# **Thoracic Medicine**

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Taiwan Society of Pulmonary and Critical Care Medicine



Taiwan Society for Respiratory Therapy



Taiwan Society of Sleep Medicine



Taiwan Society of Tuberculosis and Lung Diseases

## **Thoracic Medicine**

The Official Journal of Taiwan Society of Pulmonary and Critical Care Medicine Taiwan Society for Respiratory Therapy Taiwan Society of Sleep Medicine Taiwan Society of Tuberculosis and Lung Diseases

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

You-Cyuan Liang<sup>1\*</sup>, Shu-Farn Tey<sup>1,2\*</sup>, Shyh-Ren Chiang<sup>1</sup>, Kuo-Chen Cheng<sup>1</sup>, Mei-I Sung<sup>3</sup>, Jui-Lin Liang<sup>4</sup>

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

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

**Results:** From Sep 1, 2018 to Aug 31, 2019, 388 patients were enrolled. The number of hospitalized patients decreased from 55 during the year in which the study cases were included to 26 patients at the third year; the ratio of the number of hospitalized patients decreased from 14.2% to 9.6%, and the number of hospitalizations decreased from 83 to 45. However, the mean length of stay per hospitalization increased from 7.17 days to 10.73 days, with statistical significance (p = 0.011). The total cost of hospitalization of patients with diagnostic codes J41-J44 and/or J12-J18 did not reveal a decreasing trend from 1 year before, to the third year after study enrollment, with a similar trend regarding the cost of hospitalization per day per hospitalization. Regardless of whether the patients had diagnostic codes J41-J44 or J12-J18, both the number of hospitalized patients and the number of hospitalizations decreased from the time of study enrollment to the subsequent 3 years. The

<sup>\*</sup>These authors contributed equally to this work

<sup>&</sup>lt;sup>1</sup>Division of Chest Medicine, Department of Internal Medicine, Chi Mei Medical Center, Tainan, Taiwan, <sup>2</sup>School of Medicine, College of Medicine, National Sun Yat-sen University, Kaohsiung, Taiwan, <sup>3</sup>Department of Medical Research, Chi Mei Medical Center, Tainan, Taiwan, <sup>4</sup>Department of Intensive Care, Chi-Mei Medical Center, Liuying, Tainan, Taiwan.

Address reprint requests to: Dr. Jui-Lin Liang, No. 901, Zhonghua Rd., Yongkang Dist., Tainan City 71004, Taiwan (R.O.C.)

number and rate of intensive care unit admissions showed a decreasing trend between the year of enrollment and the third year, as did the number of in-hospital deaths and the mortality rate of those hospitalized revealed. In terms of emergency department (ED) visits only, the total east number of network and number of visits generally revealed a downward trand, but

total cost, number of patients and number of visits generally revealed a downward trend, but the mean cost per ED visit did not show a consistent trend. Subgroup analysis demonstrated that patients with diabetes mellitus, a GOLD classification, lower mean pre- and postbronchodilator FEV1 at baseline lung function, COPD, a higher CAT score, an mMRC score and episodes of COPD exacerbations in the prior year had a significantly higher tendency of visiting the ED or being hospitalized. The GOLD classification was a potential risk factor for an ED visit or hospitalization, with overall statistical significance (p = 0.002), and GOLD grade III seemed to have higher risk tendency than GOLD grade I. Likewise, COPD was a potential risk factor for an ED visit or hospitalization, with overall statistical significance (p < 0.001), and COPD groups C and D seemed to have a higher risk tendency than groups A and B.

**Conclusion:** This study revealed the benefits of P4P program enrollment for patients with COPD. Our results suggest a different kind of medical care concept using an integrated multidisciplinary approach. Further studies with a longer follow-up period are warranted to distinguish the effectiveness of P4P and other factors or comorbidities that may have an impact on ED visits or hospitalization of patients with COPD. (*Thorac Med 2025; 40: 1-12*)

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

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

Mei-Yuan Teo<sup>1</sup>, Bing-Chen Wu<sup>1</sup>, Shaw-Woei Leu<sup>1</sup>, Kuo-Chin Kao<sup>1,2</sup>, Han-Chung Hu<sup>1,2</sup>

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

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

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

**Conclusion:** Administering appropriate antibiotics within 48 hours after onset of CRKP pneumonia with BSI has been identified as vital for reducing 30-day mortality in critically ill patients with respiratory failure. (*Thorac Med 2025; 40: 13-21*)

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

<sup>1</sup>Department of Thoracic Medicine, Chang Gung Memorial Hospital, Taoyuan 33305, Taiwan, <sup>2</sup>Department of Respiratory Therapy, Chang Gung University College of Medicine, Taoyuan 33302, Taiwan. Address reprint requests to: Dr. Han-Chung Hu, No.5, Fuxing St., Guishan Dist., Taoyuan City 333, Taiwan.

## Multiple Myeloma with Mediastinal Lymphadenopathy and Lung Consolidation Leading to Pulmonary Amyloidosis Diagnosis

Wei-Syun Hung<sup>1</sup>, Chun-Yu Lin<sup>1</sup>, Chih-Wei Wang<sup>2</sup>, Yueh-Fu Fang<sup>1</sup>

Multiple myeloma is a rare hematologic malignancy. It is rarely involved in the lung, but may be associated with systemic amyloidosis and result in pulmonary amyloidosis. Pulmonary parenchymal involvement and mediastinal lymphadenopathy are rare manifestations of pulmonary amyloidosis, and have a poor outcome. Recently, amyloidosis showed a good response to a novel targeted therapy regimen. We reported a 66-year-old woman who was diagnosed with multiple myeloma and presented with mediastinal lymphadenopathy and lung consolidation. Pulmonary amyloidosis was confirmed by transbronchial lung biopsy and endobronchial ultrasound-guided transbronchial needle aspiration. Clinical physicians should be aware of pulmonary amyloidosis in multiple myeloma patients, and administer prompt, risk-adapted therapy. *(Thorac Med 2025; 40: 22-27)* 

Key words: multiple myeloma, pulmonary amyloidosis

<sup>1</sup>Department of Thoracic Medicine, Chang Gung Memorial Hospital at Linkou, Taoyuan, Taiwan, <sup>2</sup>Department of Anatomic Pathology, Chang Gung Memorial Hospital, Tao-Yuan, Taiwan.

Address reprint requests to: Dr. Yueh-Fu Fang, Department of Thoracic Medicine, Chang Gung Memorial Hospital, No.5, Fuxing St., Guishan Dist., Taoyuan City 333, Taiwan.

#### Iatrogenic Tracheal Laceration Treated with Silicone Y-stents

Hao-Ming Wu<sup>1</sup>, Horng-Chyuan Lin<sup>1,2,3</sup>, How-Wen Ko<sup>1,2</sup>, Po-Jui Chang<sup>1,2</sup>, Li-Pang Chuang<sup>1,2,3,4</sup>

We reported the case of an 86-year-old female who was brought to the emergency department due to sepsis. She had emergency intubation due to a decreased level of consciousness and paradoxical breathing. Subcutaneous emphysema developed rapidly after intubation. Fiberoptic bronchoscopy found a 4-cm tracheal laceration in the posterior wall. Since traditional surgical repair was not feasible, a silicone Y-stent implantation procedure was employed. Follow-up chest X-ray showed resolution of the subcutaneous emphysema on the 10th day, and the patient was weaned from the ventilator successfully. *(Thorac Med 2025; 40: 28-32)* 

Key words: tracheal laceration, silicone stents, Y-stents

<sup>1</sup>Department of Thoracic Medicine, Chang Gung Memorial Hospital at Linkou, Taoyuan, Taiwan, <sup>2</sup>School of Medicine, Chang-Gung University, Taoyuan, Taiwan. <sup>3</sup>Department of Respiratory Therapy, Chang Gung Memorial Hospital at Linkou, Taoyuan, Taiwan, <sup>4</sup>Sleep Center, Chang Gung Memorial Hospital, Taoyuan, Taiwan. Address reprint requests to: Dr. Li-Pang Chuang, Department of Thoracic Medicine, Chang Gung Memorial Hospital No. 5, Fu-Hsing Street, Kweishan, Taoyuan 33305, Taiwan.

#### Chest Wall Reconstruction in a Young Male Patient with Left Chest Wall Ewing's Sarcoma Involving the Left Lower Lobe of the Lung and Adjacent Ribs

Sung-Yang Liao<sup>1</sup>, Chia-Ying Li<sup>2</sup>

Ewing's sarcoma is a malignant tumor found mostly in adolescents, and accounts for 5% of soft tissue malignancies. Ewing's sarcoma of the chest wall has a 5-year survival ranging from 35% to 55%, as reported in recent studies. The common invasion site is the bone, with about 25% originating from soft tissues; about 25% of cases have metastases at the time Ewing's sarcoma is diagnosed. The clinical symptoms and signs of primary chest wall sarcomas usually originate from the mass effect on adjacent thoracic structures such as the lung, mediastinum, vertebra, diaphragm, and chest wall. Consequently, aggressive chest wall sarcomas often induce pain, shortness of breath, and in some cases, systemic symptoms. We report the case of a young male who presented to the emergency department complaining of shortness of breath and cough. *(Thorac Med 2025; 40: 33-37)* 

Key words: soft tissue sarcoma, Ewing's sarcoma, chest wall sarcoma with lung and ribs involvement, chest wall reconstruction

<sup>&</sup>lt;sup>1</sup>Thoracic Surgery, Department of Surgery, Show Chwan Memorial Hospital. <sup>2</sup>Show Chwan Memorial Hospital, Superintendent Office.

Address reprint requests to: Dr. Sung-Yang Liao, No. 28, Ln. 270, Neilikeng St., Xinpu Township, Hsinchu County, Taiwan (R.O.C.)

#### A Case Report of *Mycobacterium gordonae* Pulmonary Disease with a Favorable Treatment Response

Chih-Jung Chang<sup>1</sup>, Sheng-Wei Pan<sup>2,3</sup>

*Mycobacterium gordonae* is one of the most commonly isolated nontuberculous mycobacteria (NTM) in respiratory samples. Although it seldom causes pulmonary disease and is often considered contamination or "non-pathogenic", there have been reports of true infections involving pulmonary disease, soft tissue, or disseminated disease. Currently, there are no evidence-based management guidelines for *M. gordonae* pulmonary disease. Treatment typically includes a combination of macrolides, fluoroquinolones, linezolid, and amikacin, based on limited data regarding susceptibility to *M. gordonae*. Here, we reported an 81-year-old woman presenting with significant body weight loss with an abnormal chest X-ray and high-resolution computed tomography (HRCT) showing lung clustered nodules. Further microbiological criteria for NTM pulmonary disease were met. Treatment with macrolide-based combination therapy was initiated. Clinical symptoms improved, an image showed resolution, and sputum conversion was achieved during treatment. The diagnosis of *M. gordonae* pulmonary disease was confirmed. The patient had nearly complete remission of lung lesions and completed treatment smoothly over 9-month period. (*Thorac Med 2025; 40: 38-43*)

Key words: *Mycobacterium gordonae*-pulmonary disease; nontuberculous mycobacterial-pulmonary disease; immunocompetent; treatment

<sup>1</sup>Department of Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwan, <sup>2</sup>School of Medicine, College of Medicine, National Yang Ming Chiao Tung University, Taipei, Taiwan. <sup>3</sup>Division of Pulmonary Immunology & Infectious Diseases, Department of Chest Medicine, Taipei Veterans General Hospital, Taipei, Taiwan.

Address reprint requests to: Dr. Sheng-Wei Pan, Division of Pulmonary Immunology & Infectious Diseases, Department of Chest Medicine, Taipei Veterans General Hospital, No. 201, Section 2, Shi-Pai Road, Taipei 112, Taiwan.

#### IgA Vasculitis as a Rare Presentation of Tuberculosis: A Case Report

Shu-Fa He<sup>1</sup>, Meng-Rui Lee<sup>1</sup>, Jin-Yuan Shih<sup>1</sup>

Immunoglobulin A (IgA) vasculitis, formerly known as Henoch-Schönlein purpura, is a relatively uncommon form of vasculitis primarily affecting the skin, joints, gastrointestinal tract, and kidneys. We reported the case of an 81-year-old man who initially presented with purpura on both lower legs. He was admitted to the intensive care unit and was later intubated due to pneumonia. He also presented with microscopic hematuria, nephrotic range proteinuria, and renal failure. A skin biopsy showed diffuse neutrophilic infiltration around the capillaries, small venules, and small-to-medium-sized veins in the superficial to deep dermis. Combining the clinical presentations, IgA vasculitis was diagnosed. Miliary lung lesions were noted on the chest radiogram. Sputum acid-fast stain showed acid-fast Gram positive bacilli. Mycobacterium tuberculosis was confirmed by polymerase chain reaction, and later by sputum culture. Miliary tuberculosis (TB) and IgA vasculitis were identified and managed accordingly. Following treatment for IgA vasculitis and TB, the patient was successfully liberated from mechanical ventilation, with resolution of skin lesions and improvement in renal function, allowing for the gradual discontinuation of renal replacement therapy. This case highlights the importance of considering TB in the differential diagnosis of IgA vasculitis, as IgA vasculitis could also be a manifestation of active TB. (Thorac Med 2025; 40: 44-51)

Key words: Henoch-Schönlein purpura, immunoglobulin A vasculitis (IgA vasculitis), *Mycobacterium tuberculosis* 

<sup>&</sup>lt;sup>1</sup>Division of Pulmonary and Critical Care Medicine, Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan.

Address reprint requests to: Dr. Meng-Rui Lee, Department of Internal Medicine, National Taiwan University Hospital, No. 7, Chung Shan S. Rd., Zhongzheng District, Taipei City 100225, Taiwan.

#### Mixed Intrapulmonary Graft-Versus-Host Disease with Pulmonary Fibrosis after Blood Stem Cell Transplantation: A Case Report

Yu-Cheng Chang<sup>1</sup>, Xu-Heng Chiang<sup>1,2</sup>, Min-Shu Hsieh<sup>3</sup>, Hsao-Hsun Hsu<sup>1</sup>

We presented the unique case of a 23-year-old woman with severe lung fibrosis associated with chronic graft-versus-host disease (GVHD) and bronchiolitis obliterans syndrome (BOS) following allogeneic hematopoietic stem cell transplantation for acute myeloid leukemia. This patient underwent bilateral sequential lung transplantation as salvage therapy. The histopathological analysis of the explanted lungs revealed constrictive bronchiolitis and interstitial fibrosis, which confirmed the diagnosis. This is a rare report of complex lung pathology after allogeneic hematopoietic stem cell transplantation involving GVHD and lung fibrosis that contributed to lung damage. These findings provide insights for pathologists, and aid in further exploration of the mechanisms underlying GVHD and BOS. *(Thorac Med 2025; 40: 52-57)* 

Key words: Blood stem cell transplantation, lung transplantation, graft-versus-host disease (GVHD), lung fibrosis, bronchiolitis obliterans syndrome (BOS)

<sup>1</sup>Department of Surgery, National Taiwan University College of Medicine and National Taiwan University Hospital, Taipei, Taiwan. <sup>2</sup>Department of Medical Education, National Taiwan University Hospital, Taipei, Taiwan. <sup>3</sup>Department of Pathology, National Taiwan University College of Medicine and National Taiwan University Hospital, Taipei, Taiwan.

Address reprint requests to: Dr. Xu-Heng Chiang, No. 7, Chung Shan S. Rd. (Zhongshan S. Rd.), Zhongzheng Dist., Taipei City 100225, Taiwan (R.O.C.)

## Reactivation of Tuberculosis Following Immunotherapy Combined with Chemotherapy and an Anti-angiogenic Agent in Non-small Cell Lung Cancer – A Case Report and Literature Review

Jiunn-Song Jiang<sup>1</sup>, Yu-Wung Yeh<sup>1,2</sup>

Tuberculosis (TB) reactivation following immunotherapy is a rare adverse event, with only a few documented cases in the existing literature. The incorporation of immunotherapy into treatment strategies has expanded the range of options for patients with advanced non-small cell lung cancer. The reactivation of TB during lung cancer immunotherapy is becoming an increasingly recognized concern. The recognition and management of reactivated TB is not only crucial for the patient's cancer treatment outcome, but also for the health of treatment providers. Herein we present the case of a 56-year-old male with stage IV adenocarcinoma of the lung who received combination immunotherapy, chemotherapy, and an anti-vascular endothelial growth factor agent and experienced TB reactivation during treatment. This case highlights the importance of physicians remaining vigilant for potential opportunistic infections in patients undergoing immunotherapy. *(Thorac Med 2025; 40: 58-64)* 

Key words: atezolizumab, immune checkpoint inhibitor, immunotherapy, lung cancer, tuberculosis

<sup>1</sup>Shin Kong Wu-Ho-Su Memorial Hospital, Taipei, Taiwan, <sup>2</sup>Fu Jen Catholic University, College of Medicine, New Taipei City, Taiwan.

Address reprint requests to: Dr. Yu-Wung Yeh, Division of Chest Medicine, Shin Kong Memorial Hospital, 95 Wenchang Rd, Shilin District, Taipei, Taiwan, 10111.

## Pirfenidone for the Treatment of Post-Amniotic Fluid Embolism-related Acute Respiratory Distress Syndrome in a 34-year-old Female

Ping-Chen Kuo<sup>1</sup>, Yu-Wen Chang<sup>2</sup>, Chien-Hao Lai<sup>3</sup>, Yi-Hsuan Tsai<sup>3,4</sup>

Acute respiratory distress syndrome (ARDS) is common in patients with amniotic fluid embolism (AFE). This critical condition usually leads to a high mortality rate and can have serious sequelae even in the acute phase. Currently, there are limited effective drugs for this condition. We reported a 34-year-old pregnant woman with no underlying medical conditions who was admitted to the hospital for regular abdominal delivery. During the procedure, the bilateral lung consolidation suddenly collapsed. AFE was diagnosed, and emergency use of extracorporeal membrane oxygenation (ECMO) was begun. After suffering from ARDS, she had difficulty weaning from mechanical ventilation and was supported by ECMO for nearly 2 months. We started pirfenidone while in the intensive care unit, and she was successfully extubated and discharged from the hospital after treatment. After discharge, her activities of daily living were completely independent and oxygen was not required at home. Our case suggests that antifibrotic agents such as pirfenidone may be an effective treatment option for patients with ARDS. (*Thorac Med 2025; 40: 65-72*)

Key words: amniotic fluid embolism, acute respiratory distress syndrome, antifibrotic, pirfenidone, extracorporeal membrane oxygenation

<sup>&</sup>lt;sup>1</sup>Department of Internal Medicine, Kaohsiung Chang Gung Memorial Hospital, <sup>2</sup>Division of Pharmacy, Kaohsiung Chang Gung Memorial Hospital, <sup>3</sup>Division of Pulmonary & Critical Care Medicine, Department of Internal Medicine, Kaohsiung Chang Gung Memorial, <sup>4</sup>Lee's Clinic.

Address reprint requests to: Dr. Yi-Hsuan Tsai, Lee's Clinic, Wenshan branch. No. 157, Sec. 3, Jianguo Rd., Fengshan Dist., Kaohsiung City, 830734, Taiwan.

#### Two Cases of Pulmonary Ciliated Muconodular Papillary Tumor: Case Report and Literature Review

Kheng-An Ho<sup>1</sup>, Wen-Chieh Huang<sup>1</sup>, Mei-Lin Chan<sup>1</sup>

Ciliated muconodular papillary tumors (CMPTs) are rare. Owing to the continuous basal cell layer, lack of mitosis, necrotic changes, and immunohistochemical features, CMPT is considered a benign tumor with the potential to be an early precursor of mucinous adenocarcinoma. We reported the clinical and pathological findings of 2 cases of CMPT without recurrence 16 and 30 months, respectively, after surgery. With this case report, we hope to improve the management of CMPTs. *(Thorac Med 2025; 40: 73-79)* 

Key words: Ciliated muconodular papillary tumor, pulmonary, bronchiolar adenoma

<sup>1</sup>Division of Chest Surgery, Department of Surgery, Mackay Memorial Hospital.

Address reprint requests to: Dr. Wen-Chieh Huang, Division of Thoracic Surgery, Department of Surgery, Mackay Memorial Hospital, No. 92, Chung-Shan North Road, Taipei 104, Taiwan.

## Refractory Pleural Effusion Attributed to Metastatic Adenocarcinoma Originating from the Prostate Gland

Chi-Yi Yen<sup>1</sup>, Jung-Yueh Chen<sup>1,2</sup>, Yi-Ru Chen<sup>3</sup>

A 70-year-old man presented with exertional dyspnea and orthopnea for more than 2 weeks, accompanied by a dry cough. Despite regular medications, his symptoms persisted. Initial autoimmune profile testing reported normal results. Imaging revealed bilateral pleural effusion and a semi-consolidated lung lesion. Pleural fluid analysis indicated an exudative lymphocyte-predominant effusion with normal carcinoembryonic antigen levels. Cardiac echo revealed normal left ventricular contractility and mild valvular heart disease. Video-assisted thoracoscopic surgery confirmed metastatic adenocarcinoma from the prostate gland. Elevated serum prostate-specific antigen (PSA) levels and positive immunohistochemical staining corroborated the diagnosis. Bone scan showed diffuse bone metastases. The patient was diagnosed with stage IVB prostate cancer and received androgen deprivation therapy, resulting in symptom improvement and decreased PSA levels. Pleural effusion regression was observed post-treatment. Prostate cancer-induced pleural effusion is rare, but can present diagnostic challenges. Immunohistochemistry and PSA assessment play crucial roles in the diagnosis. The prognosis for patients with malignant pleural effusion secondary to metastatic prostate adenocarcinoma is typically poor, with an average survival period of approximately 18 months under treatment. Further research is warranted to improve diagnostic and therapeutic strategies for this rare presentation of prostate cancer. (Thorac Med 2025; 40: 80-87)

Key words: malignant pleural effusion, prostate adenocarcinoma, metastatic prostate cancer

<sup>&</sup>lt;sup>1</sup>Department of Internal Medicine, E-Da Hospital, I-Shou University, Kaohsiung, Taiwan, <sup>2</sup>School of Medicine, College of Medicine, I-Shou University, Kaohsiung, Taiwan, <sup>3</sup>Department of Pathology, E-Da Hospital, I-Shou University, Kaohsiung, Taiwan.

Address reprint requests to: Dr. Jung-Yueh Chen, School of Medicine, College of Medicine, I-Shou University, Kaohsiung, Taiwan. Department of Internal Medicine, E-DA Hospital, I-Shou University, Kaohsiung, Taiwan. No.1, Yida Road, Jiao-su Village, Yan-chao District, Kaohsiung City 824, Taiwan.

#### Case Report: A 61-Year-Old Man with Chronic Obstructive Pulmonary Disease Presenting a Worsening Cough and Breathlessness for 3 Months

Chang-Ru Lin<sup>1</sup>, Shih-Chi Ku<sup>1</sup>

We reported the case of a 61-year-old man with a history of chronic obstructive pulmonary disease (COPD) who suffered frequent exacerbations and developed a new nodule in the left upper lung. He was ultimately diagnosed with phaeohyphomycosis based on pathological findings, which revealed necrotizing granulomatous inflammation with pigmented fungal hyphae. His primary symptoms were exertional dyspnea and a productive cough persisting for several months. A series of chest X-rays revealed a subpleural lung nodule. Later, a wedge resection disclosed a necrotic lung nodule with pigmented fungal hyphae, confirming phaeohyphomycosis. After surgery, the patient experienced improved dyspnea and better FEV1, leading to de-escalation in his COPD treatment. This case underscores the need to investigate potential underlying chronic fungal infections when managing unstable COPD. *(Thorac Med 2025; 40: 88-94)* 

Key words: COPD exacerbation, phaeohyphomycosis

<sup>1</sup>Division of Chest Medicine, Department of Internal Medicine, National Taiwan University Hospital, Taipei, Taiwan. Address reprint requests to: Dr. Shih-Chi Ku, Division of Chest Medicine, Department of Internal Medicine, National Taiwan University Hospital #7, Chung Shan S. Rd., Zhongzheng District, Taipei City 100225, Taiwan.

#### A Rare Case of Foreign Body Ingestion

Hsiu-Ping Chou<sup>1</sup>, Kuan-Hsun Lin<sup>1</sup>

Both younger and older age, as well as mental retardation, are frequent causative factors in the ingestion of foreign bodies. Such cases are usually sent to the emergency department, regardless of whether the patients have symptoms or not. We reported the case of a 60-year-old male patient with dysphagia and nausea who ingested an unusually-shaped object and was brought to the emergency department. The diagnosis was confirmed by kidney, ureter, and bladder X-ray exam, the patient's clinical history, and imaging findings. The location of the foreign bodies was identified by computed tomography. Surgical treatment was performed immediately, and successfully removed the foreign bodies. In most cases, ingested foreign bodies are typically found in the gastrointestinal tract due to spontaneous passage. It is possible that a foreign bodies had an unusual shape or were in a challenging position; hence, the endoscopic approach was difficult to perform. Surgical treatment was required to remove them. *(Thorac Med 2025; 40: 95-98)* 

Key words: foreign body ingestion; removal; surgical treatment

<sup>&</sup>lt;sup>1</sup>Division of Thoracic Surgery, Department of Surgery, Tri-Service General Hospital, National Defense Medical Center.

Address reprint requests to: Dr. Kuan-Hsun Lin, Division of Thoracic Surgery, Department of Surgery, Tri-Service General Hospital, 325, Section 2, Cheng-Kung Road, Taipei 114, Taiwan, R.O.C.