

Acquired lung cysts in post primary tuberculosis: An uncommon radiological finding in a common disease

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SUMMARY

Tuberculosis (TB) is still an endemic disease in Malaysia. Cystic lung disease in post primary tuberculosis is not common. It can occur before, during or after completion of anti-TB treatment. Clinical history and review of serial chest radiograph is paramount to make the diagnosis. This case report highlights an interesting case of a young female patient who developed extensive cystic lung disease during the course of anti-TB treatment and the importance of recognizing this unusual manifestation.

INTRODUCTION

The formation of cystic lung lesions in post primary tuberculosis is rare. It can occur before, during or after completion of anti-TB treatment. We report a young female patient who started to have near total replacement of lung by cysts during anti-TB treatment. The acquired lung cysts persist even after completion of treatment. To our knowledge, similar case has not been reported in Malaysia. As TB is still endemic in our country, we should be aware of this rare manifestation of acquired lung cysts in post TB infection.

CASE REPORT

A 25-year-old woman with no co-morbid conditions was admitted to surgical ward for two days history of acute abdominal pain and fever. She denied respiratory symptom such as cough and hemoptysis. She had history of loss of appetite and loss of weight. The patient had completed Bacillus Calmette–Guérin (BCG) vaccination during childhood. On examination, she had spiking temperature. Physical examination revealed coarse crepitations in both lungs. Abdomen was tense and distended with generalized tenderness. Clinical diagnosis was perforated appendicitis. Abdominal X-ray showed dilated small bowels. Patchy lung consolidation was seen on the supine chest x-ray suggestive of pneumonia.

Blood investigation showed leukocytosis. Other investigations include serum amylase, renal and liver function tests were normal. Urine pregnancy test was negative.

She was then sent for a contrast enhanced computed tomography (CECT) abdomen, which showed pneumoperitoneum with focal thickening of the terminal ileum (Figure 1A). Multiple enlarged abdominal and hilar lymph nodes were also seen. Besides that, there were nodular

lung lesions with cavitation at both lung bases (Figure 1B). The radiological diagnosis was perforated ileocecal TB and pulmonary TB (PTB).

She underwent emergency laparotomy and perforation was seen at the thickened ileocecal junction. The histopathological examination (HPE) revealed caseating granuloma with no malignant cell. Sputum was however negative for acid fast-bacilli (AFB). Chest radiograph revealed multiple lung nodules suggestive of infection (Figure 2A). She was treated as ileocecal TB and commenced on anti-tuberculosis treatment (isoniazid, pyrazinamide, ethambutol, rifampicin) which was planned for one year.

One month after the commencing the treatment, she was admitted for spontaneous pneumothorax. Chest radiograph revealed diffuse cystic lung lesions in both lungs with right pneumothorax (Figure 2B). The pneumothorax resolved after chest tube insertion and she was discharged well. However, her serial follow-up chest radiographs showed progressive worsening of lung cysts despite completion of anti-TB treatment for one year and improvement of clinical condition with weight gain (Figure 2C). High resolution computed tomography (HRCT) thorax after completion of TB treatment also showed diffuse lung cysts with small cavitating lung nodules (Figure 2D). There was only minimal residual lung parenchyma. Based on the serial chest radiographs, the diagnosis of post PTB acquired lung cysts was made.

DISCUSSION

TB is still endemic in Malaysia with incidence rate of 89 cases per 100 000 population in 2015.¹ Pulmonary tuberculosis is the commonest form with 87% of cases while extra-pulmonary TB contributes to the remaining 13% of cases in 2015.² The three most common sites for extra-pulmonary TB are lymph nodes, military/ disseminated and pleura. Gastrointestinal TB (GITB) is an uncommon form of extra-pulmonary TB in this region.

In general, GITB commonly affect ileocecal regions, peritoneum and hepatobiliary system. The clinical presentation include abdominal pain, anorexia, weight loss, fever and abdominal distention. Less than 50% of patients with GITB have coexisting lungs manifestation. Our patient presented with acute abdomen secondary to perforated terminal ileum. CECT abdomen showed pneumoperitoneum and focal thickening at the ileocecal junction with multiple

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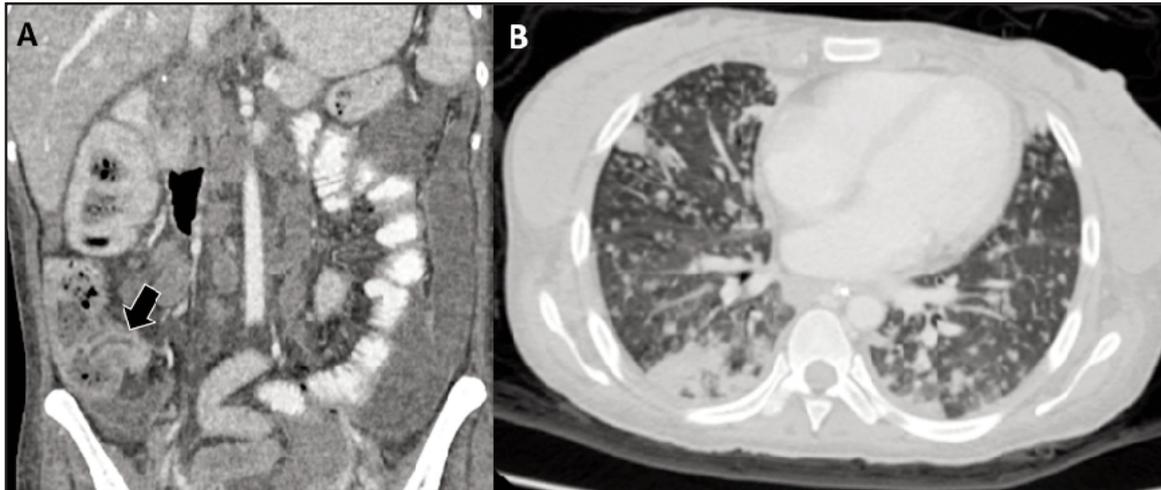


Fig. 1: 1A. CECT Abdomen (coronal view) showed thickening of the terminal ileum suggestive of GITB. 1B. Multiple small lung nodules are seen at the lung bases.

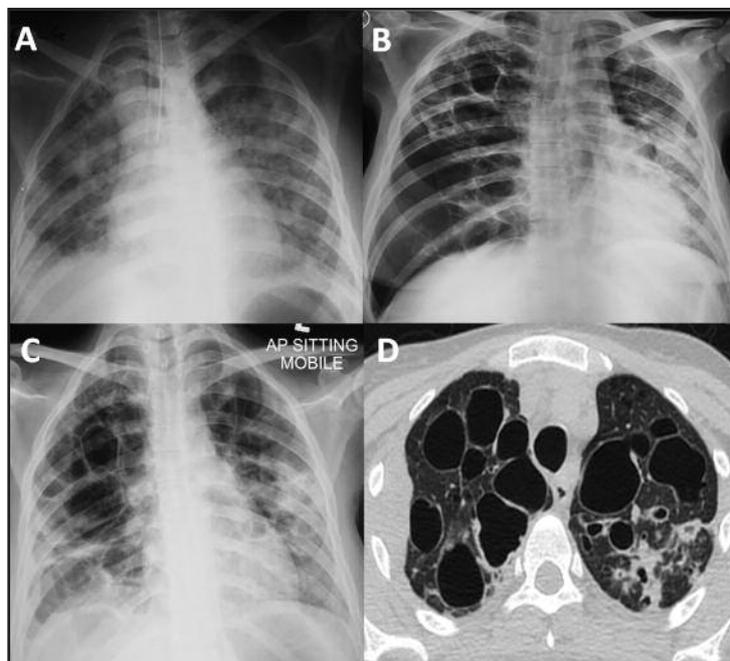


Fig. 2: 2A. Chest radiograph showed bilateral ill-defined lung nodules suggestive of lung infection. 2B. One month post anti-TB treatment. Bilateral scattered thin-walled lung cysts with right pneumothorax. 2C. One year post anti-TB treatment. Persistent thin-walled lung cysts in both lungs. 2D. HRCT Thorax (axial) showed multiple thin-walled cysts scattered in both lungs.

enlarged abdominal lymph nodes which is consistent with GITB.

Subsequent HPE showed caseating granuloma with presence of AFB. In addition, her chest radiograph revealed generalized patchy lung consolidation even though sputum AFB was negative. She was diagnosed to have GITB with PTB and was commenced on one-year anti-TB drugs. However, despite clinical improvement her chest radiograph showed worsening of cystic lung formation which was not present during initial diagnosis.

There are many causes for cystic lesions in the lungs. It can rarely occur as a complication of pulmonary tuberculosis.³ This condition is uncommon and is considered as the rarest presentation of this common disease.³ There are only several cases reported worldwide. Vishak et al. (2004) and Puri et al (2014) documented two cases of acquired lung cysts in patients who had completed TB treatment in India.^{4,5} Amimesh Ray et al reported another case of TB cystic lung disease in a young female with resolution of lung cyst after anti-TB treatment.³

Several pathogeneses have been described to account for lung cysts formation in PTB. These include caseating necrosis of bronchial wall and granulomatous involvement of bronchioles leading to check-valve mechanism. Besides that, it could be related to scarring and stenosis of bronchi which cause distal end dilatation. Tuberculous cavities that healed with bronchiectasis and re-lined by epithelia has also been implicated as a cause of lung cyst formation.⁵ In isolated cases, isoniazid has been reported to be associated with lung cyst.⁵

The hallmark radiograph findings of post-primary pulmonary TB are cavitating lung consolidation with upper lobe predominance. Lung consolidation typically resolved after treatment. It usually heals with fibrosis and calcified granuloma. However, TB may have atypical manifestations in up to one-third of the cases. Multiple thin-walled cysts are one of the rare manifestations of TB.⁵ Our patient had an episode of spontaneous pneumothorax that is most likely caused by rupture of the thin-walled lung cysts during the course of treatment. Most patients with TB lung cysts have extensive bilateral lung infiltrates.⁵

TB lung cysts may associate with different outcome and severity during the course of the disease.¹ It may even persist after completion of anti-TB treatment. Our patient most likely developed lung cysts during the course of active TB and these lesions worsen along the course of anti-TB treatment. Although PTB is common in our country, this is a rare local case whereby patient had near total replacement of lung parenchyma by cystic lesions despite of successful anti-TB.

In conclusion, acquired lung cysts can occur before, during or after completion of anti-TB treatment in rare instances.⁴ Thus, pulmonary tuberculosis should be considered as a possible cause of acquired cystic lung disease in appropriate clinical settings, especially in our region whereby TB is still endemic.

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