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Cystic teratoma mimicking recurrent pleural effusion, complicated by *Mycobacterium abscessus* infection

Nurul Yaqeen Mohd Esa[1], Adli Azam Mohd Radzi[2], Nor Salmah Bakar[3], Mohd Shukry Mohd Khalid[4], Ahmad Izuanuddin Ismail[1] & Mohamed Fauzi Abdul Rani[1]

[1]Respiratory Unit, Department of Internal Medicine, Faculty of Medicine, Universiti Teknologi MARA (UiTM) Selayang Campus, Sungai Buloh, Selangor, Malaysia.
[2]Cardiovascular and Thoracic Surgery, Surgical Science Cluster, Faculty of Medicine, Universiti Teknologi MARA (UiTM), Sungai Buloh, Selangor, Malaysia.
[3]Pathology Department, Faculty of Medicine, Universiti Teknologi MARA (UiTM), Sungai Buloh, Selangor, Malaysia.
[4]Medical Imaging Unit, Faculty of Medicine, Universiti Teknologi MARA (UiTM), Sungai Buloh, Selangor, Malaysia.

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Correspondence
Dr Nurul Yaqeen Mohd Esa, Fakulti Perubatan, UiTM Selayang Campus, Jalan Prima Selayang 7, 68100, Selangor, Malaysia. E-mail: n_yaqeen@yahoo.com

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Abstract

Teratomas of anterior mediastinum are rare. They are often slow growing, asymptomatic, and detected incidentally on chest imaging. *Mycobacterium abscessus* (*M. abscessus*) is an acid-fast bacillus that is classified as a pathogenic "rapid growing" non-tuberculous mycobacteria. It is an uncommon cause of human pathology, which may cause skin and soft tissue infection after skin injury following inoculation, minor trauma, and surgery. Here, we present an unusual case of benign cystic teratoma mimicking recurrent pleural effusion, which was subsequently complicated by *M. abscessus* infection following thoracotomy. Cystic teratoma is rare, but it needs to be considered whenever clinical and investigative work-up fails to provide a convincing diagnosis. A combined clinical, radiological, surgical, and histopathological assessment is important to arrive at the correct diagnosis. Rapidly growing mycobacteria needs to be included in the differential diagnosis of patients with non-resolving infected post-thoracotomy wound and who do not respond to broad-spectrum antibiotics.

Introduction

Teratomas of the anterior mediastinum are slow growing tumors that are often asymptomatic and often detected incidentally on chest radiographs. Mediastinal teratomas have been reported to mimic pleural effusions on chest radiography and computed tomography (CT) [1]. *Mycobacterium abscessus* (*M. abscessus*) is one of the rapidly growing mycobacterial species and was first described by Moore and Frerichs in 1953. It can cause skin and soft tissue infection after skin injury following inoculation, minor trauma, or surgery [2]. We report a case of a 41-year-old man who presented with clinical and radiological features of recurrent pleural effusion, which was then misdiagnosed as loculated pleural effusion from CT Thorax by the radiologist, and subsequently underwent thoracotomy. Intraoperatively, benign cystic teratoma was found. Postoperatively, it was complicated by *M. abscessus* infection, most likely because of previous multiple thoracenteses resulting in wound dehiscence and poor wound healing. This is an unusual presentation of an uncommon pathology, with unusual complication.

Case Report

A 41-year-old non-smoker, non-Caucasian man was referred to our respiratory clinic with 1 year history of cough, significant weight loss, appetite loss, and intermittent fever. Apart from well-controlled hypertension, he had no other medical illness. There was no history of contact with tuberculosis patient, and he denied any high-risk behaviors. He had seen three physicians from as many hospitals and on each occasion following pleural , and chest tube insertion was told to have pleural effusion secondary to non-tuberculous infection. CT Thorax was not carried out during his previous hospitalizations. On examination, he was a thin man with a body mass index of 22. There was no finger clubbing, dilated vein, or palpable lymphadenopathies. Respiratory examination revealed features suggestive of right-sided pleural effusion with

reduced chest expansion, reduced vocal resonance, reduced vocal fremitus, and stony dullness on percussion over the right mid zone and lower zone. Plain posteroanterior (PA) chest radiograph revealed a huge mediastinal mass obscuring the right heart border with pleural effusion. Contrast enhanced CT Thorax showed a well-defined homogenous anterior right mediastinal mass with adjacent lung collapse as well as pleural effusion with passive lung collapse posteriorly. Note that the cystic nature of the mass could have been mistaken for a loculated pleural effusion (Fig. 1). There was mild leukocytosis (total white cell counts [TWCCs] $11.7 \times 10^3/\mu L$), with normochromic normocytic anemia (hemoglobin [Hb] 10.9, mean corpuscular volume [MCV] 80), and his renal and liver profiles were normal. His inflammatory markers were raised, C-reactive protein (CRP) 32.7 and erythrocyte sedimentation rate (ESR) 97. Based on the findings just discussed, he was then referred to the cardiothoracic team for further surgical intervention. At thoracotomy, a cystic-like mass consisted of cloudy fluid measuring 10 cm × 8 cm × 3 cm with generalized adhesion to surrounding lung tissue was found (Fig. 2). Histopathology revealed benign cystic teratoma with no evidence of malignancy. Pleural fluid found intraoperatively in the pleural space grew mixed growth of three types of gram positive cocci, most likely because of previous repeated thoracenteses and previous parapneumonic effusion. Postoperative serum alpha-fetoprotein (α-FP) and beta-human chorionic gonadotrophin (β-hCG) were normal, but the recovery phase was complicated by recurrent post-thoracotomy wound infection, which resulted in wound dehiscence. He was initially treated with prolonged intravenous second generation cephalosporin and surgical drainage, but the lesion showed no improvement and, in fact, later had become worse. The infected wound tissue was subsequently sent for direct smear, which showed presence of acid-fast bacilli > 50/L (heavily positive), and the tissue culture grew *M. abscessus*.

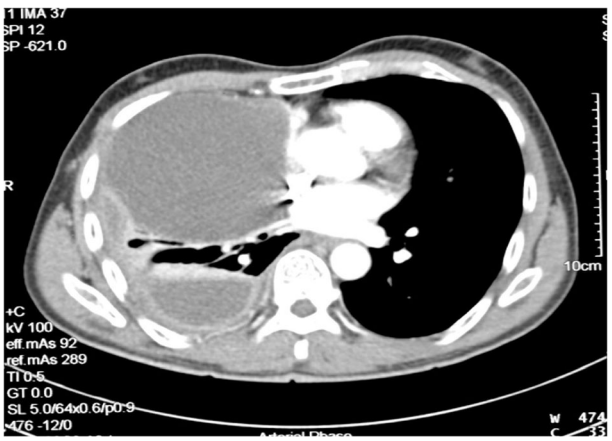

Figure 1. Contrast enhanced computed tomography scan of the thorax shows a well-defined homogenous anterior right mediastinal mass with adjacent lung collapse as well as pleural effusion with passive lung collapse posteriorly. Note that the cystic nature of the mass may be mistaken for a loculated pleural effusion.

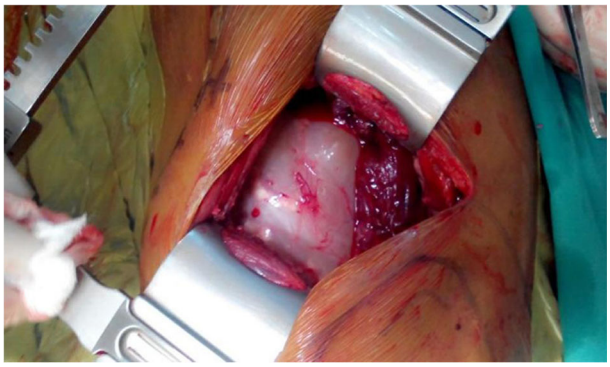

Figure 2. Intraoperative finding revealed a cystic like mass measuring 10 cm × 8 cm × 3 cm, with generalized adhesion to surrounding lung tissue.

Discussion

Superior mediastinal teratomas are usually asymptomatic till late and are often discovered incidentally on chest X-ray. Symptoms such as chest pain, dyspnoea, or cough are a result of compression of nearby structures [3]. The interesting feature of our patient was that he presented with clinical and radiological features mimicking recurrent pleural effusions, which is an uncommon presentation [3] and if presented to general physicians in a resource-deficient hospital may be easily diagnosed as parapneumonic effusion as the case in our patient. Upon drainage of the fluid and antibiotics, the symptoms would have all resolved and gave an impression of cure. Our patient, however, presented again as the underlying diagnosis was missed when he visited different physicians from different institutions. Chest X-ray may raise a suspicion of a diagnosis but is inadequate as in this case, but mediastinal CT scan is able to demonstrate the extent of a mass, detect fatty or cystic areas in mediastinal masses, and define invasion of adjacent structures and thus assists planning surgical intervention [4]. Complete curative surgical removal of a mediastinal teratoma is the treatment of choice as it establishes the diagnosis besides preventing life-threatening complications. Nearly everyone is presumed exposed to *M. abscessus*, yet most do not develop clinical signs of infection. The factors predisposing to infection are not well understood but likely are due to an interaction between host defense mechanisms and the load of clinical exposure [5]. Common risk factors related to *M. abscessus* post-thoracotomy wound infection would include immunosuppressed patient, such as poorly

controlled diabetics, post-transplant patients, and patient on immunosuppressant therapy and repeated surgical interventions [2]. We believe that the only risk factor in our patient was the multiple thoracic interventions that he has had. Although rare, an atypical mycobacterial infection should be considered for the case of recurrent infected post-thoracotomy wound that is resistant to antibiotic therapy, even if this is seen in an immunocompetent patient. Our patient represents an unusual presentation of this uncommon pathological entity, which was subsequently complicated by an unusual infection.

Disclosure Statement

No conflict of interest declared.
Appropriate written informed consent was obtained for publication of this case report and accompanying images.

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