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Case Report

Late Onset Post-Pneumonectomy Empyema Necessitans

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ABSTRACT

Collection of pus after lung removal between two pleura is called post pneumonectomy empyema (PPE) and empyema necessitans is a pyo thorax in which the pus burrows out side producing a subcutaneous abscess that eventually ruptures through skin. Post-pneumonectomy empyema is potentially a life threatening condition. We describe a case of 45 years old female with late onset post pneumonectomy empyema with empyema necessitans 4years after surgery. The purpose of this communication is that occult empyema in post-pneumonectomy can further lead to complications like empyema necessitans causing morbidity and also carries grave prognosis. Surgery is the main stay of treatment in these cases along with the treatment of infection by medical therapy.

Keywords: Post pneumonectomy, empyema necessitans, late onset, empyema.

INTRODUCTION

Post-pneumonectomy empyema (PPE) and bronchopleural fistula (BPF) are relatively rare but serious complications of pulmonary resection. [1] In general, the incidence of empyema after pulmonary resection is between 2% and 16%. [2] The incidence of PPE with or without bronchopleural fistula (BPF) has been reported to range from 0.8 to 15% in recent studies. Late-onset PPE (>3 month) may be very difficult to diagnose and manage. [3] Low-grade pyrexia with leucocytosis may be the only initial signs. New air-fluid level on chest x-ray film or appearance of empyema necessitans may enhance the index of suspicion. Diagnosis of postpneumonectomy empyema can be delayed and suggested by the lack of expected mediastinal shift on Computed tomography of the chest. We present a case of late-onset postpneumonectomy empyema necessitans.

CASE REPORT

A 45yrs old female patient came to medical op GGH Kurnool with chief complaints of recurrent swelling in left lateral wall of chest since 1yr.She is a known case of tuberculosis defaulter with lung destruction for which she underwent left pneumonectomy 4years back. She took ATT for 9 months after surgery. She underwent incision and drainage 4 times at local hospitals for her swelling in the chest. She had low grade fever and mild chest pain

since 3weeks.No loss of weight or appetite. On examination she is conscious, coherent, afebrile and vitals within normal limits. Respiratory examination revealed, trachea slightly deviated to right side, apex beat in left 5th intercostal space, drooping of left shoulder, wasting of upper part of hemi-thorax, crowding of ribs on left side. Diminished breath sounds and vocal resonance on auscultation on left hemithorax. Localised swelling of 5cms*3cms superficial to ribs, soft, fluctuant without any signs of inflammation with a sinus (fig:1). No chest wall edema. Other systems were normal. Routine investigations are normal except leukocytosis, VCTC negative, Mantoux negative. Pus culture revealed pseudomonas infection.AFB staining was positive, CRP was 106 mg/L, Chest x-ray showed homogenous opacity of left hemithorax (fig:2), CT chest revealed left empyema with communication to chest wall (fig:3;yellow arrow), extra-thoracic swelling (fig:3;white arrow), shift of mediastinum to left side, abrupt cut off of left main bronchus indicating post operative changes, compensatory emphysema on right side. Diagnosed as empyema neccessitans with mixed infection. Treated with sensitive antibiotics, started on ATT and referred to cardio-thoracic surgeon for further management.

Fig:1: Showing sinus tract on left lateral wall of chest.

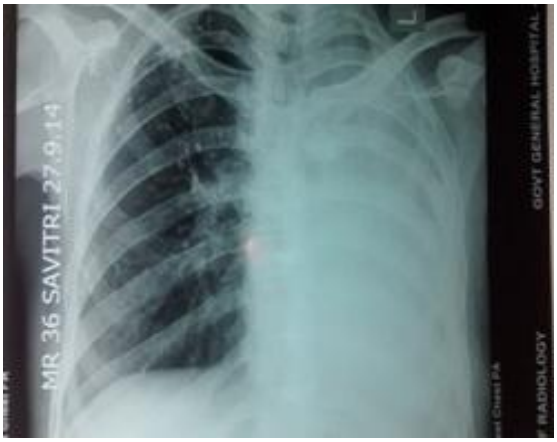

Fig:2: Chest X-Ray showing homogenous opacity on left hemithorax without shift of mediastinum to opposite side.

Fig:3:CT Chest revealing left empyema with communication to chest wall (yellow arrow), extra-thoracic swelling (white arrow), shift of mediastinum to left side, compensatory emphysema on right side.

DISCUSSION

Empyema necessitans is characterized by an extension of pus (empyema thoracic) from pleural cavities to the surrounding structures. It occurs commonly to subcutaneous tissues of the chest wall, but can also spread to involve other sites such as the esophageal, breast, retroperitoneal, peritoneal, pericardial and paravertebral regions. Empyema in the postpneumonectomy space complicates approximately 5 percent of pneumonectomies. Early empyema occurs within 10 to 14 days of surgery and is

commonly associated with a bronchopleural fistula. Late empyema, in which infection is most often acquired via a hematogenous route, occurs more than three months after pneumonectomy and has been reported up to 4years, [7] 26 years, [4] 40 years following surgery.

Postpneumonectomy empyema (PPE) is divided into simple and complicated types depending on absence or presence of bronchopleural fistula respectively. Predisposing factors to the development of postoperative empyema include pre-operative radiation, pulmonary resection for inflammatory conditions, persistent pleural space, prolonged air leak, long or ischemic bronchial stump, gross contamination of the pleural space and positive culture for tuberculosis. [5]

Usually post-pneumonectomy changes depend upon side of pneumonectomy. In right pneumonectomy, elevation of the right hemi-diaphragm can result in an elevation of the liver into the right post-pneumonectomy space. The heart and great vessels eventually shift into the vacant right post-pneumonectomy space. In a left pneumonectomy, the heart rotates counterclockwise into the vacant left pneumonectomy space. [6] These findings are evident on our patient's imaging where there is empyema along with mediastinal shift on same side. This indicates post-pneumonectomy, mediastinum has shifted to left side with compensatory expansion of right lung and empyema on left side is a delayed complication of pneumonectomy. The commonest organisms cultured in PPE are *Staphylococcus aureus* and *Pseudomonas aeruginosa.* [2]

In our patient, it is mixed infection of tuberculosis and pseudomonas. In the background of tuberculosis, superadded pseudomonas infection is probably due to repeated incision and drainage. Clinically patients are commonly asymptomatic or present with few symptoms until the empyematous collection drains outside the pleural space, into a bronchus or the chest wall, resulting in a bronchopleural fistula or empyema necessitans, respectively. [7]

Radiologically PPE without a bronchopleural fistula with empyema necessitans is visualized as a thick walled,well-encapsulated pleural mass associated with an extra-pleural mass in chest. Fistulous tract is rarely demonstrated on CT which is seen in the present case. A new air-fluid level on chest x-ray film and CT film indicates empyema with bronchopleural fistula. [8]

The treatment of post-pneumonectomy empyema has three components. Drainage is the initial concern, the second step the surgeon must obliterate the pneumonectomy space or accept its presence and attempt to sterilise it and the third component consists of identifying and treating any oesophagopleural or bronchopleural fistulae. [9] Clagett and associates demonstrated that the treatment of choice for management of post pneumonectomy empyema (PPE) was a two-stage procedure that consisted of open pleural drainage followed by obliteration of the pleural cavity with antibiotic solution at the time of chest wall closure. [10]

The initial response in our patient was clinically successful but the eventual evolution, highlights the importance of surgical drainage, either closed or open.

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