



## Pericardial effusion

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A 36-year-old woman presented with a two-month history of dry cough, retrosternal pain, episodes of low fever, and dyspnea on heavy exertion. An echocardiogram showed a moderate pericardial effusion (PE) and leaflet thickening. A chest CT scan revealed PE and small nodules in the left upper lobe, demonstrating the tree-in-bud pattern (Figure 1).

PE is an acute or chronic accumulation of fluid in the pericardial sac. In a healthy individual, the pericardial sac contains between 15 and 50 mL of serous fluid. The pericardium has limited elasticity and, in acute settings, only 150-200 mL of fluid is necessary to cause cardiac tamponade. In chronic settings, PE may become 1-2 L in size before it causes cardiac tamponade, as long as the accumulation is gradual and the parietal pericardium has adequate time to stretch and accommodate the increased volume.<sup>(1,2)</sup>

CT can be useful not only in identifying unsuspected PE but also in providing important information about mediastinal or pulmonary abnormalities that can be a guide to etiological diagnosis. Transthoracic echocardiography is the imaging test of choice for diagnosing PE, quantifying volume, and guiding pericardiocentesis.

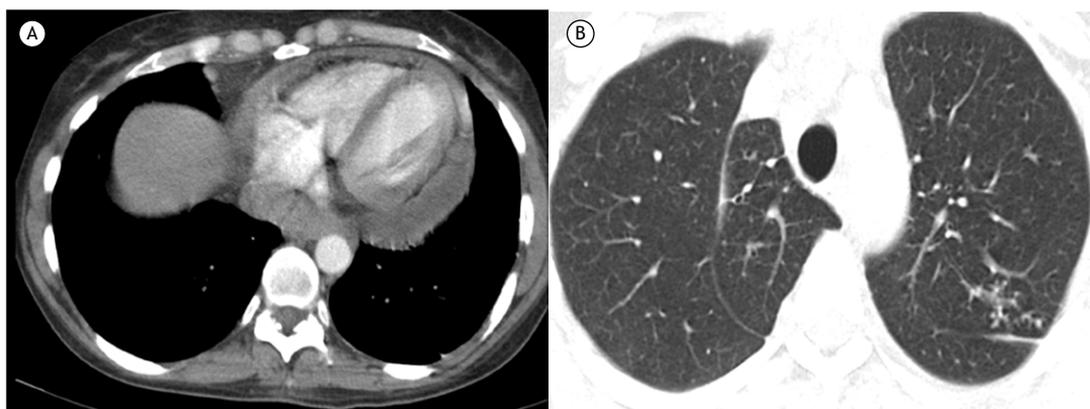
PE can be classified by etiology as infectious, inflammatory, neoplastic, traumatic, cardiac, vascular, idiopathic, or other. Infectious PE can have a viral, bacterial, fungal, or parasitic etiology.<sup>(1)</sup>

PEs are asymptomatic per se unless they cause cardiac tamponade. Tuberculous PE usually develops insidiously, causing nonspecific systemic symptoms, such as fever, night sweats, fatigue, and weight loss. Chest pain, cough, and dyspnea are common.

The patient underwent pericardiocentesis. The pericardial fluid sample was negative for AFB, but the adenosine deaminase (ADA) level was 70 U/L. The patient was started on tuberculosis treatment on the basis of the clinical picture, the CT appearance of the lung lesion, and the high ADA level in the pericardial fluid. She responded well to tuberculosis treatment.

A definitive diagnosis of tuberculous pericarditis is based on demonstration of *Mycobacterium tuberculosis* (direct examination or culture) in pericardial fluid or in a biopsy specimen of the pericardium. A probable diagnosis is made if pericarditis is accompanied by evidence of tuberculosis elsewhere in the body, if pericardial fluid ADA levels are high, or if there is an appropriate response to antituberculosis chemotherapy.<sup>(1,2)</sup>

In patients suspected of tuberculous pericarditis, measurement of ADA levels should be mandatory, because waiting for pericardial fluid culture results, which not always are positive, can significantly delay the diagnosis. Early diagnosis and institution of appropriate therapy are essential to prevent mortality.



**Figure 1.** In A, an axial CT slice viewed at mediastinal window settings shows a fluid density collection involving the heart (pericardial effusion). In B, an axial CT slice viewed at parenchymal window settings shows nodular opacities in the upper lobe of the left lung, demonstrating the tree-in-bud pattern.

### REFERENCES

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