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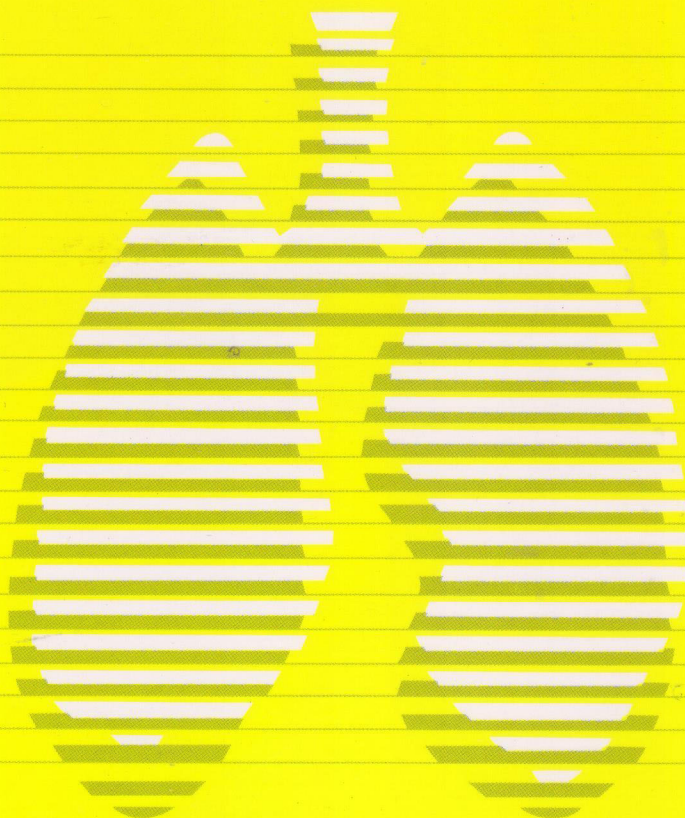
## Thoracic Medicine

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# Characteristics of Clinical and Radiological Manifestations in Empiric Antibiotic-Delayed Diagnosis of Pulmonary Tuberculosis

Guan-Yuan Chen, Meng-Hen Shieh, Yue-Fu Fang, Jie-Mo Lin, Jr-Hau Jang, Horng-Chyuan Lin

**Background:** Delays in the diagnosis of pulmonary tuberculosis (TB) may result in increased patient morbidity and further spread of the disease. Recent published reports suggest that antibiotic treatment might be associated with the delayed diagnosis of TB. The aim of this study was to evaluate the impact of clinical and radiological manifestations in the delayed diagnosis of TB among different antibiotic classes in an endemic TB area.

**Methods:** Patients with culture or tissue biopsy-confirmed TB diagnosed between January 2005 and December 2006 were included and their medical records reviewed and analyzed.

**Results:** Eighty-three of the 403 patients (20.6%) received a fluoroquinolone (FQ group) and 129 (32%) received non-FQ antibiotics (AB group) before the diagnosis of TB. The median duration from initial visit to ordering a TB study was longer in the FQ and AB groups than in the control group (2 and 2 vs. 0 days). More patients in the FQ and AB groups had underlying disease (65.1% and 79.8% vs. 37.2%, respectively), hypoalbuminemia (63.9% and 55.8% vs. 26.2%, respectively) and a positive acid-fast bacilli (AFB) sputum smear (69.9% and 52.7% vs. 49.7%). Specific radiologic patterns and distribution among patients receiving antibiotics, regardless of class, were significantly different from those among patients without antibiotics, and included alveolar consolidation (37.3% vs. 21.9%), multiple lobe infiltrations (50.9% vs. 39.8%) and lower lung involvement (55.2% vs. 31.9%).

**Conclusion:** Patients who received empiric antibiotics before the diagnosis of TB had a higher percentage of underlying diseases, hypoalbuminemia and positive AFB sputum smears. Antibiotic treatment irrespective of class for presumed CAP delayed the diagnosis of pulmonary TB, and the delay was similar regardless of which antibiotic class had been prescribed. The specific radiologic pattern of alveolar consolidation and atypical distribution with multiple lobes and lower lung involvement contributed to masking the underlying pulmonary TB. Clinicians should consider pulmonary TB in their differential diagnosis when prescribing antibiotics for the treatment of CAP, particularly when encountering the specific radiologic features and distribution reported in this study. (*Thorac Med* 2012; 27: 71-80)

Key words: radiological manifestations, community acquired-pneumonia, fluoroquinolone, delayed diagnosis, pulmonary tuberculosis

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## 造成肺結核延遲診斷之臨床及放射線影像特徵

陳冠元 謝孟亨 枋岳甫 林玠模 張志豪 林鴻銓

肺結核延遲診斷會增加發病率及疾病的散播。近年有文獻報告因社區型肺炎而使用經驗性抗生素治療，不論使用何種抗生素，會造成肺結核延遲診斷。本研究探討在肺結核病盛行地區是否有相同情況，並探討不同臨床表現與放射線影像的型態對肺結核病患一開始經驗性抗生素選擇使用所造成的影響。

我們回顧403位經由微生物學或組織切片確定診斷為肺結核的病人的病歷記錄，分析其包括臨床表徵，抗生素使用情況及放射線影像型態。另外，我們依照抗生素使用情況，將病人分成三組，分別為接受fluoroquinolone類抗生素（FQ group），接受非fluoroquinolone類抗生素（AB group），及沒有使用任何抗生素（No antibiotic group）。

結果403位病人中，在肺結核診斷之前，有83位（20.6%）接受fluoroquinolone類抗生素，有129位（32%）接受非fluoroquinolone類抗生素。而從病人初至門診到臨床醫師開立結核檢查的中位期間在FQ group, AB group 及 Control group三組分別為2天，2天，0天，有顯著的差異（ $p<0.05$ ）。在使用FQ類及non-FQ類抗生素的病人中有較多病人存有原在性疾病（underlying disease）分別是（65.1% and 79.8% vs 37.2%）及低蛋白血症（hypoalbuminemia）分別是（63.9% and 55.8% vs 26.2%）。另外，使用抗生組（FQ類及non-FQ類）相對於無使用抗生素組有較高比例抗酸性染色呈現陽性（69.9% and 52.7% vs 49.7%）。對於403位肺結核病人中，在放射線影像型態及病變分佈方面，有接受抗生素者（不論是使用FQ類或non-FQ類）與沒有使用抗生素者有顯著的不同。這些差異包括肺泡實質化型態（37.3% vs 21.9%），多發性肺葉浸潤（50.9% vs 39.8%）及肺下部侵犯（55.2% vs 31.9%）。

因此，特殊的影像型態及分布包括肺泡實質化型態，多發性肺葉浸潤及肺下部侵犯容易造成肺結核診斷的誤判。所以，臨床醫師在診斷社區型肺炎並給予經驗性抗生素治療的同時，必須將肺結核列入鑑別診斷；尤其是在遇到本研究論文中所提及的特殊放射線影像型態及病變分佈的情況時。（*胸腔醫學* 2012; 27: 71-80）

關鍵詞：特殊放射線影像型態，社區型肺炎，延遲性診斷，肺結核，Fluroquinolone

# Evaluation of a Portable Device for Diagnosing Sleep Apnea/Hypopnea Syndrome

Shu-Yi Huang<sup>\*,\*\*</sup>, Li-Pang Chuang<sup>\*,\*\*,\*\*\*</sup>, Shih-Wei Lin<sup>\*,\*\*,\*\*\*</sup>, Cheng-Ta Yang<sup>\*\*</sup>,  
Yu-Ching Lin<sup>\*\*</sup>, Ning-Hung Chen<sup>\*,\*\*</sup>

To limit time spent in the sleep-lab ward and avoid a delayed diagnosis of sleep apnea, adequate and accurate diagnosis/monitoring of sleep apnea/hypopnea using a portable device may be of benefit. This study was designed to evaluate the use of a portable sleep monitoring device in the diagnosis of sleep apnea/hypopnea syndrome. A high correlation in the apnea-hypopnea index (AHI) and the lowest oxygen saturation was noted between standard polysomnography and this portable device. The agreement between the 2 methods was also good (linear regression:  $R^2$  0.799,  $p$  value <0.001). Extremely good sensitivity (97.3%) and specificity (88.6%) were noted at the diagnostic threshold of AHI  $\geq 30$ , which means this portable device is a good screening and monitoring tool for severe sleep apnea/hypopnea disorders at home and may reduce waiting time and costs in medical resources. (*Thorac Med* 2012; 27: 81-87)

Key words: sleep apnea/hypopnea disorders, portable polysomnography

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## 驗證攜帶式睡眠呼吸生理檢查機應用於 睡眠呼吸障礙之診斷

黃舒儀\*, \*\* 莊立邦\*, \*\*, \*\*\* 林士為\*, \*\*, \*\*\* 楊政達\*\* 林裕清\*\* 陳澤宏\*, \*\*

呼吸睡眠障礙近年來逐漸接受到大家的重視，但睡眠中心有限的資源常導致延遲診斷睡眠呼吸障礙，而未診斷的睡眠呼吸障礙常導致車禍、心血管疾病危險性增加等併發症；若能有攜帶式的睡眠呼吸生理檢查讓病患可於家中接受檢查，可減少等待的時間。但攜帶式的呼吸生理檢查機應用於睡眠呼吸障礙症候群之診斷準確度是需要驗證。本研究希望藉由調查驗證此攜帶式的睡眠呼吸生理檢查機與正規睡眠呼吸生理檢查機之間的差異。結果顯示兩種機型診斷在中重度以上之睡眠呼吸中止症有高度正相關（ROC：AHI  $\geq 15$ ：n = 37,  $r = 0.86$ ,  $p < 0.0001$ ；AHI  $\geq 30$ ：n = 25,  $r = 0.78$ ,  $p < 0.0001$ ）；且具高敏感性（97.3%）、高特異性（88.57%）於重度睡眠呼吸障礙病患，適合用於篩選於被高度懷疑為睡眠呼吸障礙臨床症狀之病人，可降低等待檢查的時間以及減少醫療資源的支出。（*胸腔醫學* 2012; 27: 81-87）

關鍵詞：睡眠呼吸障礙，驗證攜帶式簡易睡眠呼吸生理檢查機

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# Pulmonary Arteriovenous Malformations Mimicking Solitary Pulmonary Nodule with No Symptoms: A Case Report

Wei-Hoong Yau, Yao Fong\*, Ching-Nan Lin\*\*, Jiunn-Min Shieh

Pulmonary arteriovenous malformations (PAVMs) consist of abnormal communications between pulmonary arteries and veins that cause pulmonary blood flow diversion. This splits the blood flow through the abnormal anastomosis, not through the alveolar capillaries, leading to gas exchange. PAVMs are mostly located at both sides of the lower lobes, and range from single to multiple occurrences. Most patients have symptoms indicative of PAVMs, or underlying hereditary hemorrhagic telangiectasia (HHT). We reported a patient with an abnormal CXR showing a solitary pulmonary nodule (SPN) with no symptoms that was diagnosed as PAVM using video-assisted thoracoscopic (VATS) surgical wedge resection. In this case, we learned that a SPN could be a PAVM, and prior to the advent of good imaging studies, CT-guided fine-needle biopsy for pulmonary lesions was not totally safe and could cause lethal complications. (*Thorac Med* 2012; 27: 88-93)

Key words: pulmonary arteriovenous malformations, solitary pulmonary nodule, CT-guided fine-needle biopsy, video-assisted thoracoscopic wedge resection, hereditary hemorrhagic telangiectasia

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# 肺動靜脈畸形仿似孤立性肺結節，CT引導下細針穿刺切片可能引起致命的併發症：一病例報告

丘偉鴻 馮 瑤\* 林靖南\*\* 謝俊民

肺動靜脈畸形（PAVMs）為一由異常肺動脈和肺靜脈的交通，造成肺血分流。這導致血液流經此異常吻合，不經過肺泡毛細血管行氣體交換。肺動靜脈畸形多位於兩側下肺葉，數量上可以是單個或多個。大部分的病人都會有相關症狀來呈現肺動靜脈畸形或遺傳性出血性毛細血管擴張症。我們報告一位病人，沒有症狀，因為胸部X光異常來求診，其X光以孤立性肺結節（SPN）呈現，最終使用影像輔助胸腔鏡楔形切除術診斷出肺動靜脈畸形。在這種情況下，我們了解到，SPN可以是PAVMs，在未充分取得影像學診斷下，貿然以電腦斷層導引下細針穿刺切片，可能會帶來致命性的併發症。*(胸腔醫學 2012; 27: 88-93)*

關鍵詞：肺動靜脈畸形，孤立性肺結節，CT引導下細針穿刺切片，影像輔助胸腔鏡楔形切除術，遺傳性出血性毛細血管擴張症

# Herbal Medicine-Induced Lung Injury Presenting as Acute Respiratory Distress Syndrome

Ming-Hui Hung\*, Jyun-Yi Li\*, Fang-Chi Lin\*, \*\*, Shi-Chuan Chang\*, \*\*\*

Drug use may lead to serious adverse effects in the lungs, and pulmonary drug toxicity is increasingly being diagnosed as a cause of acute and chronic lung diseases. We reported a case of herbal medicine-induced lung injury presenting as acute respiratory distress syndrome (ARDS).

A 41-year-old male suffered from dry cough with intermittent fever and chills for 2 weeks prior to this admission; generalized muscle pain and mild diarrhea developed a few days later. The patient was treated for atypical pneumonia. Unfortunately, ARDS developed despite the use of moxifloxacin and Tamiflu. Diagnostic bronchoalveolar lavage (BAL) was performed, and the majority of alveolar macrophages in the BAL fluid had a foamy appearance and showed positive for Sudan black stain. Sudan black stain is used to detect pulmonary phospholipidosis. Drug-induced lung injury was highly suspected, and the patient then underwent pulse therapy with methylprednisolone. The lung lesions improved dramatically and the patient was discharged with maintenance oral steroid.

This case highlights the realization that herbal medicine, with its complex compositions, should be considered to be a cause of drug-induced lung injury. BAL may be of value in aiding the diagnosis of drug-induced lung injury as suggested by pulmonary phospholipidosis. (*Thorac Med* 2012; 27: 94-99)

Key words: herbal medicines, drug-induced lung injury, acute respiratory distress syndrome, phospholipidosis

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## 中藥引起肺部損傷導致急性呼吸窘迫症候群

洪明輝\* 黎俊義\* 林芳綺\*,\*\* 張西川\*,\*\*\*

藥物會導致肺傷害，越來越多的報告顯示，藥物引致肺部不良反應是急慢性肺疾患的原因。我們報告一例中藥引致肺傷害而導致急性呼吸窘迫症候群。

一位41歲男性在住院前兩週開始有乾咳及發燒的症狀，幾天之後發生全身肌肉酸痛及腹瀉的現象。根據臨床資料，病人被診斷為非典型肺炎而接受治療。未久，病人很快進展急性呼吸窘迫症候群。因為導致急性呼吸窘迫症候群的病因不明，病人接受支氣管肺泡灌洗術。支氣管肺泡灌洗液的細胞學檢查發現，許多肺泡吞噬細胞呈現泡沫狀細胞，且對蘇丹黑染色呈現陽性反應。在高度懷疑藥物引致性肺損傷，給予脈衝類固醇治療後，肺部病灶快速改善，病人順利出院。詳細詢問病人過去病史，病人所服用的中藥可能是造成此次生病的主要原因。

本案例警示中藥的成分複雜，可能會引致肺傷害或導致急性呼吸窘迫症候群，支氣管灌肺泡洗術對於藥物引致性肺傷害之診斷有其臨床效益。(胸腔醫學 2012; 27: 94-99)

關鍵詞：中藥，藥物引致肺部損傷，急性呼吸窘迫症候群

# Chronic Intractable Cough Caused by Cervical Spinal Cord Injury: A Case Report

Meng-Hsiang Chang, Chun-Shih Chiang, Liang-Yi Hung\*, Cheng-Yi Chang\*\*,  
Chien-Wen Huang

Cervical spinal cord injury (SCI) is a rare cause of chronic cough in adults. We report a 53-year-old man who fell from the 3rd to the 2nd floor, who later developed tetraparesis and an intractable chronic cough. These conditions were caused by C3-4 retrolisthesis and a central herniated intervertebral disc (HIVD) at C3/4-C4/5, with narrowing of the spinal canal and SCI. The cough improved after anterior spinal fusion with spinal instrumentation and C3/4-C4/5 discectomy. The patient was continually monitored in our outpatient department, and was maintained in a stable condition. (*Thorac Med* 2012; 27: 100-104)

Key words: cervical spinal cord injury, chronic cough, discectomy, retrolisthesis

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## 頸脊髓損傷造成慢性難治療的咳嗽

張孟祥 江俊士 洪良一\* 張正一\*\* 黃建文

頸脊髓損傷是成人慢性咳嗽的少見病因之一。我們提出一位53歲的男性因為從樓梯三樓跌倒到二樓，導致第三第四節頸椎向後移位以及中央突出型椎間盤突出併發脊髓腔狹窄以及頸脊髓損傷，後來發生了四肢輕癱以及難治療的咳嗽。之後咳嗽藉由前頸椎融合手術加上脊椎內固定器以及第三第四和第四第五椎間盤切除術獲得改善，並於門診追蹤，保持穩定狀態。*(胸腔醫學 2012; 27: 100-104)*

關鍵詞：頸脊髓損傷，慢性咳嗽，椎間盤切除術，頸椎向後移位



# High-Frequency Chest Wall Oscillation May Facilitate Extubation in Patients with Hypoxic Encephalopathy: A Case Report

Jiun-Rung Chen\*, Pi-Chu Wu\*\*, Chao-Jung Chen\*\*, Ya-Hua Cheng\*\*\*,  
Jeng-Yuan Hsu\*, Chieh-Liang Wu\*\*\*, \*\*\*\*

Impaired airway clearance leads to pulmonary complications, such as pneumonia, atelectasis, asphyxia, respiratory failure, and death. High-frequency chest wall oscillation (HFCWO) provides a safe, effective and well-tolerated therapy for removal of excessive airway secretions. We describe a 68-year-old man with hypoxic encephalopathy who was extubated successfully with the assistance of HFCWO which improved airway secretion clearance and prevented atelectasis. HFCWO therapy was stopped 5 days after extubation. Unfortunately, the patient died of hypoxemia as a result of suspected retention of airway secretions 2 weeks after extubation. HFCWO may be of use in the short term for facilitating extubation in patients with hypoxic encephalopathy complicated with ineffective cough. However, the long-term effect and safety of HFCWO with these patients should be further investigated. (*Thorac Med* 2012; 27: 105-111)

Key words: high-frequency chest wall oscillation, hypoxic encephalopathy, extubation

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## 使用高頻胸廓震動系統可幫助缺氧性腦病變患者拔管 —病例報告

陳俊榮\* 吳碧珠\*\* 陳昭瑤\*\* 鄭雅華\*\*\* 許正園\* 吳杰亮\*\*\*,\*\*\*\*

清除呼吸道分泌物能力不佳時可導致多種肺部併發症，如肺炎，肺膨脹不全，窒息，呼吸衰竭，甚至死亡。高頻胸廓震動系統（high-frequency chest wall oscillation）提供了安全，有效，且耐受性良好的治療，以除去過多的呼吸道分泌物。我們描述了一個患有缺氧性腦病變的68歲男子，藉由高頻胸廓震動系統促進呼吸道分泌物排除並避免肺塌陷的發生，幫助病人成功拔管。高頻胸廓震動系統在拔管5天後停用。不幸地，在拔管二個星期後，他因為疑似呼吸道分泌物增加造成低血氧而死亡。對於缺氧性腦病變患者合併咳嗽能力不佳，高頻胸廓震動系統對拔管可能有短期的效果。然而，對這類病人使用高頻胸廓震動系統的長期效益及安全性仍需進一步研究。*(胸腔醫學 2012; 27: 105-111)*

關鍵詞：高頻胸廓震動系統，缺氧性腦病變，拔管

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# Negative Pressure Pulmonary Edema (NPPE) Following Extubation from Laryngeal Mask Airway— Case Report

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Chuen-Ming Shih\*, Wu-Huei Hsu\*

Acute negative pressure pulmonary edema (NPPE) has been reported as an unpredictable but dangerous clinical event. Its occurrence is typically due to an upper airway obstruction related to laryngospasm. We herein present a case of acute NPPE related to laryngospasm in a healthy young male patient ventilated via laryngeal mask airway (LMA). The laryngospasm that the patient developed was most likely an outcome of stimulation associated with LMA extubation. A history of recent upper respiratory tract infection (URI) also may predispose to laryngospasm. The patient was successfully managed with diuretics and continuous positive airway pressure (CPAP). Clinicians should be aware of these complications when utilizing LMA. (*Thorac Med* 2012; 27: 112-116)

Key words: pulmonary edema, laryngospasm, laryngeal mask airway (LMA), young healthy male

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## 脫離喉罩式呼吸道（LMA）後之急性負壓肺水腫

蕭詠聰\* 涂智彥\*,\*\* 廖偉志\* 陳家弘\* 施純明\* 徐武輝\*

術後急性肺水腫是一種無法預測卻是危險的併發症，在第一時間做出正確診斷和治療是十分重要的。因為喉部痙攣引起上呼吸道阻塞是造成急性負壓肺水腫最常被廣泛討論的，而又以“年輕健壯男性”被認為是此併發症的好發族群。我們報告一位年輕健壯男性術後脫離喉罩式呼吸道（LMA）之急性負壓肺水腫，推測起因於使用喉罩式呼吸道所導致喉部痙攣，而最近的上呼吸道感染也是引發因子，病患成功地以利尿劑和連續正壓呼吸器（CPAP）治療出院。臨床醫師對於此併發症應審慎評估。*(胸腔醫學 2012; 27: 112-116)*

關鍵詞：急性肺水腫，喉部痙攣，喉罩式呼吸道（LMA），年輕健壯男性

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# ***Pneumocystis jirovecii* Pneumonia in a Patient with Smoldering Adult T Cell Leukemia/Lymphoma**

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Jih-Shuin Jerng, Kwen-Tay Luh\*\*

*Pneumocystis jirovecii* is 1 of the most common opportunistic infections in immunocompromised hosts, but rarely causes symptoms in immunocompetent adults. We report the case of a healthy 58-year-old male who was diagnosed with *Pneumocystis* pneumonia about 2 years ago. He presented with progressive dyspnea on exertion, dry cough and mild body weight loss for 2 months. *Pneumocystis jirovecii* pneumonia was proven by transbronchial lung biopsy. A survey for possible causes of the immunosuppressed status, including anti-HIV and venereal disease research laboratory tests, and hemograms, showed negative results, and no history of Chinese herb or steroid use was traced. After treatment for *Pneumocystis* pneumonia, serial chest radiographs showed gradual resolution of the lung lesions. After 20 months of follow-up, he developed the symptoms of upper airway infection, tongue base tumor, oral candidiasis, and bilateral neck lymphadenopathies; adult T cell leukemia-lymphoma (ATLL) was then diagnosed. The patient died 2 months later due to disease progression, despite chemotherapy and treatment for complicated infections. In conclusion, a healthy patient with *Pneumocystis* infection should be considered as a healthy human T-cell lymphotropic virus type 1 (HTLV-1) carrier or smoldering ATLL patient. (*Thorac Med* 2012; 27: 117-123)

Key words: *Pneumocystis jirovecii* pneumonia, smoldering adult T cell leukemia-lymphoma

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## 在鬱積型成人T細胞白血病/淋巴瘤病人罹患肺囊蟲肺炎： 病例報告

梁勝鎧 姚 明 張逸良\* 林中梧\* 鄭之勛 陸坤泰\*\*

肺囊蟲是在免疫不全的宿主最常見的伺機感染之一，但卻很少在免疫健全的成年人身上造成症狀。我們報告一個58歲健康男性於2年多前被診斷罹患肺囊蟲肺炎之病例。他表現出漸進氣促，咳嗽和輕度體重減輕持續了2個月的時間。支氣管鏡肺部活檢證實感染肺囊蟲肺炎。調查所有可能造成免疫抑制狀態原因的檢查都顯示陰性結果。經過肺囊蟲肺炎治療，一系列的胸部影像檢查均顯示肺部病變逐步改善。經過20個月的後續追蹤，病人發生了上呼吸道感染症狀，舌根部腫瘤，口腔念珠菌病，和兩側頸部淋巴結腫大，因而診斷成人T細胞白血病/淋巴瘤。最後，儘管在積極的化學治療和準備異體周邊血液幹細胞移植，他仍在2個月後因病情惡化與併發傳染性疾病而去世。因此我們更要全面去檢查且密切追蹤這些病人是否有免疫功能低下疾病的臨床表現。(胸腔醫學 2012; 27: 117-123)

關鍵詞：肺囊蟲，鬱積型成人T細胞白血病/淋巴瘤

# Endobronchial Ultrasound-Guided Transbronchial Needle Aspiration as a Complementary Tool for Diagnosis of Esophageal Cancer—A Case Report

Yueh-Feng Wen, Chao-Chi Ho

Endoscopic ultrasound with fine needle aspiration (EUS-FNA) and endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) have emerged as valuable tools in the mediastinal nodal staging of lung cancer. Each modality alone has its limitations. The combination of both approaches therefore arises as a new idea for mediastinal nodal staging of lung cancer, and it has yielded promising results. Yet, the clinical impact of this strategy in the diagnosis of other mediastinal disease is still not well known. Herein, we report a case in which the diagnosis of esophageal cancer was established via EBUS-TBNA after endoscopic biopsy and EUS-FNA failed to obtain tissue confirmation. We concluded that in carefully selected patients, EBUS-TBNA may be an alternative diagnostic method before more invasive modalities are adopted. (*Thorac Med* 2012; 27: 124-130)

Key words: endoscopic ultrasound with fine needle aspiration, endobronchial ultrasound-guided transbronchial needle aspiration, esophageal cancer

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# 以支氣管內超音波導引經支氣管細針抽吸作為診斷食道癌的輔助工具：案例報告

溫岳峯 何肇基

以食道內超音波導引細針抽吸和以支氣管內超音波導引經支氣管細針抽吸的技術在診斷攸關肺癌分期的縱隔腔淋巴結病變方面已經成為極有價值的工具。不過兩者都有其個別解剖位置的限制。同時結合這兩項技術於是成為診斷肺癌縱隔腔淋巴結病變的一個新的想法並且已經得到可靠的結果。然而這個策略對於診斷其他縱隔腔疾病的臨床影響目前仍不清楚。此處我們要提出一個案例報告，此案例的病人在嘗試過以直接內視鏡切片和食道內超音波導引細針抽吸的技術仍無法確診之後最終以支氣管內超音波導引經支氣管細針抽吸的技術建立食道癌的診斷。我們認為對於謹慎挑選的病人而言這可能提供了在採用更侵入性的診斷工具之前的一項替代選擇。*(胸腔醫學 2012; 27: 124-130)*

關鍵詞：食道內超音波導引細針抽吸，支氣管內超音波導引經支氣管細針抽吸，食道癌