

Case of Empyema Necessitans Present with Discharging Sinus

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Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Background

Empyema is defined as a collection of pus in the pleural space. When the pus extends through the parietal pleura into adjacent tissue, it is termed as empyema necessitans.^[1] Empyema necessitans is a rare long-term complication of poorly or uncontrolled empyema thoracis characterized by the dissection of pus through the soft tissues and skin of the chest wall. The pus collection bursts and communicates with the exterior, forming a fistula between the pleural cavity and the skin.^[2]

TB is the most common cause of EN. EN usually presents as a single mass with or without pain on chest wall; diagnosis is based on clinical view and radiologic imaging and confirmation is by smear, culture, and PCR from fluid aspiration. Pleural effusion with empyema necessitans is usually caused by *Mycobacterium tuberculosis* and *Actinomyces israelii* ^[3]. The most common nontubercular etiological agent is *Staphylococcus*. Other microbial causes include *Pneumococci*, *Escherichia coli*, *Pseudomonas*, *Klebsiella*, and anaerobes.^[3] Pleural fluids are usually diagnostic and help in the choice of appropriate antibiotics.

Case Presentation

An 30 years old male farmer presented in dermatology OPD with complaint of purulent discharging sinus on right lowerchest last 10 days with history of dry sputum, chest pain, weight loss and dyspnoea since last 3 months.

On cutaneous examination

A single sinus of a approximately 1×1.cm in size with purulent discharge, on and off in nature in mid-axillary line at 7th Intercostal space of right hemithorax. There was no tenderness, no warmness, no fluctuating in palpation and surrounding skin have erythematous ring.



Figure 1: Chest wall with sinus opening

Investigations

The Chest X-ray (figure) showed thoracic asymmetry with right side retraction, right mediastinal deviation and old rib fractures. The right side pleural effusion was seen in the chest wall.



Figure 2 showing chest X-ray findings

USG findings

Mild thick collection in right pleural cavity with tubular track like fistula in USG image

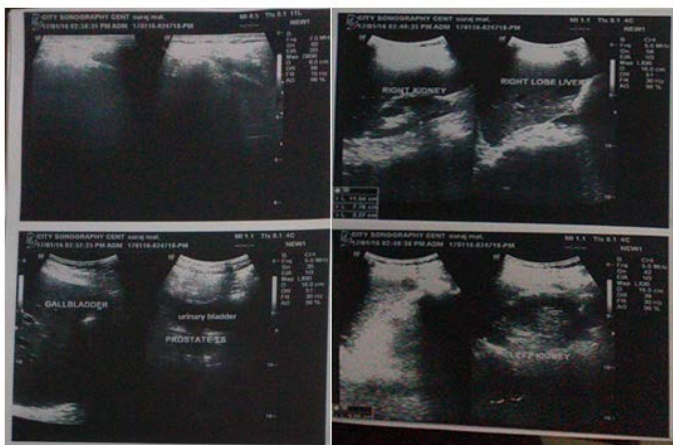


Figure 3 showing USG findings

Ultrasound (USG) findings

Ultrasound (US) examination of the swelling was done which showed a decrease movement of right dome of diaphragm seen on USG. The USG also showed a

hypochoic, multi lobulated mass which showed no vascularity on color flow.

Laboratory investigations

Thick purulent yellowish colored pus was aspirated and was sent for gram stain, acid fast bacillus, culture and sensitivity. Ziehl-neelsen and gram staining was done. Acid Fast bacilli was seen in staining. All other investigations were found to be in normal limit.

Management

The clinical and radiological findings suggestive of empyema necessitans then started ATT and surgical intervention was done for sinus. Chest wall mass was drained with aspirative drain.

Differential Diagnosis

Differential diagnosis of the chest wall mass includes benign and malignant soft tissue tumours, soft tissue infection and abscess and skeletal lesions.^[4] Some of the benign tumours causing chest wall masses are lipomas, lymphangiomas, haemangiomas or desmoid tumours. Malignant tumours may be sarcomas, malignant fibrous histiocytomas, liposarcomas or neurofibrosarcomas; metastatic disease is also possible. Pain is one of the most common symptoms of benign and malignant tumours. The presence of other signs and symptoms is critical to a diagnostic approach; although imaging is a precious help, most of the time, biopsy is mandatory.

Discussion

Pleural effusion with empyema necessitans is characterised by the pus collection in the thorax which bursts and communicates with the exterior, forming a fistula between the pleural cavity and the skin.^[1] There are very few case reports of empyema necessitans related to pulmonary TB. Tezel et al^[5] and McNulty^[6] reported two similar cases in 2008, although the clinical presentation was more acute than ours.

Empyema necessitans is a rare complication in the present era after the development of antibiotics. The most common etiology being Mycobacterium tuberculosis. The chronic nature of the infection corresponds with the slow progression of disease. The granulomatous infection creates a tract from the pleural space through parietal pleura to the surrounding soft tissues and skin of chest wall forming a fistula. Bronchopleural fistulas and pyopneumothorax are common complications of empyema. Other rare complications like purulent pericarditis, pulmonary abscess, peritonitis from extension through diaphragm and osteomyelitis of adjacent rib can occur.^[7]

Empyema necessitans complicating pleural effusion is rare. It was also reported to be rare by other workers elsewhere.^[3] Akgül et al. ^[3] reported nine cases of empyema necessitans over a 4-year period in Turkey. Hoffman,^[8] in United Kingdom, also reported its rarity where he reported a prevalence of 3.2%. If pleural effusion is left for several months without intervention, this can lead to developing this complication, empyema necessitans. This might have contributed to the development of empyema necessitans in our patient.

Chest wall abscesses that involve the ribs need extensive debridement. Removal of all involved tissues such as bones and cartilages is an assured and safe approach but sometimes spreads the infection. Decortication can better the lungs' function significantly. Surgery's mortality rate is about 5%. Relapse of infection is due to incomplete excision of ribs or infected pleura, which can take place 10 years after the surgery. These patients should be under close observation for years.^[9]

Conclusion

Empyema necessitans is a result of neglected or inadequately treated pulmonary infection. It is commonly

associated with pulmonary tuberculosis, *Actinomyces*, and nontuberculous organisms like *Staphylococcus aureus*. Immunocompromised state in any form not only adds to the progression of infection but also hinders in the diagnosis of disease making Montoux test negative. The delay in the treatment of empyema necessitans thereby increases morbidity and mortality. The most challenging part is to identify the disease as empyema necessitans. The management of this case was challenging since it was difficult to differentiate between tuberculous and nontuberculous effusion in this case.

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