

INTRAMYOCARDIAL TUBERCULOSIS: AN INCIDENTAL FINDING ON AUTOPSY

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INTRODUCTION

TB is a major cause of mortality and morbidity worldwide and has been identified as a global emergency by WHO.^[1] According to global tuberculosis report 2018, 10 million people worldwide developed TB in 2017, of which 5.8 million were men, 3.2 million were women and 1 million were children. The term Miliary TB is derived from the latin word "Miliarius" meaning millet seed, depicting granulomas of a size of millet seed (1-2mm) in various organs affected by tubercle bacilli. This term was coined by John Jacob Manget in 1700.^[2]

TB rarely involves the heart, and when it does, it mostly affects the pericardium leading to pericardial effusion or myopericarditis. TB myocarditis is extremely rare, the first ever reported case of myocardial TB was by Maurocordat in 1664 followed a century later by Morgagny in 1761. The reported incidence of myocardial TB is 0.14%, 0.2% and 2% in various series. The condition presents with sudden cardiac death, arrhythmias and congestive cardiac failure. The first reported case of sudden cardiac death due to TB was in 1977 by behr et al.^[3,4,5]

CASE REPORT

A 60 year old male was brought for autopsy after he was declared dead in the hospital due to an unknown cause. On detailed examination, the patient was found to have an unknown sickness from the past 7-8 months. However, HIV status was not ascertained. The patient was admitted to primary health care centre and expired in a few hours after admission to the hospital.

The deceased was a male of average built, weighed 60 kgs with no external signs of injury. Rigor mortis was present all over the body and postmortem staining in the dependant areas.

Post mortem was performed in order to determine the cause of death. Whole heart and portions of lung, liver, spleen and kidney were sent for histopathological examination.

Grossly, Heart weighed 380gm and showed grey white nodules on the all over its external surface. On cut sectioning, myocordium was studded with similar grey white nodules.

Each lung weighed 7 gm and showed grey white nodules at the outer as well as on cut section. Similar findings were seen on both the surfaces of liver, spleen and kidney.

On Microscopy, microsections examined from various portions of heart showed extensive areas of necrotizing granulomatous inflammation involving myocardium along with features of pericarditis. Sections examined from lung, liver, spleen and kidney also showed extensive areas of necrotizing granulomatous inflammation.

Staining for Acid fast bacilli using ZN stain was positive. Based on the above autopsy findings, we determined that the cause of death was Disseminated Tuberculosis - involving Heart, Lung, Liver, Spleen and kidney.



Fig 1: H&E section 10x : caseating granulomatous inflammation in heart.

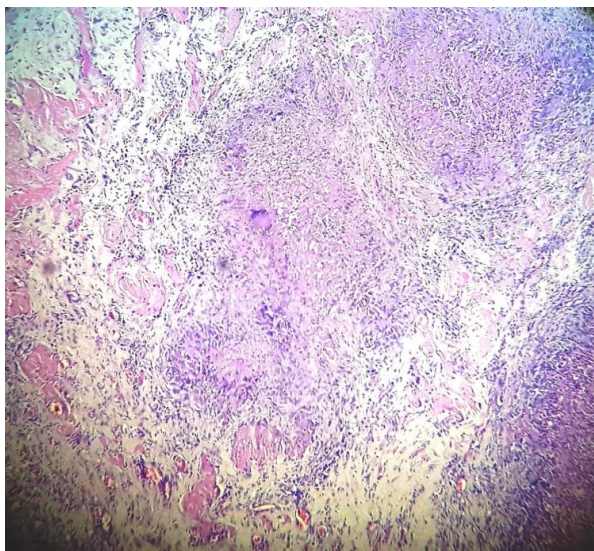


Fig 2: H&E 40x- caseating necrotizing granulomas in myocardium.



Fig 3: Gross showing heart specimen studded with tubercles on external surface and on cut section.

DISCUSSION

The hallmark of mycobacterium infected tissue is necrotizing granulomatous inflammation comprising of a central necrotic zone surrounded by epithelioid histiocytes and variable number of lymphocytes and multinucleated giant cells.^[6] The three types of pattern of myocardial involvement in TB that have been described are diffuse infiltrative, caseating nodular and miliary.^[3]

Despite various advancements in the field of medicine, mycobacterium remains a major cause of morbidity due to its ability to invade almost every organ of the body.^[3] However, organs such as pancreas, thyroid, heart and skeletal muscle are rarely affected by TB. The reasons for relative sparing of heart (particularly myocardium) is due to protective effect of lactic acid produced by muscular activity of the myocardium and constant

movement of myocardium which makes it non-conductive for lodgement of tubercle bacilli.^[4,5]

Another hallmark feature of the disease is the difficulty in diagnosis. As a result, it is often detected late or at post-mortem, like in our case. Spread of TB to myocardium can occur by hematogenous seeding, lymphatic spread from mediastinal lymph nodes and direct spread from the pericardium.^[3]

Liu et al proposed a system of classification for diagnosing myocardial TB using major and minor criteria.^[4]

Major criteria include:

- Positive PCR on myocardial tissue.
- Positive TB culture from myocardial tissue sampling.
- Positive acid fast bacilli on myocardial tissue.

Minor criteria include:

- Granulomata in myocardial tissue
- Miliary TB in more than one organ
- A positive radiological image (MRI)

Presence of two or more major criteria or a major and two or more minor criteria will justify the diagnosis of myocardial TB.^[4]

Our study also justify the diagnosis of myocardial TB with fulfilment of one major and two minor criteria. Therefore we support the proposed diagnostic criteria to assist in standardisation of the diagnosis.^[4]

Other infective diseases that present as granulomatous inflammation within the myocardium include viral, fungal, bacterial infections, parasitic infestation and Whipple's disease.^[4]

CONCLUSION

In the present case, disseminated TB was an incidental finding at autopsy which emphasises the difficult nature of diagnosis of this condition. Treatment with antitubercular drugs has shown better clinical outcome in TB myocarditis therefore accurate diagnosis and prompt treatment could aid in improving the outcomes in future.

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