Case Report

A rare case of lung entrapment

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Abstract:-
Lung entrapment is a sequela of empyema which is a chronic, active infection of the pleural space and a rare complication of pleuropulmonary TB. It is rare compared with tuberculous pleural effusions that result from an exaggerated inflammatory response to a localized paucibacillary pleural infection with tuberculosis. Anti-TB drug treatment alone cannot be relied on for complete clearance of infection many a times. Virtually all cases require some form of interventional management like intercostal drainage or pleural decortication.

Introduction
Lung entrapment is a sequela of empyema which is a chronic, active infection of the pleural space and a rare complication of pleuropulmonary TB. It is rare compared with tuberculous pleural effusions that result from an exaggerated inflammatory response to a localized paucibacillary pleural infection with tuberculosis. Anti-TB drug treatment alone cannot be relied on for complete clearance of infection many a times. Virtually all cases require some form of interventional management like intercostal drainage or pleural decortication.¹

Case report:
A 37 year old male agriculturist presented with history of fever and breathlessness of 15 days duration with a significant past history of being on antitubercular drugs
regularly since past two months after being diagnosed as having right tubercular pleural effusion. He had just been transferred to continuation phase of antitubercular drugs(ATT) having completed intensive phase of the regimen issued by Directly Observed Treatment Short Course (DOTS). On examination he was febrile with fever of 100.5 F with tachypnoea and tachycardia. Breath sounds were diminished in the right hemithorax; a straight line dullness was elicited and chest x-ray revealed loculated pleural effusion, pneumothorax and evidence of parenchymal tuberculosis(Fig1). Pleural aspirate showed yellowish turbid fluid and a provisional diagnosis of tubercular empyema was made and an intercostal drain was placed in the right pleural sac under guidance of ultrasound(Fig2).

Meanwhile, his pleural fluid analysis showed a cell count of 1500 with 90% neutrophils and 10% lymphocytes; a protein of 4.5 g/dl and glucose of < 10 mg/dl; multiple gram positive cocci in pairs sensitive to most of antibiotics. Complete blood picture showed mild leucocytosis and an ESR of 110 mm/hr. For the next 16 days, patient had steadily decreasing intercostal drain collections ranging from 700 to around 150 ml/day. In addition, he received his ATT medications with broad spectrum parenteral antibiotics. Intercostal drain was removed under aseptic precautions and patient was discharged with advice to continue ATT drugs. Around 1 and half months later, patient returned back this time complaining of increasing breathlessness, though he did not have toxic features of the previous admission. Vital parameters were normal and chest examination revealed grossly decreased chest movements on the right side with decreased intensity breath sounds. Chest xray revealed bilateral pneumothorax, right side bigger than left side (Fig3). Intercostal drain was placed in the right pleural sac for the second time and was retained for next 8 days.

Pulmonary function tests done after 3 weeks revealed severe restrictive pattern of airway disease. The diagnosis of tubercular empyema with lung entrapment was made. Patient was then given the option of decortication of pleura of right side since he was not maintaining arterial oxygen saturation with bilateral diseased lungs. Procedure of decortication of pleura on right side was done. Patient showed improvement in his pulmonary function test scores and oxygen saturation after the procedure and was discharged with advice to continue ATT drugs. Patient was in follow up for the next four months when he completed ATT drugs. Patient had no other symptoms after that.

**Discussion:** In lung entrapment, the lung is unexpandable due to visceral pleural restriction from active pleural disease, such as malignancy or infection. Tuberculous empyema should be managed in its acute exudative phase to avoid the development of chronic empyema which carries a high risk of morbidity and mortality. The mortality from empyema ranges from 11 to 50%. Tuberculous empyema is most commonly a result of rupture of a subpleural caseous focus into the pleural space. Rarely, it is due to hematogenous spread from involved thoracic lymph nodes or from a subdiaphragmatic focus, accounting for only 10% of pleural empyemas. If tuberculous empyema is inadequately treated, it may spontaneously perforate the pleura and extend through fascial planes. Other sites of empyema extension include the vertebral column, paravertebral soft tissues, retroperitoneum,
bronchus, mediastinum, breast, diaphragm, and more rarely the esophagus, flank, groin, and pericardium. TB empyema, as it can get complicated by bronchopulmonary fistula surgical drainage should be considered. Surgery continues to have both diagnostic and therapeutic indications for management of pleuropulmonary tuberculosis, despite the morbidity and mortality rates associated with operative procedures. The immediate objectives in the treatment of empyema are to eradicate persistent fever, to evacuate pleural contents, and to fully reexpand the lung. The long term objective is to prevent chronic lung damage. The probability of pyopneumothorax should be kept in mind when pleural aspiration is being performed under aseptic measures and adequate drainage measures ensure recovery of patient.

Conclusion: This case report emphasizes that decortication should be considered early in a patient of chronic organized empyema, enabling complete expansion of the lung and preventing morbidity. Thus it underscores the importance of surgical management in the early stages of a case of tubercular pleural effusion.

References:
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Figures

Fig 1
Fig 2