

## Empyema Complicating Pleural Pseudo-Tumour in Human Immunodeficiency Viral Disease Patient

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### Keywords:

Empyema; Pleural pseudo-tumour; Human immunodeficiency viral disease; HIV; Retroviral disease

## 1. Abstract

**1.1. Background:** Empyema is suppurative infection in the pleural cavity associated with accumulation of pus in the pleural cavity. It is common among people with immunosuppression.

**1.2. Case Report:** A thirty-eight year old HIV- positive woman, presented with cough. Follow up chest radiograph was requested and an incidental finding of a well circumscribed, pleural based, opaque mass in the right lower lung zone with calcifications was seen. This was confirmed on Computerized Tomography (CT) of the chest which showed a right mid thorax, pleural based, isodense mass with calcific densities, normal lung fields bilaterally and no pleural effusion or bony lesion seen. Subsequently she had thoracotomy and biopsy with histology diagnosis of benign fibrous pseudotumour of the pleura.

**1.3. Conclusion:** Triple assessment is useful in diagnosis of pleural pathology especially in patients with higher risk factors for development of neoplasms.

## 2. Introduction

Empyema thoracis, pleural-thoracic empyema or pyothorax refers to an infected purulent and often located pleural effusion. It can cause a large unilateral pleural effusion and could be life threatening. They usually occur as complications of underlying pathologies such as pneumonia, sub-diaphragmatic abscess or oesophageal perforation. Empyema may complicate pneumonia in patients with Human Immunodeficiency Virus (HIV) or Acquired Immunodeficiency Syndrome (AIDS) in greater than 5% cases of

pneumonia [1].

HIV is a retro virus (lente) which infects CD4+T cells and macrophages and is ultimately responsible for AIDS. The reduced CD4 count diminishes the HIV patient's ability to fight infection hence the lungs are one of the chief target organs for HIV-associated disease and almost 70% of the patients suffer at least one respiratory complication during the course of their illness [2]. There is an enhanced prevalence of bronchial hyper-responsiveness and dysfunction of the small airways [3]. Calcifying Fibrous Pseudotumor (CFPT) is a known lung manifestation in HIV patients.

Pleural pseudotumor is a pleural lesion that appears like a tumor. It is often used to describe a focal collection of fluid in the pleura [4]. The term pseudotumor could also be used for atelectasis, pulmonary inflammatory pseudotumor [5], mucoid impaction [6], CFPT of the lung [7], epicardial fat pad, and fat within pleural fissures [9] and asbestos round atelectasis [9], CFPT, a benign fibrous pseudotumor of the lung, is a very rare benign lesion of the lung [10]. It is composed of hyalinised collagen with psammomatous-dystrophic calcification and a typical pattern of lymphocytic inflammation. CFPTs usually occur within soft tissues but have been described in the chest wall, pleura and rarely in the lung [7]. They are usually found incidentally while investigating for other reasons.

Some cases of cardiac failure with encysted pleural effusion could appear as a pseudotumor (vanishing pseudotumor of congestive cardiac failure) [11]. Pleural Mesothelioma [12] and Pulmonary

tuberculosis could also present with pleural thickening and calcifications [13] mimicking a pseudotumor. Pleural pseudotumor was published by Prof Frank Gaillard in 2010, in a patient who was proved to have pneumocystis jiroveci pneumonia and HIV.

The rarity of this condition and the antecedent complications during surgical diagnosis resulted the interest in this case.

### 3. Case Report

A thirty-eight year old HIV- positive woman, about 15 years post diagnosis, presented with three days history of cough. She had been previously treated for pulmonary tuberculosis several years back. Routine examination was normal. However follow up chest radiograph was requested and an incidental finding of a well circumscribed, pleural based, opaque mass in the right lower lung zone with calcifications was seen. This was confirmed on Computerized Tomography (CT) of the chest which showed a right mid thorax, pleural based, isodense mass with calcific densities (Figure 1), normal lung fields bilaterally and no pleural effusion or bony lesion seen. A radiological working diagnosis of Mesothelioma was made. Subsequently she had thoracotomy and biopsy.

Post thoracotomy, plain chest radiograph antero-posterior view showed a huge, heterogenous, right sided, pleural based mass, making an obtuse angle to the chest wall, convex to the midline with a high air fluid level. The mass spanned 3<sup>rd</sup> to 11<sup>th</sup> posterior ribs and occupied most of the right lung field. Histology however showed a Benign Fibrous Pseudotumour of the pleura. She was discharged on medications.

She presented again two weeks later with cough, breathlessness and easy fatigability with associated high grade fever and two episodes of vomiting. This time, examination revealed a young woman who was very pale, anicteric, afebrile, not dehydrated with no pedal oedema. Her blood pressure and heart sounds were normal but pulse rate was elevated. She was tachypnoeic with a respiratory rate of 36c/min. Percussion notes were dull over the right lung base with diminished air entry and breath sounds in the right middle and lower lung zones and crepitations in the right upper lung zone. Diagnoses of Anaemic Heart Failure with Pneumonia and secondary Septicaemia in an HIV patient were made by the physicians. Earlier chest ultrasound scan showed minimal collection in the right lung field.

Laboratory investigations showed low packed cell volume of 10% but normal clotting time. Repeat chest radiograph (Figure 2) showed a loculated collection in the right lung field with associated right lung collapse.

CT of the chest axial (Figures 3) showed a massive, oval, homogenous, isodense mass in the right hemithorax with convexity to the midline and multiple air fluid levels. A small remnant of compressed right lung is noted, the left lung field is normal.

Reconstructed coronal non contrast enhanced computerized scan of the chest showed a huge, oval, pleural based, homogenous mass in the right hemithorax with its convexity to the midline and multiple air-fluid levels. Associated mediastinal shift to the left is noted (Figure 4). She was re-admitted, transfused with three pints of blood, and treated with Rocephin injections, Azithromycin and Septrin tablets. She also underwent chest physiotherapy.

### 4. Discussion

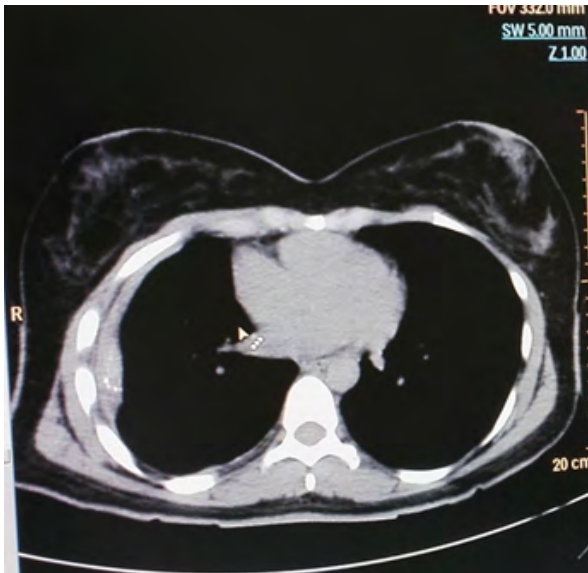
Pleural Pseudotumour represents several conditions mimicking lesions in the pleural cavity. They include Atelectasis, pulmonary inflammatory pseudotumor [1], mucoid impaction [2], Calcifying Fibrous PseudoTumor (CFPT) of the lung [3], epicardial fat pad, and can occur in the chest wall or soft tissue. This case was CFPT as seen in the Computerized Tomographic image.

They are usually found incidentally while investigating for other reasons as seen in this case.

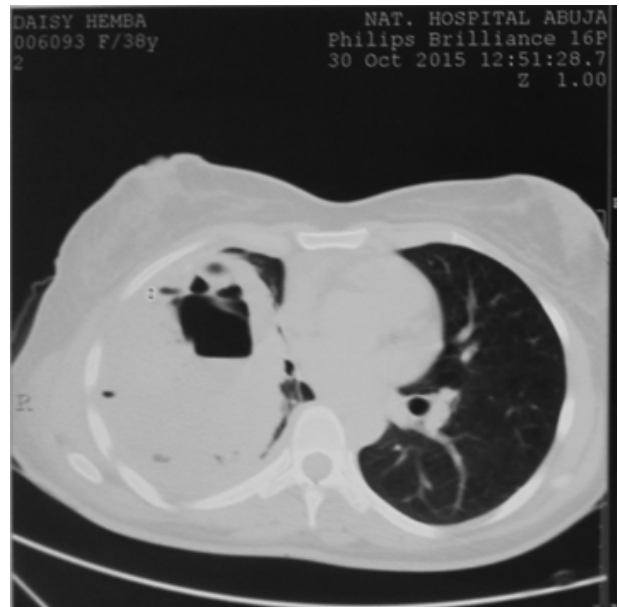
Appearances on chest radiograph (CXR) are similar to non-contrast enhanced computerized tomography (NCECT). Pseudotumors cause confusion on chest radiograph where they may appear as a solitary pulmonary mass. Thorough knowledge of the pleural fissures is important to diagnose this disease entity. A lateral projection is often very helpful. On NCECT, the mass was located along the pleural fissure and of fluid attenuation and formed an obtuse angle with the chest wall indicating a pleural mass. The chest radiograph of the case presented revealed a well circumscribed, pleural based, wedged shaped opacity in the right lower lung zone with internal calcifications. This was confirmed on Computerized Tomography of the chest (Figure 1). Histology showed Benign Fibrous Pleural Pseudotumor same as CFPT.

The follow up biopsy however complicated this pathology as the patient became breathless. Features of suspected postsurgical empyema/abscess was seen in this case (Figures 2-4). CEPT is not a known pulmonary manifestation in a HIV patient and was found incidentally in this patient, who already had been treated for Tuberculosis and suspected Kaposi sarcoma years before this presentation.

CFPT has non-specific symptoms if the mass is small as was in the initial presentation of this case. Pleural pseudotumor was published by Prof Frank Gaillard in 2010, in a patient who was proved to have pneumocystis jiroveci pneumonia and HIV. This patient probably presented like the one found by Professor Frank Gaillard. Also the empyema was probably due to the immune-compromised state of this HIV/old tuberculosis patient. Treatment is usually not necessary in CEPT. This case however developed symptoms during the confirmatory pathological tissue biopsy via thoracotomy, hence further management was mandatory. She was transfused three pints of blood and several antibiotics were administered.



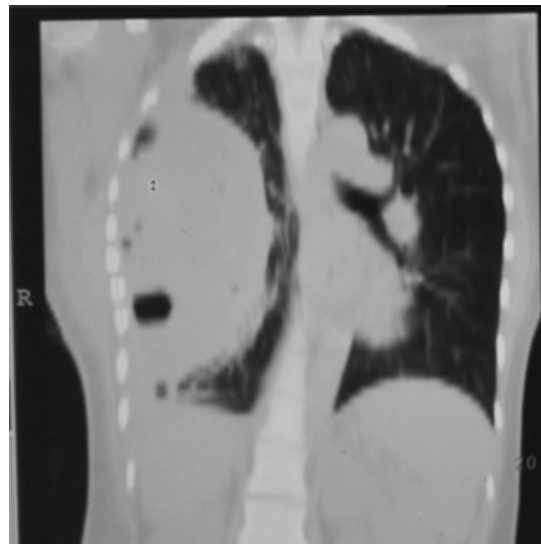
**Figure 1:** Axial non contrast enhanced computed tomographic scan of the chest showing a right mid thorax pleural based isodense mass with calcific densities (white arrow) incidental finding- pre thoracotomy.



**Figure 3:** axial non contrast enhanced computerized scan of the chest showing a huge, oval, homogenous, isodense mass in the right hemithorax with convexity to the midline and multiple air fluid levels. A small remnant of compressed right lung is noted, the left lung field is normal.



**Figure 2:** Post thoracotomy chest radiograph antero-posterior view showing a huge heterogenous right sided pleural based mass convex to the midline with a high air fluid level, spanning 3<sup>rd</sup> to 11<sup>th</sup> posterior ribs and occupying most of the right lung.



**Figure 4:** reconstructed coronal non contrast enhanced computerized scan of the chest showing a huge, oval, pleural based homogenous mass in the right hemithorax with its convexity to the midline and multiple air-fluid levels. Associated mediastinal shift to the left is noted.

### 5. Conclusion

Triple assessments utilizing clinical evaluation, radiological imaging and tissue biopsy are needed in the evidence-based management of pleural pathology especially in patients who are at risk of development of neoplasms.

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