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Pericardial Tuberculosis: Insights from Post - Mortem Examination, a Retrospective Duration Based Study

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Abstract: ***Pericardial tuberculosis (TB) is a rare but serious manifestation of TB. Post - mortem examination is a valuable tool for studying the pathological features of pericardial TB. In this retrospective study, we aimed to describe the gross and microscopic findings of pericardial TB in a series of cases diagnosed post - mortem. Our results showed that caseating granulomas were the most common finding. This study highlights the importance of considering pericardial TB in the differential diagnosis of pericardial diseases, especially in areas with high TB prevalence.***

Keywords: pericardial tuberculosis, post - mortem examination, retrospective study, caseating granulomas, autopsy findings

1. Introduction

Pericardial tuberculosis (TB) is a rare but potentially fatal manifestation of extra pulmonary tuberculosis. It occurs when the bacterium Mycobacterium tuberculosis infects the pericardium, the membrane surrounding the heart. It can lead to a variety of clinical manifestations, including pericarditis, pericardial effusion, and constrictive pericarditis. In this study, we aimed to gain insights into pathology of pericardial tuberculosis, through a retrospective duration - based study.

2. Methodology

We conducted a retrospective study of patients diagnosed with pericardial TB between January 2019 to December 2022. The study population comprised patients who underwent post - mortem examination at our hospital B. J. Medical College and Civil Hospital Ahmedabad. Data were collected from the medical records and autopsy reports. Gross and histopathological findings were analysed. Grossly, pericardial tuberculosis can present with a variety of features depending on the stage of the disease. In the early stages, there may be minimal or no changes visible on gross examination. However, as the disease progresses, several gross features may become apparent.

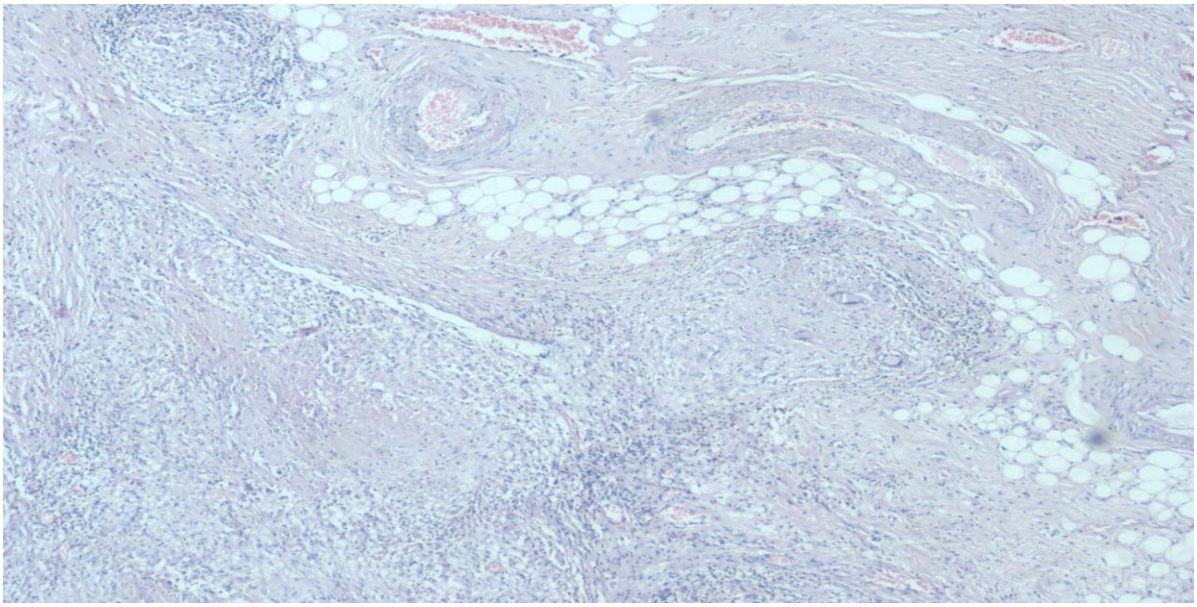
1) Pericardial effusion: The most common gross feature of pericardial tuberculosis is the presence of pericardial effusion, which can range from minimal to massive. The effusion may be clear or turbid, and can contain fibrin deposits or caseous material.
2) Thickened pericardium: In chronic cases of pericardial tuberculosis, the pericardium may become thickened and fibrotic, resulting in a "leathery" texture. The thickening may be localised or diffuse and can lead to constrictive pericarditis.
3) Granulomas: Grossly visible granulomas may be present on the surface of the pericardium or within the pericardial effusion. These granulomas are usually small and yellow - white in colour, with a firm consistency.
4) Adhesions: As the disease progresses, the pericardium may become adherent to the epicardium, resulting in the formation of fibrous adhesions. These adhesions may be focal or diffuse and can lead to constrictive pericarditis.
5) Caseous material: In some cases, the pericardial effusion may contain caseous material, which can be visible on gross examination as yellowish - white clumps or nodules.

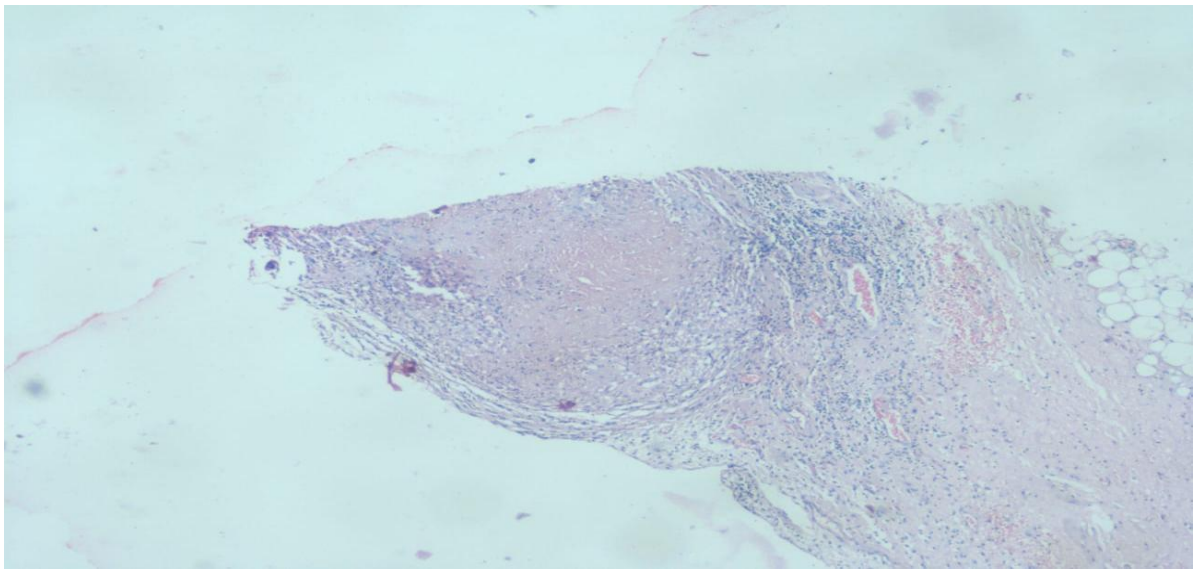
Multiple tubercles are present along the surface of myocardium and pericardium, largest tubercle measuring 4.2 x 3.4 cm

In summary, the gross features of pericardial tuberculosis can vary depending on the stage of the disease, but commonly include pericardial effusion, thickened pericardium, granulomas, adhesions, and caseous material. A thorough gross examination, along with histopathological examination, is necessary for accurate diagnosis of pericardial tuberculosis.

Microscopically, the hallmark of pericardial tuberculosis is the presence of caseating granulomas, which are aggregates of activated macrophages (epithelioid cells) surrounded by a rim of lymphocytes, plasma cells, and fibroblasts. The centre of the granuloma undergoes necrosis, which gives rise to the term "caseating granuloma". In addition to caseating granulomas, other microscopic features of pericardial tuberculosis may include:

1) Acid - fast bacilli (AFB): The causative agent of tuberculosis, Mycobacterium tuberculosis, is an acid - fast bacillus that can be visualised on microscopic examination using special staining techniques such as Ziehl - Neelsen stain or Auramine - rhodamine stain. AFB may be present within the caseating granulomas or in the surrounding tissue.
2) Fibrin deposition: In acute cases of pericardial tuberculosis, fibrin deposition may be seen on the surface of the pericardium or within the pericardial space. Fibrin is a protein that is involved in blood clotting and can accumulate in response to inflammation.
3) Epithelial cell granulomas: In some cases of pericardial tuberculosis, the granulomas may be composed predominantly of epithelioid cells and lack the typical rim of lymphocytes and fibroblasts. These are called "epithelial cell granulomas" and are more commonly seen in immunocompromised patients.
4) Vasculitis: In rare cases, pericardial tuberculosis can be associated with vasculitis, which is inflammation of the blood vessels. Vasculitis may be seen on microscopic examination as infiltration of inflammatory cells within the vessel wall.





Section shows cardiac tissue with congestion and focal areas of epithelioid cells with lenghan's type giant cells with granuloma s/o caseating Koch's granuloma.

In summary, the microscopic findings of pericardial tuberculosis include caseating granulomas, fibrin deposition, epithelial cell granulomas, and vasculitis.

3. Results

We identified 5 patients with pericardial TB. The mean age was 38 years, and 80% were male. The most common symptoms were fever, chest pain, and dyspnea. The histopathological findings showed cardiac tissue with changes of congestion with collection of inflammatory cells and necrotic background, epithelioid cells with langhans type giant cells and caseating koch's granuloma.

4. Discussion

Pericardial TB is a rare but important manifestation of extrapulmonary TB. A high index of suspicion is necessary for early diagnosis and prompt treatment. The duration of symptoms before diagnosis in our study was longer than that reported in other studies, which may reflect delays in diagnosis and treatment. The presence of caseous necrosis highlights the importance of histopathological examination in the diagnosis of pericardial TB.

5. Conclusion

Pericardial TB is a rare but potentially fatal manifestation of extrapulmonary TB. Early diagnosis and prompt treatment are essential for favourable outcomes. Our study highlights the importance of a high index of suspicion, thorough evaluation, and histopathological examination in the diagnosis of pericardial TB. Further studies are needed to improve the diagnosis and management of this condition.

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