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Case Report

Transudative Tuberculous Pleural Effusion Mimicking Massive Pericardial Effusion: A Case Report

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Abstract The presentation of a patient with a pleural effusion can range from an incidental finding to a serious condition, which can lead to being hemodynamically compromised. Here, we discuss a 24-year-old male with a history of childhood tuberculosis who presented with shortness of breath (SOB), a non-productive cough, and recent weight loss. On examination, he was dyspnoeic but alert. On echocardiographic evaluation, a massive effusion that looked like a massive pericardial effusion was seen, while a further CT scan of the thorax showed a massive unilateral left-sided pleural effusion. Although no tuberculosis (TB) was seen in the sample of thoracocentesis, the patient was referred to a TB centre because of a history of previous tuberculosis and recent weight loss. Pleural effusion and pericardial effusion can be differentiated using echocardiography. In conditions where it is impossible, further imaging, like computer tomography, may be needed to differentiate between them.

Keywords Pleural effusion; Tuberculosis; Pericardial effusion; Cardiac tamponade

Introduction

Pleural effusion is characterized by an abnormal accumulation of fluid between the wall of the chest cavity and the thin layers of tissue (pleura) lining the lung. A condition known as pericardial effusion occurs when excess fluid accumulates between the heart and the pericardium (the sac around the heart). In

the poor world, tuberculosis (TB) is the most frequent infectious cause of effusion. TB results in recurrent pericarditis and pleuritis, the ultimate causes of constructive pleuro-pericarditis. Any patient who presents with a moderate to significant pericardial effusion in Africa should have tuberculous pericarditis examined as a possible differential diagnosis (1, 2).

The first stage in the differential diagnosis or etiology for pleural fluid is determining if the patient has exudative or transudative pleural effusion (3).

Transudates (such as hepatic hydrothorax) can be brought on by increased hydrostatic pressures, such as those brought on by heart failure, decreased oncotic forces, such as those brought on by hypoproteinemia, increased negative intrapleural pressure, such as those brought on by atelectasis, or ascitic fluid moving through the diaphragm (4).

To make an echocardiographic diagnosis of pericardial effusions, a sonolucent circum cardiac space of variable dimension is generally seen. However, interpretation mistakes may arise if sonolucent regions close to the heart (pleural effusions, ascites, and pericardial cysts) are mistaken for pericardial effusions (5). In this example, only thoracocentesis was used to treat a large pleural effusion that seemed to be a pericardial effusion on echocardiography.

Case Report

A 24-year-old male came to the cardiology outpatient clinic with shortness of breath (SOB), a nonproductive cough for six days, and recent weight loss. He had a history of successfully treated tuberculosis in his childhood. Vital signs were unremarkable except for a SpO2 of 91%. On examination, he was dyspneic but otherwise alert. Bedside echocardiography showed massive effusion, which looked like pericardial effusion, and the patient was admitted for diagnostic and therapeutic pericardiocentesis. The admission electrocardiogram showed sinus tachycardia, and otherwise was normal (Figure 1). Basic laboratory tests like a complete blood count, liver function test, and renal and thyroid function tests were requested for further evaluation and showed normal results.

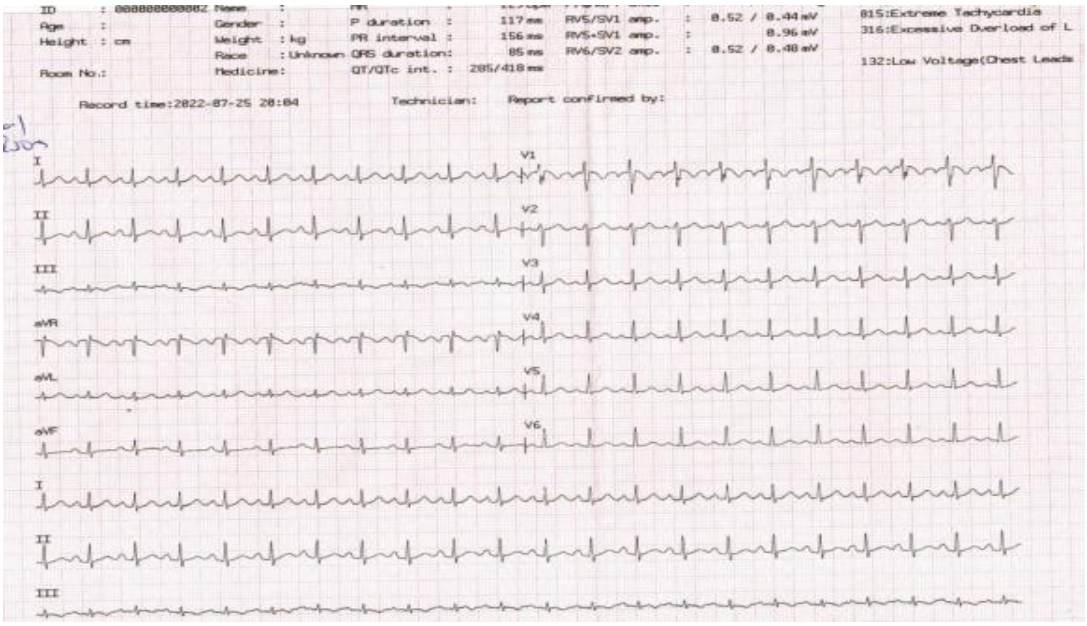

Figure 1. Electrocardiogram of the patient showing sinus tachycardia without low voltage

No drainage was seen during the procedure, so emergency echocardiography was performed again, revealing a large pleural effusion that mimicked a pericardial effusion with a swimming heart (Figure 2).

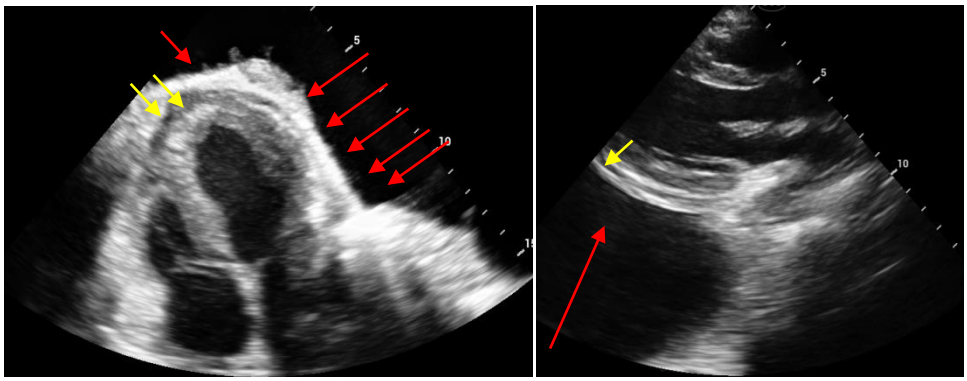

Figure 2. Echocardiography **A**: Para-sterna long axis four-chamber view Showing massive pleural effusion looking like pericardial effusion (red arrow) and minimal pericardial effusion (yellow arrow). **B:** Parasternal short-axis view minimal pericardial effusion (yellow arrow) and massive pleural effusion (red arrow).

A chest computed tomography was sent for additional evaluation of the effusion, which revealed diffuse parenchymal infiltration and tree-in-bud areas in the right lung upper lobe and posterior segment lower lobe. An effusion reaching 15 mm in the deepest part of the left lung was observed, and secondary to this, the left lung almost completely collapsed. Pleural thickening was observed in the right hemithorax. All the findings were compatible with post-primary tuberculosis reactivation in the first place (Figure 3).

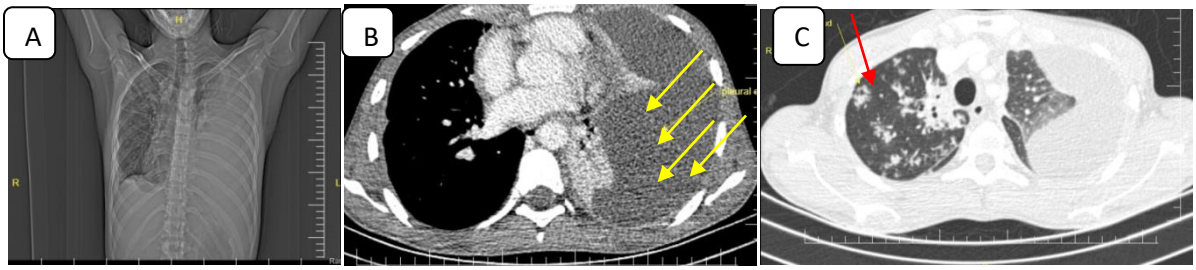

Figure 3. A: shows the collapse of the left lung with opacification**. B:** unilateral massive pleural effusion (yellow arrow). **C:** Tree-in-bud areas in the right lung upper lobe (red arrow).

Therapeutic thoracentesis was done under local anesthesia with drainage of 3 liters of fluid of the transudate type. The samples of pleural fluid microbiology and gene-expert testing were negative for TB. Five days later, a chest x-ray showed minimal pleural effusion, with no further collapse of the lung and no further swimming heart on echocardiography (Figure 4), and the patient was transferred to a TB center due to the high likelihood of TB from the history of previous TB and the CT scan report.

Discussion

The most common organ affected by the potentially severe infectious illness tuberculosis (TB) is the lung. By sneezing or coughing and dispersing microscopic droplets of germs into the air, people can spread TB to one another. Globally, an estimated 10.0 million people became sick with tuberculosis in 2019, with 1.2 million TB deaths among HIV-negative people and 208,000 deaths among HIV-positive individuals (6).

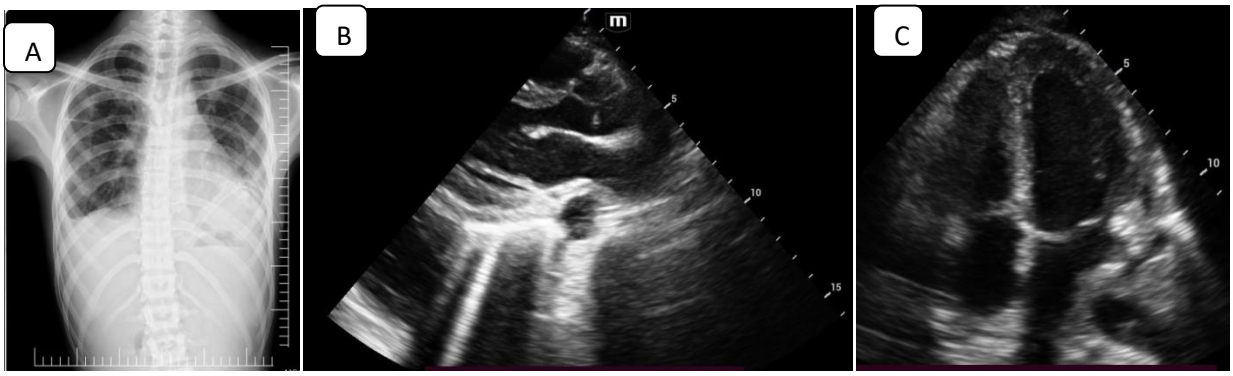

Figure 4. A: Discharge chest x-ray showing minimal pleural effusion. **B & C:** PSAX and APICAL 4 chamber view minimal pericardial effusion, respectively.

About 5% of those who have Mycobacterium tuberculosis infection get TB pleural effusion. Due to the HIV pandemic, the incidence of extrapulmonary TB has increased by 50% (7). TB pleural effusions, commonly unilateral and modest to moderate in size, typically constitute just slightly more than two-thirds of the hemothorax (8). The most prevalent form of extrapulmonary TB, tuberculous pleural effusion (TPE), often contains exudates that are mostly lymphocyte-based.

Fever, cough, and pleuritic chest discomfort are significant symptoms of TPE (9). As described in several case reports (10), it was transudative in our case, a rare instance of tuberculous pericardial effusion. In order to rule out probable causes, the biochemical analysis of pleural fluid appears to be the initial step in pleural effusion diagnosis (11). The accurate diagnosis of tuberculous pleural effusion (TPE) can frequently be challenging. Because TPE is a paucibacillary disease, mycobacterial culture-positive pleural fluid samples are unusual (1,12). A sample of our case was negative for tuberculosis.

Although a biopsy is an invasive procedure and not routinely performed, it frequently demonstrates the characteristic caveating granulomatous inflammation or even mycobacterium (13).

Although echocardiography is the preferred diagnostic imaging method for pericardial effusion assessment (5), massive pleural effusion can be confused with cardiac tamponade. Pleural effusion mimics pericardial effusion on TTE and is associated with echocardiographic complicates the diagnosis because it can occasionally be a sign of tamponade physiology (14).

Sometimes, sonolucent areas near the heart other than the left pleural effusion, such as the descending aorta, are misinterpreted as posterior pericardial effusions (2,15). Left pleural effusion, mitral annulus calcification, anterior mediastinal space-occupying lesions, fibrinous pericardial responses, and right heart catheters can all mimic pericardial effusion and must be carefully excluded (16).

Therefore, compared to other conditions that appear similarly on routine imaging, such as pleural effusions, lower lobe atelectasis, and mediastinal abnormalities, pericardial effusion can be distinguished with a CT scan (17).

Conclusion

Pleural diseases are widespread and significantly affect the prognosis of patients. Transudate tuberculosis pleural effusion should be suspected, especially in high epidemic areas. Early diagnosis and selection of the optimal management strategy can produce positive results and considerably lower rates of morbidity and mortality.

Ethical approval

Based on the regulations of the review board of the Mogadishu Somali Turkish Training and Research Hospital, institutional review board approval is not required for case reports.

Informed consent

Written informed consent was obtained from the patient to have the case details and any accompanying images published.

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