Case Report

Cystic lung disease in tuberculosis: An unusual presentation

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ABSTRACT

Cysts in the lung can arise due to large number of causes out of which tuberculosis is very rare. We report a case of tuberculosis in a young female presenting as a febrile illness and respiratory failure with radiological features of cystic lung disease. With treatment, fever and respiratory distress subsided and cysts in the lungs showed partial regression. We highlight the need to consider tuberculosis in the differential diagnoses of cystic lung disease under appropriate circumstances.

KEY WORDS: Cysts, respiratory failure, reversible, tuberculosis

INTRODUCTION

Cysts in the lungs are airspaces lined by epithelia and may arise due to a number of causes. Cysts arising as a complication of pulmonary tuberculosis have been very rarely reported and are amongst the rarest presentation of this common disease. In tuberculosis cysts may evolve with varied outcome and severity during the course of the disease and may persist following treatment of tuberculosis. Here, we report a case of lung cysts in a young patient with pulmonary tuberculosis.

CASE REPORT

A 13-year-old female patient presented with the complaints of fever for 1 month duration and shortness of breath for 10 days. She also complained of decreased appetite and significant loss of weight for the same duration. On examination, patient’s pulse rate was 130 beats/min, blood pressure was 100/70 mmHg, respiratory rate was 48/min. On auscultation chest revealed bilateral crepitations. Examination of the other systems was unremarkable. Arterial blood gas (ABG) analysis showed \(PaO_2: 42 \text{ mmHg}, \ pCO_2: 44 \text{ mmHg}, \ HCO_3: 27.1 \text{ mmol/L}, \ \text{pH} \ 7.406.\) Chest X-ray showed bilateral diffuse reticular shadows. A contrast enhanced computed tomography thorax [Figures 1 and 2] showed multiple thin walled cysts seen in both the lungs (left > right; upper lobe > lower lobe); diffuse ground glass opacities and centrilobular nodules in both lung fields.

Patient was intubated and ventilated in view of respiratory failure and impending respiratory arrest. In the Intensive Care Unit bronchoscopy was performed through the endotracheal tube and washings taken. Transbronchial lung biopsy was performed and sent for histopathological examination, which showed granulomatous inflammation consistent with tuberculosis. Bronchial washings sent for *Mycobacterium tuberculosis* culture was positive.

Patient was treated with antitubercular regimen (Isoniazid, Rifampicin, Pyrazinamide and Ethambutol) with steroids (1 mg/kg). The fever subsided and the patient could be weaned off the ventilator within 10 days of starting the above treatment. Patient was discharged after 1 week. At the time of discharge ABG showed \(PaO_2: 73 \text{ mmHg}, \ pCO_2: 28.5 \text{ mmHg}, \ \text{pH}: 7.446.\) Steroids were continued for 1 month after which it was tapered gradually over 1 month. Anti-tubercular drugs were continued for 6 months. At the end of treatment, ABG showed \(PaO_2: 95 \text{ mmHg}, \ pCO_2: 39 \text{ mmHg}, \ \text{pH}: 7.39.\) Repeat high resolution computed tomography thorax [Figures 3 and 4] showed a reduction in the number and size of cysts in both the lung fields with decrease in diffuse lung opacities and nodular lesions.
DISCUSSION

A lung cyst is defined as a well-circumscribed air-filled structure that is localized within the lung parenchyma, is >1 cm in diameter and has a definable epithelial or fibrous wall that is usually <1 mm thick, but that may be up to 2 or 3 mm thick. A variety of lung diseases can cause or mimic thin-walled air-containing cysts in the lung. Cysts may be classified as congenital and acquired. The more common congenital causes for cysts in lung diseases include central and peripheral bronchogenic cysts, intralobar pulmonary sequestrations, congenital cystic bronchiectasis, cystic adenomatoid malformation of lung and tracheobronchial papillomatosis. Cystic lung disease may be acquired in conditions such as histiocytosis-X, bullous emphysema, pneumatoceles and post-infectious states. Tuberculosis may present with atypical manifestations in one-third of the cases and multiple thin-walled cysts are one such rare manifestations of tuberculosis. Some of the possible causes attributed to the development of cystic lesions in lung due to tuberculosis are: (1) Caseating necrosis of the bronchial walls, leading to cystic bronchiectasis as a distal extension of fulminant tubercular bronchitis. (2) Granulomatous involvement of the bronchioles may lead to a check-valve mechanism leading to cyst formation. (3) Scarring of larger bronchi due to tuberculosis may lead to stenosis proximally, with dilatation of the distal end with retained secretions due to secondary bacterial infections causing inflammatory destruction of the bronchial wall leading to cyst formation. (4) Some healed tubercular cavities may be partly re-lined by ciliated epithelia and form cyst like structures. (5) In isolated cases, isoniazid may cause lung cysts. (6) Intermittent obstruction of the bronchioles by caseous material originating from parenchymal lesions.

Most of patients developing lung cysts with tuberculosis have an extensive bilateral infiltrative and an exudative kind of disease as a part of pneumonitic process. While in some cases, the cysts are reversible, in others, the cysts remain static without progression and may persist.
following tuberculosis.\textsuperscript{[3]} It should be remembered that development of cysts is seen in tuberculosis often with varying severity, extent and unpredictable outcome.

Thus, pulmonary tuberculosis may present as cystic lung disease in rare instances and should be kept as a possible cause of acquired cystic lung disease in appropriate clinical settings.

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