

Case Report

Rare manifestation of tuberculous pericarditis with normal inflammatory markers in a healthy young female

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Key words: tuberculous pericarditis, inflammatory markers, granuloma

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Received: 22 Jun 2024, accepted revised version: 08 Nov 2024, Published 26 Dec 2024

Competing Interests: Authors have declared that no competing interests exist

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Introduction

Tuberculous pericarditis (TBP) is a rare manifestation of tuberculosis caused by the *Mycobacterium tuberculosis* complex. About 20% of tuberculosis patients experience extrapulmonary tuberculosis, and TBP accounts for 1-8% of these cases. Additionally, it is found in 1% of all autopsied cases of tuberculosis and in 1-2% of pulmonary tuberculosis cases [1].

TBP is the leading cause of large pericardial effusion in developing countries. It is also the primary cause of constrictive pericarditis in adults, which has a poor prognosis and a high mortality rate. Early diagnosis and intervention for TBP are crucial in treating the disease and improving the prognosis [2].

Case Presentation

A 34-year-old woman from Galaha, who had an ASD device closure in 2018, presented with intermittent low-grade fever for 1 month accompanied by chills. She mentioned that the fever is sometimes relieved with paracetamol. She also complained of loss of appetite and a 5kg weight loss over the same duration.

She complained of central chest pain for 2 weeks, without radiation or autonomic symptoms. She also had dyspnoea (NYHA 3-4), orthopnoea and paroxysmal nocturnal dyspnoea. Additionally, she had painless, bilateral ankle swelling for the same duration. Her urinary output was normal, and there was no frothy urine or haematuria. There was no recent history of facial swelling or abdominal distention, intractable hiccups or pruritus. There was no heat intolerance, palpitations or fatigue. There was no history of

chronic diarrhoea, chronic cough, wheezing or haemoptysis. Moreover, there was no jaundice, abdominal distention, or dark urine.

On examination, she was afebrile but appeared unwell. She was mildly pale, tachypnoeic, and tachycardic with a low volume pulse and a blood pressure of 110/70. Her jugular venous pressure (JVP) was elevated, and she had muffled heart sounds. There was reduced chest expansion and stony dullness with decreased air entry in the lower zones of both lungs; however, other zones were normal. Abdominal, neurological and fundus examination were normal.

The electrocardiogram (ECG) showed small complex sinus tachycardia (Figure 1), while the full blood count revealed normocytic normochromic anaemia with a hemoglobin level of 10.1g/dL, mean corpuscular volume (MCV) of 80.8, mean corpuscular haemoglobin (MCH) of 25.7, and mean corpuscular haemoglobin concentration (MCHC) of 31.3. The white blood cell count was $8.7 \times 10^9/L$, and platelet count was $306 \times 10^9/L$, both within normal limits.

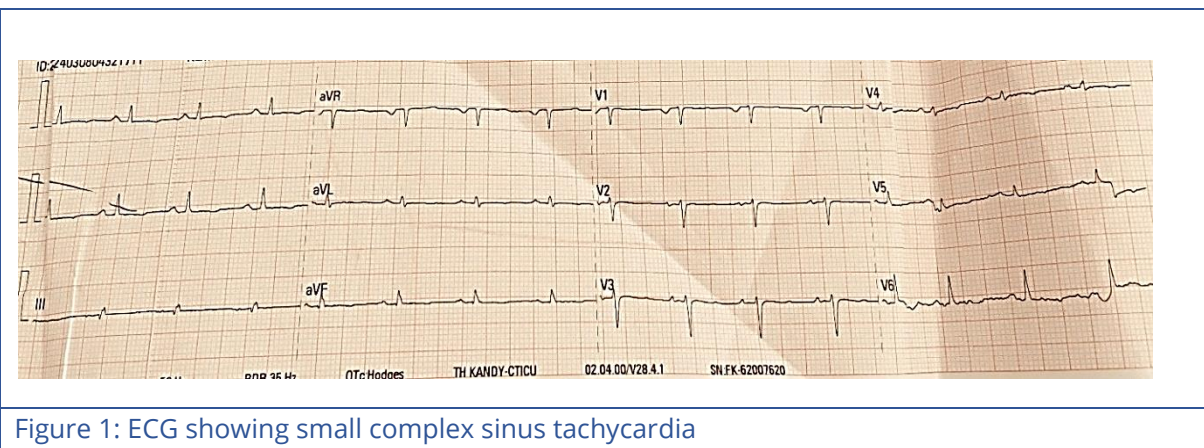


Figure 1: ECG showing small complex sinus tachycardia

Inflammatory markers CRP and ESR were within normal limits at 28 mg/dL and 17 mm/h, respectively. The blood analysis suggested anaemia of chronic disease without any abnormal cells. Urine analysis results were normal. The chest X-ray showed bilateral pleural effusion and cardiomegaly (Figure 2). The 2D Echo revealed a significant chronic pericardial effusion with an ejection fraction of 45% (Figure 3 and 4). The thyroid function test, basic renal function, and liver function were all within normal ranges.

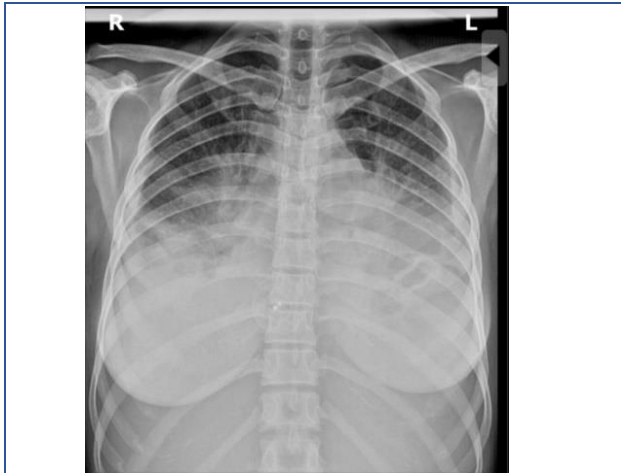


Figure 2: Chest X-ray showing bilateral pleural effusion with cardiomegaly



Figure 3: 2D-Echo showing chronic pericardiac effusion



Figure4: 2D-Echo showing chronic pericardiac effusion

An ultrasound-guided pericardiocentesis was performed and the full report indicated haemorrhagic effusion. The level of adenosine deaminase (ADA) in the pericardial fluid was found to be high (104, when it should be less than 30), confirming a diagnosis of TBP, with a positive MTB gene Xpert test and caseating granuloma in pericardiac biopsy. (Figure 5). The patient was started on anti-tuberculous drugs with steroids and transferred to the respiratory ward for further management.

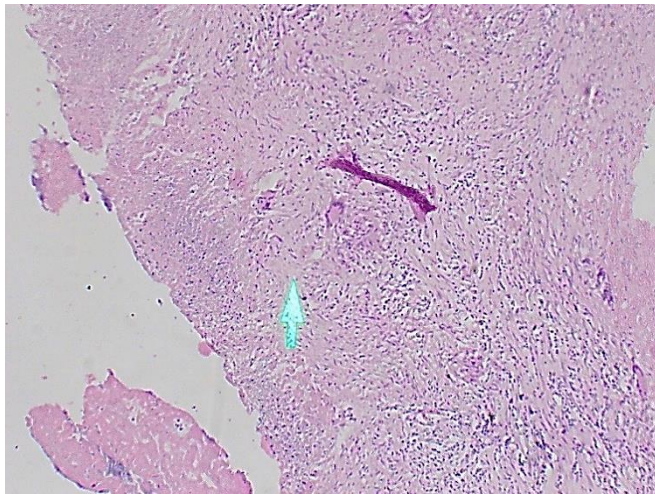


Figure 5: Green arrow indicating caseating granuloma in the pericardiac biopsy

Discussion

In 2020, the World Health Organization reported that 10 million people were infected with tuberculosis (TB). The regional prevalence was as follows: Southeast Asia - 43%, Africa - 25%, and Western Pacific - 18%. In 2023, 9538 cases were identified in Sri Lanka, with the highest number of cases in the Western Province, mainly in the Colombo District. In 2022, there were 747 deaths related to TB.

TBP accounts for 1% of all forms of TB [3]. In endemic regions, TBP accounts for 50-90% of pericardial effusion. There is a high prevalence among HIV patients, with 17-40% of them dying within 6 months of diagnosis [2].

TBP encompasses a range of conditions, including acute pericarditis (lasting less than 6 weeks), chronic pericardial effusion, cardiac tamponade and pericardial constriction (lasting more than 6 months). The stages of TBP are categorized as the dry stage, effusive stage, absorptive stage and constrictive stage [4,5]. Disease can progress sequentially through stages 1-4 or present at any stage. The earliest recognizable phase is clinically present in three forms: pericardial effusion, constrictive pericarditis or a combination of effusion and constriction [4,5].

The clinical features of this condition mainly occur in middle-aged and immunocompromised individuals. The symptoms depend on the stage and severity of the disease and may include insidious onset fever (84%), night sweats (56%), cough (94%), vague chest pain that is pleuritic and relieved by sitting up and leaning forward (76%), loss of appetite and weight loss (48%) dyspnoea (88%), orthopnoea, PND (80-88%) and ankle oedema [4]. Other signs may include sinus tachycardia, pulsus paradoxus (indicative of tamponade) (23-71%), elevated JVP with rapid y descent, Kussmaul's sign (lack of inspiratory JVP decline), impalpable apex (indicative of effusion), pericardiac rub

(37-84%), muffled heart sound (indicative of effusion), pulsatile hepatomegaly, ascites, and peripheral lymphadenopathy (13-28%) [4].

The following tests are used to investigate TBP: ECG may show sinus tachycardia, PR segment deviation, concave ST elevation or low voltage complexes with electrical alternans. 2D Echo may reveal fibrinous strands on the visceral pericardium. Chest X-ray may show cardiomegaly. The Mantoux test is 85% sensitive in immunocompetent individuals [6].

The inflammatory markers ESR and CRP are usually elevated, with ESR being more elevated. However, there have been case reports of normal inflammatory markers, similar to our case [1,2,6].

Pericardial fluid analysis may show exudative fluid with a high lymphocytic count and high LDH, with 80% of cases being haemorrhagic. AFB on ZN stain has a sensitivity of 0-42%. The ADA test has a sensitivity of 90% and specificity of 74% (cutoff >35U/L). TB PCR and Gene Xpert have a sensitivity of 68% and specificity of 99%. IFN gamma test has a sensitivity of 97% and specificity of 99%. Pericardiac biopsy has a 50-60% positive rate on culture and a 70% positive rate on histology. Cardiac CT and MRI, as well as cardiac catheterization, may also be performed [6,7].

Treatment includes anti-TB medication, steroids, and pericardiectomy. This significantly reduces mortality (80-90% to 8-17%) and the likelihood of constrictive pericarditis (88% to 10%). The drug regimen is the same as for pulmonary TB, and steroids are beneficial for constrictive pericarditis and large effusions [8]. For adults, oral prednisolone 60mg/day for 4 weeks, followed by 30mg/day for 4 weeks, then 15mg/day for 2 weeks and 5mg/day for 1 week. Pericardiectomy is recommended for persistent constrictive pericarditis despite treatment, especially in cases where haemodynamics fail to improve and there is evidence of pericardiac calcification. This approach is favored for all patients with constrictive pericarditis [5,9].

Conclusion

TBP is a rare disease that requires a high index of suspicion, even in the presence of normal inflammatory markers. Timely and thorough evaluation is necessary to make a proper diagnosis. Early treatment should always be considered to prevent complications

References

1. Jayasinghe P A, Jayasekara R T, Fernando A. Case series of tuberculous pericarditis treated at central chest clinic borella.Vol.01,Sri Lankan journal of cardiology.2019.p.84-6. Available from: 17-Case-series-of-Tuberculous-pericarditis-treated-at-Central-Chest-Clinic-Borella.pdf
2. Wang S, Wang J, Liu J, Zhang Z, He J, Wang Y. A case report and review of literature: Tuberculous pericarditis with pericardial effusion as the only clinical manifestation. Front Cardiovasc Med. 2022 Nov 2;9. <https://doi.org/10.3389/fcvm.2022.1020672>

3. Global Tuberculosis Programme. Latent tuberculosis infection : updated and consolidated guidelines for programmatic management. 64 p.
4. Cherian G. Diagnosis of tuberculous aetiology in pericardial effusions. Vol. 80, Postgraduate Medical Journal. 2004. p. 262-6.
<https://doi.org/10.1136/pgmj.2003.013664>
5. Fanning A. Tuberculosis: 6. extrapulmonary disease. Cmaj. 1999 Jun 1;160(11):1597-603.
6. Reuter H, Burgess L, van Vuuren W, Doubell A. Diagnosing tuberculous pericarditis. QJM: An International Journal of Medicine. 2006;99(12):827-39.
<https://doi.org/10.1093/qjmed/hcl123>
7. Strang JIG, Wilkins EGL. Serodiagnosis of pericardial tuberculosis [Internet]. Vol. 88, QJMed. 1995. Available from:
<https://academic.oup.com/qjmed/article-abstract/88/5/317/1588121>
8. Senarathna HM, Fonseka CL, De Silva PUT, Bodinayake CK. Empirical treatment for suspected Tuberculous pericarditis -When is it justifiable? Journal of the Ruhunu Clinical Society. 2019 Dec 13;24(1):71-6. <https://doi.org/10.4038/jrcs.v24i1.73>
9. Heller T, Lessells RJ, Wallrauch C, Brunetti E. Case report: Tuberculosis pericarditis with cardiac tamponade: Management in the resource-limited setting. American Journal of Tropical Medicine and Hygiene. 2010 Dec;83(6):1311-4.
<https://doi.org/10.4269/ajtmh.2010.10-0271>