

Post Tubercular Large Emphysematous Lung Bullae Treated Successfully with Surgery

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Abstract: Tuberculosis, although an ancient disease, affecting humans for millennia; continues to present in atypical ways. Whilst the development of bullous lung disease in patients suffering from Pulmonary Tuberculosis, has been reported, it remains an extremely rare phenomenon. The present report describes a case of emphysematous bullae post pulmonary tubercular treatment in a 18 years old female that occupied the left hemi lung with mediastinal compression of the right lung. The patient underwent a left sided postero - lateral thoracotomy with lung volume reduction surgery. The patient had an uneventful recovery.

Keywords: Bullous lung disease, Pulmonary tuberculosis, Post tuberculosis sequelae, lung volume reduction surgery.

1. Introduction

Bullae may be defined as air spaces in the lungs, measuring at least more than 1 cm in diameter when distended; while giant bullae, occupy at least a third of the entire hemithorax. [1] Bullae may be idiopathic or more frequently linked to lung infections or chronic obstructive pulmonary disease. Smoking, emphysema, cocaine or marijuana usage, sarcoidosis, and genetic disorders such as alpha - 1 antitrypsin deficiency, Marfan's syndrome, and Ehlers Danlos syndrome are risk factors for the development of bullous lung disease. [3] Although cases of bullous lung illness in tuberculosis patients have been reported, bullous lung disease as a consequence of tuberculosis has not been widely documented in the literature. [1] We reported one such case of a rapid development of bullous lung in a 18 - year - old female patient as a sequelae of post Pulmonary Tuberculosis which was successfully treated with lung volume reduction surgery.

2. Case Report

An 18 - year - old female presented with chief complaints of breathlessness and pain over left side chest for 1 month. She had history of pulmonary tuberculosis 1 year ago for which she had completed anti - tubercular regimen for a period of 8 months. On percussion, there was hyper - resonant note heard over left side of chest and on auscultation, airway entry was reduced over right lung. Chest X - ray was done which showed large radiolucent avascular area. High Resolution Computed Tomography of chest was done which was suggestive of emphysematous bullae in both lung fields, largest one measuring approximately 123*101*91 mm in left upper lobe of lung with shift of mediastinum towards right side. There was also fibrosis with septal thickening and tiny

nodules were noted in both lung fields suggestive of old Koch's lesion.

Patient was planned for operative intervention and left postero - lateral thoracotomy was done with opening of intra - parenchymal air - filled cystic cavity and subsequent excision of wall of lesion from the lung parenchyma along with excision of lingual lobe. Post - operatively, patient was kept in intensive care unit for 3 days and later shifted to ward. Patient was discharged on post - operative day 13 with stable vitals and maintaining oxygen saturation 99% on room air.

Histologic examination showed enlarged air spaces, fibrosis and infiltration of inflammatory cells. Patient is on regular follow up since last 6 months with completely symptoms free.



Figure 1: Chest X - ray showing large radiolucent avascular area

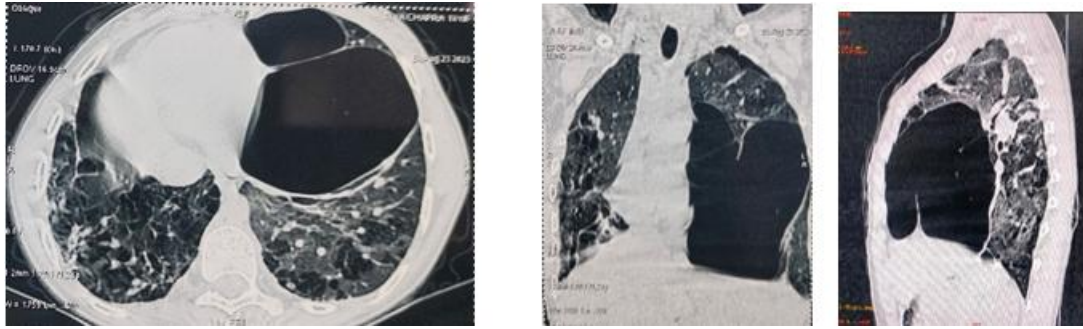


Figure 2 - 4: HRCT: Emphysematous bullae in both lung fields, largest one measuring approximately 123*101*91 mm in left lung with shift of mediastinum towards right side.

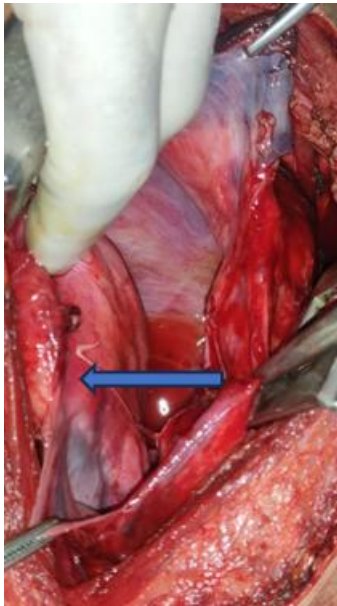


Figure 5: Intra - operative picture showing Left Lung Bullae

3. Discussion

Bullae are defined as air spaces in the lungs, measuring more than 1 cm in diameter when distended, while giant bullae occupy at least 30% of the hemithorax [1]. In addition to treating the underlying pulmonary condition, lung volume reduction surgery, lung transplantation, and bullectomy are all part of the general care of gigantic bullae in cases of severe emphysema. [1]

Although extremely rare, the development of bullous lung disease in tuberculosis patients has been documented in the past. There are a number of possible explanations for this disease, including the use of isoniazid as part of the antitubercular regimen, lung tissue destruction, modifications to the lung's innervation and/or vasculo - nutrient factors, and adhesion of both pleurae, which creates a suction towards the defect that is made possible by the bronchi's patency. The rarity of this in clinical practice suggests that the circumstances under which it may develop are complex and multifactorial which seldom co - exist. [2]

Giant bullae can present clinically as cough, dyspnoea, and chest pain, but it can also occasionally be asymptomatic. One of the main symptoms of giant lung bullae is increasing dyspnoea, which may or may not be accompanied by chest pain. [2] Giant bullae that are clinically present result in a

localized reduction or lack of breath sounds as well as an increase in resonance to percussion. [3]

Chest radiography is the most practical method for identifying the presence of bullae and their progression. As was the case in our instance, a large bulla can occasionally move the mediastinum contralaterally and even crush the opposite lung. These days, a number of studies detail the use of ultrasonography in identifying bullae and distinguishing them from pneumothorax. [3]

The most reliable method for identifying emphysema, assessing its kind and severity, and differentiating between pneumothorax and huge bullae is a CT scan. A bulla is defined as a region of trans - radiancy that is bounded by visible walls and typically devoid of blood vessels. A useful indicator for differentiating between a nearby large bulla and a pneumothorax is the double wall sign. [3] In addition to assisting in the diagnosis of possible causes and associated disorders such infected cysts, bronchiectasis, pulmonary artery enlargement, and pneumothorax, high resolution computed tomography (HRCT) displays the size and distribution of the disease. [4]

The development of thoracoscopic surgical methods for treating lung cysts has significantly changed the timing and indications of surgical procedures for this disease. Several surgical procedures have been proposed to treat Giant Lung Bullae. The use of plication, local excision, segmental resection, lobectomy and even lung transplantation have been reported, with variable results. The resection of giant bullae in our case might be viewed as a special case of lung volume reduction, working on principle to reduce lung volume by resecting the worst functioning lung tissue. [5] Early functional changes after surgery for alveolar disease are qualitatively similar to initial reports of lung volume loss due to non - alveolar emphysema. [5]

4. Conclusion

Although tuberculosis is an ancient disease affecting humans for millennia and has been extensively studied and documented, it continues to present in atypical ways. The possibility of development of bullous lung should be considered in patients suffering from pulmonary tuberculosis, particularly those who received Isoniazid therapy. Also to mention that even symptomatic large lung bullae can be completely treated by surgical procedures involving lung mass reduction principles.

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