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Case Report

Tuberculous Pericarditis in an Immunocompetent Young Female: A Case Report

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Introduction

Tuberculous pericarditis is a rare extrapulmonary manifestation of tuberculosis (TB). Extrapulmonary tuberculosis occurs in 20% of TB cases with tuberculous pericarditis (TBP) representing 1-8% of them [1]. It often presents with vague symptoms. Pericardial effusion is the commonest [2]. Therefore, pericardial tuberculosis should be suspected in individuals with pericardial effusion in areas where TB is prevalent. TBP is usually found in immuno-compromised states. However, it can also affect immunocompetent individuals especially where tuberculosis is more prevalent. Comprehensive diagnostic evaluation, including pericardial fluid analysis and histopathology, is critical for accurate diagnosis. It is done by detecting the bacillus in pericardial fluid or through a biopsy Treatment typically includes a combination of antituberculous medications and corticosteroids to avoid complications like constrictive pericarditis [3].

Case Presentation

A 24-year-old female presented with intermittent, moderate-grade fever for two weeks. It was associated with a dry cough for the same duration. She had no significant past medical history or known immunocompromising conditions. On examination, she had a temperature of 38.4°C. Her blood pressure was 100/70 mmHg, heart rate 120 bpm, and oxygen saturation of 97%. Cardiovascular examination revealed distant heart sounds without murmurs with normal jugular venous pressure. Other systems examination was unremarkable. A clinical diagnosis of pericardial effusion was made. An urgent chest X-

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ray (Figure 1) showed cardiomegaly. Pericardial effusion was confirmed by 2D echocardiography (ECHO) (Figure 2)

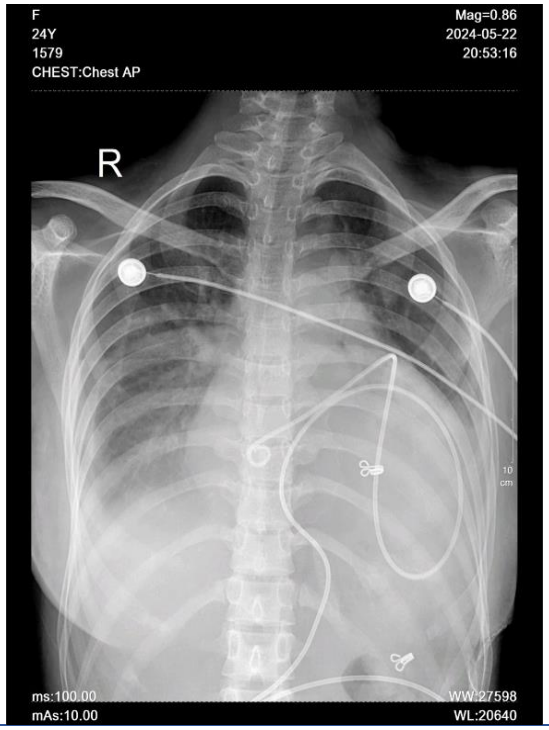

Figure 1: Chest X-ray demonstrating enlarged cardiac silhouette indicating pericardial effusion, pig tail catheter in situ

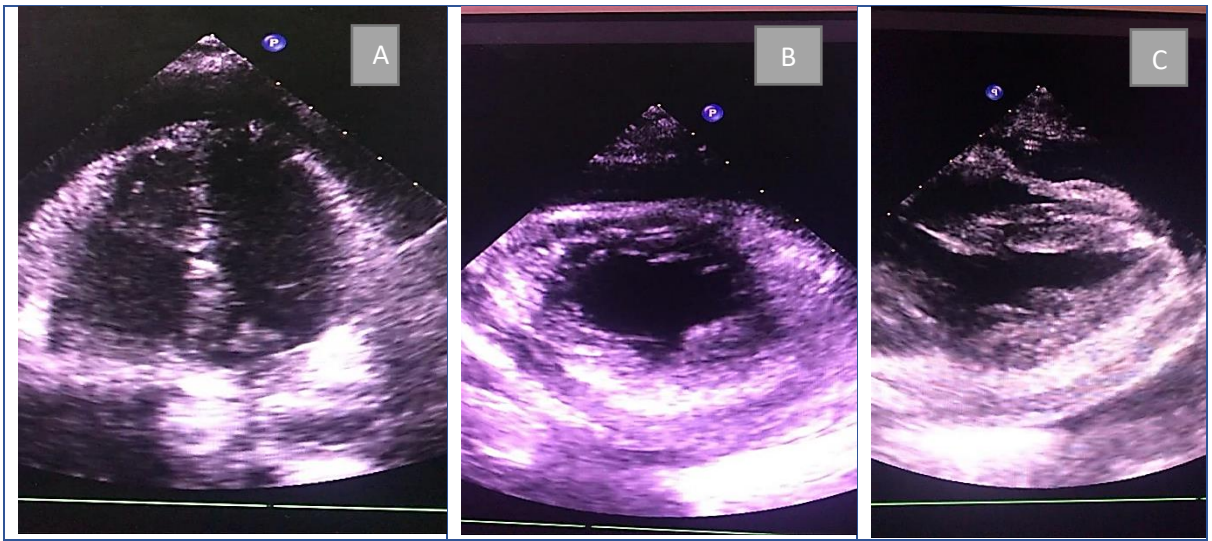

Figure 2: 2D echocardiography**.** A: apical chamber view B: parasternal short axis view C: parasternal long axis view showing large pericardial effusion

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The left ventricular ejection fraction was 60%, without segmental contractility disorders, with systolic right atrial collapse and right ventricular collapse in diastole with good left ventricular systolic function.

Pericardiocentesis was carried out at the same time with 450ml of blood-stained fluid drained under transthoracic ECHO guidance. Pericardial fluid was sent for analysis. Further laboratory investigations were carried out to identify the possible aetiology (Table 1).

Table 1- Hematological, Biochemical and Imaging Investigations

Investigation	**Value**	**Normal range**
Full Blood Count		
White Blood Cells	10.25	4.00 – 10.00×10^9/L
Neutrophils	69.2	50.0 – 70.0%
Lymphocytes	20.1	20.0 – 40.0%
Haemoglobin (Hb)	10.2	11-16mg/dL
Platelets	376	150 – 450×10^3/ µL
C Reactive Protein	178	<6mg/dL
ESR	100	12mm/1st hour
Procalcitonin	0.36 ng/ml	<0.05
LDH	220	125-220U/L
Urine full report		
Pus cells	1-2	
Red cells	Nil	
Albumin	Nil	
Liver functions		
Aspartate transferase (AST)	48	5-35U/L
Alkaline transferase (ALT)	67	0-55U/L
Alkaline phosphatase (ALP)	166	40-150 U/L
Total bilirubin	0.5	0.2-1.2mg/dL
Total protein	6.5	6.4-8.3g/dL
Albumin	2.3	3.5-5.2 g/dL
Serum creatinine	0.5	0.4-1.3mg/dL
Ferritin	178	5-204ng/ml
3 sputum samples for Acid Fast Bacilli	Negative	
TB sputum PCR	Negative	

TB sputum culture	Awaiting	
Mantoux test	4mm	<10mm
Blood culture	No growth	
Urine culture	No growth	
Sputum pyogenic culture	No growth	
Pericardial fluid analysis		
Appearance	Bloodstained/turbid	
Polymorphs	310	
Lymphocytes	2050	
Red cells	>10000	
Protein	4.9g/dl	
Glucose	34 mg/dL	
LDH	1471	
ADA Adenosine deaminase	2.1U/L	<40U/L
TB gene expert	Detected	
3 AFB samples	Not detected	
Bacterial culture	No growth	
Parvo B19DNA	Not detected	
Adenovirus PCR	Negative	
Entero virus RNA	Negative	
Cytology	Predominately neutrophilic infiltrate favoring pericarditis	
HIV	Negative	
ANA	Negative	
Rheumatoid factor	6	<14IU/mL
TSH	1.2	0.4-4mIU/L
12 lead ECG	Electrical alternance, low voltage complexes in precordial leads, and sinus tachycardia	
Ultra Sound Scan of abdomen	Normal	
CECT Chest Abdomen Pelvis	Pericardial effusion with maximum thickness about 1.8cm in the anterior pericardial space. No features of pulmonary tuberculosis in the bilateral lungs. No suspicious lesions in the chest and abdomen	

As the TB PCR of the pericardial fluid was positive, the patient was diagnosed with tuberculous pericarditis. Antituberculous therapy consisting of isoniazid, rifampicin, pyrazinamide, and ethambutol was initiated following consultation with a respiratory specialist. Simultaneously, oral prednisolone was started at a dose of 40 mg/day to prevent constrictive pericarditis. 1200 ml of pericardial fluid was drained during the hospital stay. The patient was discharged with a plan for continued outpatient

management, including anti-TB drugs and steroids. A follow-up 2D echocardiogram (ECHO) was scheduled in two months.

Discussion

TB is one of the most devasting clinical problems in South Asian countries like Sri Lanka. It is caused by *Mycobacterium tuberculosis* (MTB). TB pericarditis accounts for approximately 1-2% of TB cases worldwide, usually spreading from adjacent structures like the lungs or via hematogenous dissemination [1,2]. It is usually prevalent among immunocompromised, such as HIV positive individuals [4]. Pericardial effusion is the commonest manifestation, accounting for approximately 79%. It can be complicated with cardiac tamponade [5]. The diagnosis of TBP can be challenging in immunocompetent people because of the lack of symptoms and the chronic nature of the disease. Invasive tests like pericardiocentesis are essential for a definitive diagnosis. The pericardial fluid is often blood-stained (80% of cases) and exhibits exudative characteristics with high protein and elevated leukocyte counts, predominantly lymphocytes and monocytes [6]. ADA levels are important for diagnosis, with a cutoff of 35 U/L indicating a high likelihood of positivity (90%) [7]. GeneXpert *Mycobacterium* offers high diagnostic accuracy for detecting MTB in pericardial fluid, with a sensitivity of 72.2% and a specificity of 100% [8]. If pericardial fluid aspiration is difficult, we can consider pericardial biopsy which characteristically shows granulomatous inflammation characteristic of TB but is less sensitive [5].

A six-month course of ATT with a 2-month intensive phase and a 4-month continuation phase is recommended in TBP. It consists of rifampicin, isoniazid, pyrazinamide, and ethambutol for at least two months, followed by isoniazid and rifampicin for the rest [5]. Concurrent initiation of glucocorticoids over six weeks has been found to reduce the occurrence of constrictive pericarditis [9]. Early diagnosis and management are crucial to prevent complications like constrictive pericarditis or recurrent effusion.

Conclusion

Pericardial tuberculosis is an uncommon type of extrapulmonary tuberculosis that often presents as pericardial effusion. The diagnosis of TBP in immunocompetent patients needs a high index of suspicion. It should be considered in the differential diagnosis of pericardial effusion, regardless of immune status.

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