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Mycobacterial Diseases

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Opinion Article

Recent Developments in the Diagnosis of Tuberculous Pericardial Effusions

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DESCRIPTION

Tuberculous Pericardial Effusion (TPE) is still common in African and Asian countries, but with migrant populations and the spread of AIDS, reports from other parts of the world, such as Europe and the Western hemisphere, are becoming more common. TPE typically manifests as a slowly progressing febrile illness. The diagnosis is more likely to be delayed or missed if it presents as acute pericarditis, which is uncommon, or as cardiac tamponade, which is common. In one report from Spain, the time from hospital admission to diagnosis was 5.2 weeks, while in another from the United States, the diagnosis was made only at necropsy in 17% of patients. Other causes of large effusions include malignant, viral, and chronic idiopathic effusions. Effusions associated with cancer are usually, but not always, visible at the time of presentation. Chronic idiopathic effusions with no aetiology are a common cause of tamponade in countries such as the United Kingdom, France, and the United States, with reported incidences ranging from 11% to 32%.

The diagnosis of tuberculous aetiology in pericardial effusions is critical because the prognosis with specific treatment is excellent. The clinical features may be indistinguishable, and the diagnosis may be missed, especially in the case of tamponade. The spread of HIV infection has increased the incidence. The diagnosis is largely based on histopathology of pericardial tissue or culture of *Mycobacterium tuberculosis* from this tissue or fluid, but pericardiocentesis is not required in patients who do not have haemodynamic compromise. Histopathology, on the other hand, may reveal non-specific findings in a significant number of cases.

Pathogenesis of tuberculous pericarditis

The pericardium can be involved in tuberculosis in a variety of ways. In rare cases, tuberculous pneumonia can be transmitted directly. In miliary tuberculosis, the pericardium can be seeded, and in such cases, other organ systems dominate the presentation. It is uncommon to see direct extension from an infected visceral pleura or rib. Most often, infection spreads from mediastinal nodes directly into the pericardium, particularly those near the tracheobronchial bifurcation. The spread occurs through lymph channels that connect where the parietal pericardium and the pleura separate.

Developments in the diagnosis of TPE

Polymerase chain reaction (PCR): PCR technology has been used for nucleic acid amplification in tuberculosis diagnosis. In the diagnosis of TPE, PCR, culture, and histopathology were compared. IS6110-based primers specific for the *Mycobacterium tuberculosis* complex were used in PCR on both pericardial fluid and tissue. They concluded that the overall accuracy of PCR was comparable to that of conventional methods, despite the fact that PCR was faster. The sensitivity for pericardial fluid was low, and false positive PCR results are still a concern.

Serodiagnosis: It was used a monoclonal antibody (CDC/WHO reference number IT39) raised against a specific epitope on the *Mycobacterium tuberculosis* 30 kDa antigen. Except for one patient, all sputum microscopies for acid fast bacilli were negative. The sensitivity was 61% (with a specificity of 96%). This technology is unlikely to see widespread use. According to a more recent study, there is a wide clonal heterogeneity of antigen specific $CD4^{+}$T-cells that localise at the site of disease during tuberculosis.

CONCLUSION

Tuberculosis is a major cause of pericardial effusion in Afro-Asian countries, and with the spread of HIV infection, the incidence is increasing globally. The use of PCR technology, improved techniques for *Mycobacterium tuberculosis* recovery, observations on mediastinal lymph nodes on chest computed tomography, and more clearly defined observations on echocardiography have all been significant recent developments.

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