with Cold Agglutinin Hemolysis, Ischemic Stroke, and Acute Kidney Injury in a Middle-Aged Woman with Type II Diabetes: A Case Report and Literature Review

Chia-Jung Chan, Ching-Lung Liu

Mycoplasma pneumoniae is an essential common human pathogen in the etiology of atypical pneumonia in children and adults. In some rare instances, however, it might result in secondary cold agglutinin disease (i.e., cold agglutinin-associated autoimmune hemolytic anemia) or ischemic stroke. We report a case of the 47-year-old woman with type II diabetes mellitus who was diagnosed as having Mycoplasma pneumonia as the result of positive mycoplasma IgM antibody and cold agglutinin tests. Complications including severe hemolytic anemia, jaundice, ischemic stroke due to RBC cold agglutination, and acute kidney injury occurred later. Under treatment with levofloxacin, plasmapheresis and hemodialysis, she recovered gradually and could carry out daily activities independently. This case shows that mycoplasma pneumonia can lead to complications with extrapulmonary diseases involving a wide variety of organs. Multiple extrapulmonary manifestations often indicate an ominous prognosis. In clinical practice, even though mycoplasma infection is common, the extrapulmonary manifestations should be evaluated and managed seriously. (*Thorac Med* 2019; **34**: 119-125)

Key words: mycoplasma pneumonia, cold agglutinin, hemolytic anemia, ischemic stroke, acute kidney injury

Division of Chest Medicine, Department of Internal Medicine, MacKay Memorial Hospital, Taipei, Taiwan
Address reprint requests to: Dr. Ching-Lung Liu, Division of Chest Medicine, Department of Internal Medicine, MacKay Memorial Hospital, Taipei, Taiwan, No. 92, Sec. 2, Zhongshan N. Rd., Zhongshan Dist., Taipei City 104, Taiwan

第二型糖尿病中年女性之黴漿菌肺炎併發冷凝集素溶血性貧血，缺血性中風，及急性腎衰竭：病例報告和文獻回顧

詹家榮 劉景隆

黴漿菌，從兒童至成人，是導致非典型肺部感染的重要致病原之一。稀少的病例顯示黴漿菌會導致冷凝集疾病（如：冷凝集相關之自體免疫溶血性貧血）或是缺血性中風。本文報告一位 47 歲中年婦女，本身為糖尿病患者，臨床上出現發燒，咳嗽，流鼻水，以及胸部 X 光片上有一肺炎浸潤。經過 10 天的治療後，咳嗽持續惡化並合併再次發燒。因黴漿菌血清學抗體檢驗及冷凝集測試均呈現陽性，因此確立黴漿菌肺炎診斷。臨床上，更發生嚴重之溶血性貧血，黃膽，併發右側肢體無力，中風及急性腎衰竭。該病患在完整的抗生素治療，血漿置換，及血液透析治療下，病情獲得明顯改善，逐漸復原並能恢復其日常之行動功能。該病例說明黴漿菌肺炎可能涉及肺外多重器官的複雜疾病。多重肺外器官表現通常代表不良預後。在臨床診療上，即使黴漿菌感染很常見，也應該審慎評估及處理黴漿菌感染的肺外表現。(*胸腔醫學* 2019; 34: 119-125)

關鍵詞：黴漿菌肺炎，冷凝集，自體免疫溶血性貧血，缺血性中風，急性腎衰竭

Legionnaires' Disease and Rhabdomyolysis: A Case Report and Literature Review

Yen-Chang Chen, Chiao-Hung Wang, Kuan-Jung Chen, Ruery-Perng Perng

Legionnaires' disease, an important cause of severe community-acquired pneumonia, is usually suspected when patients present with extrapulmonary features along with the diagnosis of pneumonia. We describe a patient diagnosed with Legionnaires' disease due to the presence of a constellation of rare, characteristic extrapulmonary features, including rhabdomyolysis, relative bradycardia, elevated liver function and troponin I levels, hyponatremia, and mild hypokalemia. Given that Legionnaires' disease has been reported as the most common condition that causes rhabdomyolysis in patients diagnosed with bacterial pneumonia, preemptive levofloxacin was administered intravenously before the rapid urinary antigen test had confirmed the diagnosis. The patient made a full recovery. Based on the presentation of this case, we concluded that rhabdomyolysis that is otherwise unexplained in patients diagnosed with pneumonia should increase a suspicion of Legionnaires' disease. (*Thorac Med* 2019; 34: 126-132)

Key words: Legionnaires' disease, rhabdomyolysis, extrapulmonary features

Department of Chest Medicine, Taipei City Hospital, Renai Branch
Address reprint requests to: Dr. Yen-Chang Chen, Department of Chest Medicine, Taipei City Hospital, Renai Branch, No. 10, Renai Road, Section 4, 8th Fl. Da-An District, Taipei City 10629 (R.O.C.)

退伍軍人病與橫紋肌溶解症：一個案例報告與文獻回顧

陳彥昌 王喬弘 陳寬榮 彭瑞鵬

退伍軍人病 (Legionnaires' disease) 是造成嚴重社區型肺炎 (community-acquired pneumonia) 的重要原因之一。患者經常只在被診斷肺炎時，同時表現出肺外特徵 (extrapulmonary features) 時才會被懷疑遭到此症感染。本文報告一位肺炎患者，因為同時出現一群少見且獨特之肺外特徵，包括橫紋肌溶解症 (rhabdomyolysis)、相對性心搏過緩 (relative bradycardia)、肝功能與肌鈣蛋白 (troponin I) 升高、低血鈉、輕微低血鉀，而被診斷患有退伍軍人病。基於過去文獻指出退伍軍人病為最常造成橫紋肌溶解症之細菌性肺炎，患者於快速尿液抗原確診退伍軍人病之前，便開始接受靜脈注射 levofloxacin 治療。患者最終亦完全康復。根據病人的臨床表現與本文中針對退伍軍人病與橫紋肌溶解症之相關文獻回顧，我們建議當肺炎患者同時併有無法解釋之橫紋肌溶解症時，應該高度懷疑退伍軍人病的可能。(胸腔醫學 2019; 34: 126-132)

關鍵詞：退伍軍人病，橫紋肌溶解症，肺外特徵

Uterine Myoma — Induced Venal Thrombosis and Acute Pulmonary Thromboembolism: 2 Case Reports

Ping-Tsung Yu, Chun-Yen Chen*, Chang-Yi Lin

Acute pulmonary thromboembolism is a catastrophic disease that could lead to sudden death. The overall average annual incidence of acute pulmonary embolism is approximately 70 per 100,000, and that of venous thrombosis approximately 124 per 100,000. According to Virchow's theory, 3 conditions (stasis, vessel injury and hypercoagulopathy) are the major causes of pulmonary thromboembolism. Most cases (80–95%) of pulmonary embolism occur as a result of thrombus originating in the lower extremities due to stasis. Several predisposing factors, such as economic class syndrome, have been mentioned in previous reports. In rare cases, a huge uterine myoma can cause compression of the pelvic venous system leading to deep venous thrombosis and pulmonary embolism. The high prevalence of myoma (the most common benign neoplasm) among women of reproductive age indicates the need to evaluate the associated risk of deep venous thrombosis/pulmonary embolism secondary to uterine myoma in female patients with abnormal menstruation. This would help clinical physicians accurately determine the correct etiology of venous thromboembolism and avoid unnecessary thrombophilia workup. (*Thorac Med* 2019; 34: 133-138)

Key words: myoma, pulmonary embolism

Chest Division, Department of Internal Medicine, MacKay Memorial Hospital, Taipei 104, Taiwan; *Cardiovascular Section, Department of Internal Medicine, MacKay Memorial Hospital, Taipei 104, Taiwan
Address reprint requests to: Dr. Dr. Chang-Yi Lin, Chest Division, Department of Internal Medicine, MacKay Memorial Hospital, Taipei 104, Taiwan, No. 92, Sec. 2, Zhongshan N. Rd., Taipei City 10449, Taiwan

子宮肌瘤導致靜脈血栓形成及急性肺栓塞：病例報告

余秉宗 陳俊延* 林長怡

急性肺栓塞症 (Pulmonary thromboembolism) 是一種嚴重的疾病，且可能導致猝死。急性肺栓塞症的平均每年發生率約為十萬分之七十，靜脈血栓形成的平均每年發生率約為十萬分之七十。根據 Virchow 的理論，三種臨床狀況：血液瘀滯 (stasis)、血管損傷 (vessel injury) 和高凝血狀態 (hypercoagulopathy) 是導致急性肺栓塞的主要原因。大多數病例 (80-95%) 的肺栓塞是源於下肢的靜脈血栓所造成的。根據以前的報告中曾經提到過幾種誘發因素 (predisposing factors)，如經濟艙症候群 (economic class syndrome)。偶有案例報導，巨大的子宮肌瘤可導致骨盆靜脈系統受壓迫，從而導致下肢靜脈血栓 (Deep venous thrombosis, DVT) 和急性肺栓塞症。由於子宮肌瘤常見於育齡婦女 (最常見的良性腫瘤)，女性患者若患有子宮肌瘤相關症狀如月經過多，應該評估繼發性下之靜脈血栓和急性肺栓塞的風險。這將有助於臨床醫生準確地診斷血栓的病因，避免不必要的檢查。(*胸腔醫學* 2019; 34: 133-138)

關鍵詞：子宮肌瘤，急性肺栓塞