

A Case of Prominent Epicardial Fat Mimicking a Tumor on Echocardiography

Epicardial fat may anteriorly produce an echo-free space that can be mistaken for pericardial fluid. We recently experienced a 67-year-old woman with prominent epicardial fat which was presented as an echogenic tumor-like mass. She underwent open pericardiostomy to relieve large amount of pericardial effusion. Operative findings revealed only prominent epicardial fat. Biopsy of the pericardial and fat tissues revealed an inflammation and normal fat cells without any malignant cell infiltration.

Key Words: Pericardium; Echocardiography; Fats

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INTRODUCTION

Excessive subepicardial deposition of fat is one of the common causes mimicking pericardial effusion because it commonly appears as an echo-free space. But, rarely is it presented as an hyperechoic area.

We hereby report a patient with prominent epicardial fat which was misdiagnosed as an echogenic mass.

CASE REPORT

A 67-year-old woman presented with dyspnea and chest discomfort. Her history was unremarkable except for previous appendectomy and hysterectomy. Physical examination revealed jugular venous distention, distant heart sounds, and bilateral basilar crackles upon inhalation. On arrival, blood pressure was 110/70 mmHg, pulse 80/min, and respiration 18/min. Chest x-ray revealed an enlarged cardiac silhouette (Fig. 1). Twelve-lead ECG illustrated low voltages in the frontal leads. Routine laboratory findings were within normal limits. ESR was 87 mm/hr and CRP was 5.7 mg/dL. Two-dimensional echocardiography showed normal left ventricular wall motion as well as large anterior and posterior echo free

spaces, diastolic invagination of the right ventricular and atrial wall, and echogenic area along the entire pericardium (Fig. 2A, apical view; 2B, subcostal view). Chest CT revealed a thickened low attenuated band-like lesion

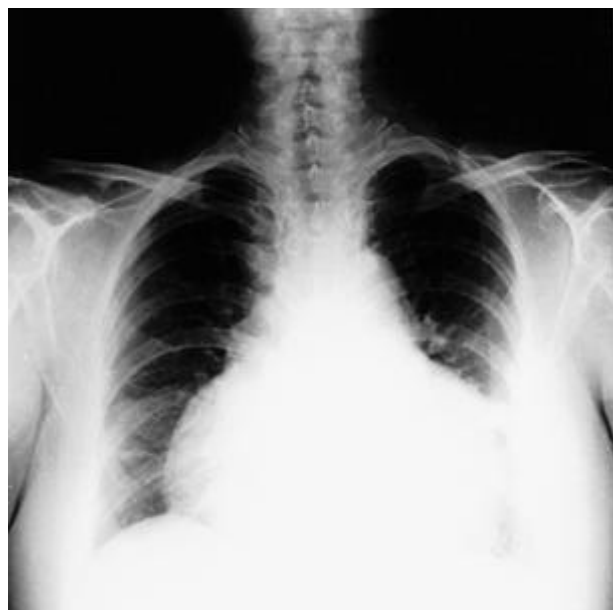


Fig. 1. Chest PA showed marked cardiomegaly.

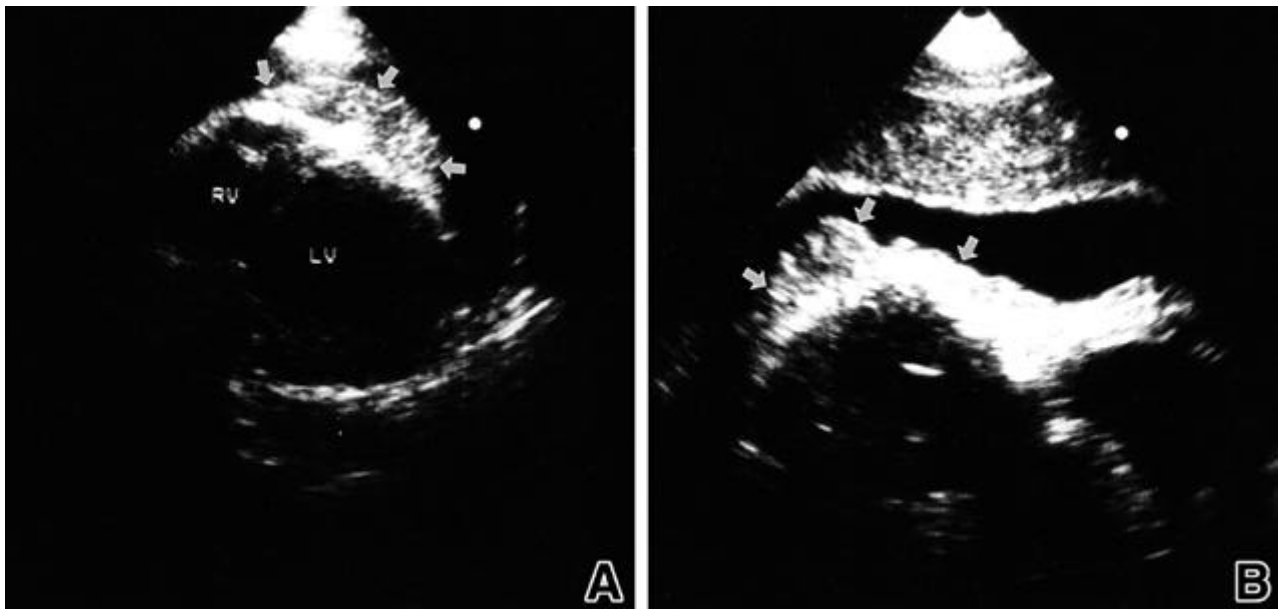


Fig. 2. A) apical view, B) subcostal view. Two-dimensional echocardiography showed a large amount of pericardial effusion and hyperechoic mass-like lesion along the pericardium (arrows).

along the large amount of pericardial effusion (Fig. 3). Unfortunately, it was inaccessible to needle pericardiocentesis.

She underwent open pericardiostomy for diagnostic and therapeutic purposes. Operative findings revealed only prominent epicardial fat and an inflammation surrounding the right atrium (Fig. 4). The pericardial fluid was clear and yellowish with pH 7.4, RBC 90,000/ μ L,

WBC 11,600/ μ L (neutrophil 98%), glucose 121 mg/dL, protein 6.1 g/dL, LDH 1054 unit/L, amylase 30 unit/L, and ADA 115 IU/L. AFB, Gram's stain, and KOH mount for pericardial fluid showed no abnormal findings. No growth was observed in culture of pericardial fluid. Biopsies of pericardium and fat tissues showed an inflammatory reaction of the pericardial tissue and normal fat cells without any malignant cell infiltration (Fig. 5). Fol-

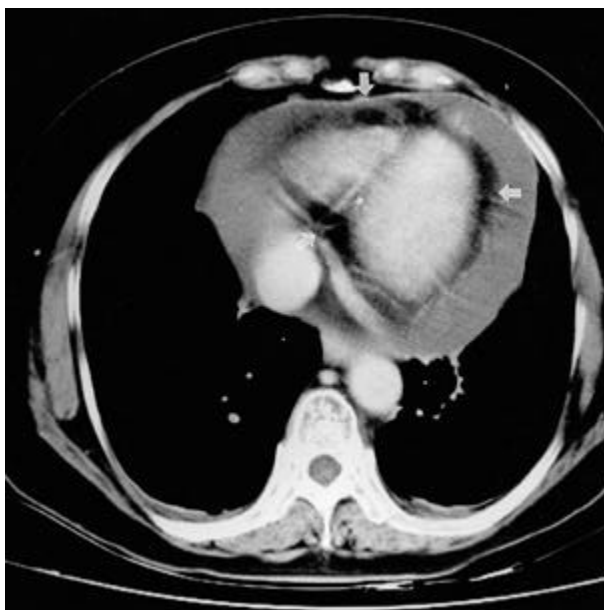


Fig. 3. Chest CT revealed a thickened low attenuated band-like area along the large amount of pericardial effusion, suggesting prominent fat tissue. Mass lesions were absent.

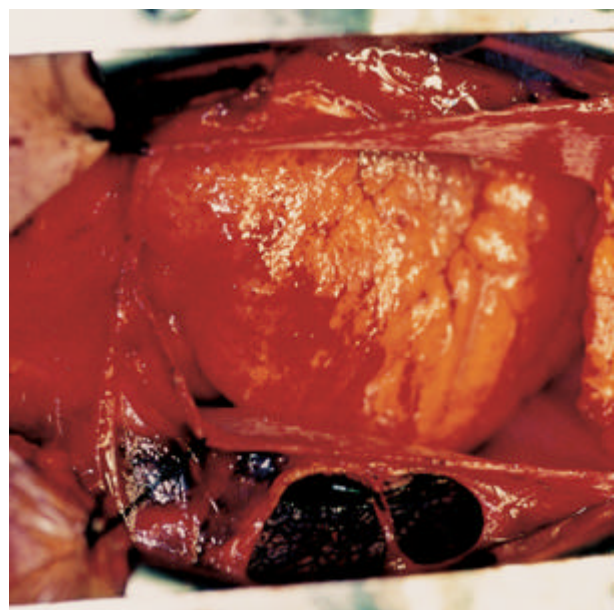


Fig. 4. Operative findings revealed only prominent yellowish epicardial fat and inflammation surrounding the right atrium.

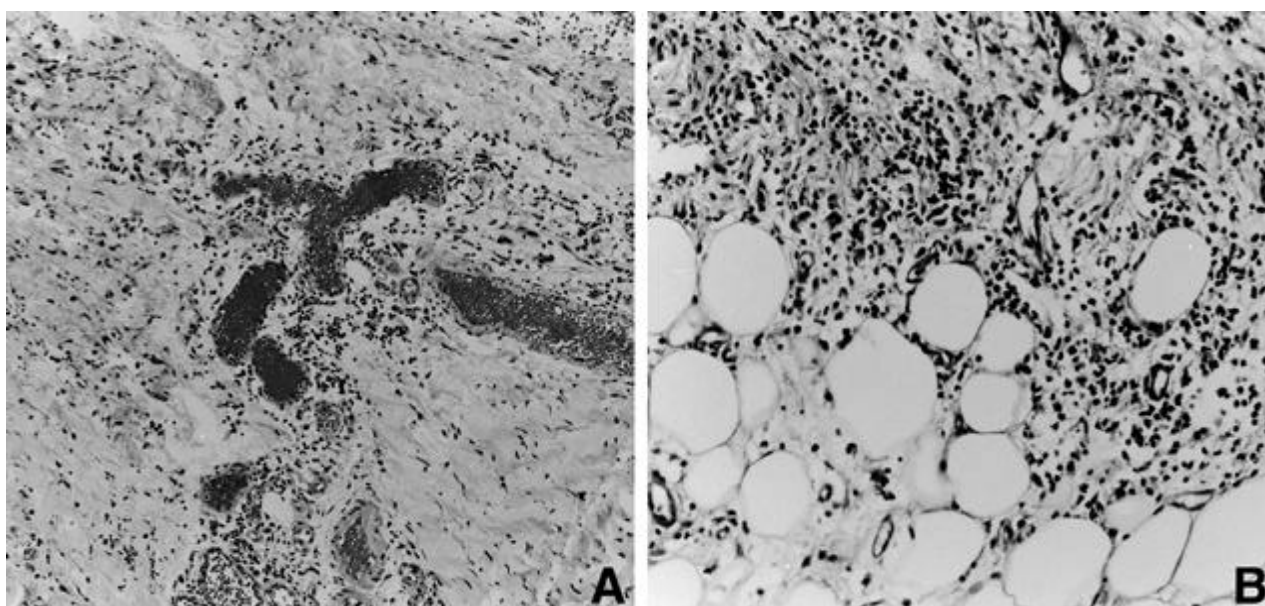


Fig. 5. A: Vascular congestion and inflammatory cell (lymphocyte-predominant) infiltration at perivascular area in pericardial tissue (H&E stain, $\times 100$). B: Inflammatory cell (lymphocyte-predominant) in fibroadipose tissue (H&E stain, $\times 200$). No evidence of tumor cells was observed.

low-up two-dimensional echocardiography after open pericardiostomy revealed marked reduction of pericardial effusion and a persistence of prominent hyperechoic area along the pericardium.

She was discharged with clinical improvements.

DISCUSSION

Fat may accumulate anywhere around the epicardial surface of the heart and mimic pericardial effusion because it commonly appears as an echo-free space (1-7). The amount of subepicardial fat normally increases with age and is most extensive over the anterior portion of the heart (1-5). Fat can also be found in a variety of places within the heart (8). Excessive fat accumulation is most common in older, obese, diabetic patients, usually women, and may be observed in patients with exogenous or endogenous steroid excess (9). The subject of this case was a woman who was not obese. Echocardiographic differentiation of fat from fluid is subtle and usually based on location-anterior rather than posterior; mobility-fat is slightly less mobile than fluid and the surrounding epicardial and pericardial layers move less freely; and texture-fat is usually slightly more echogenic or granular than fluid (9).

In this patient, prominent epicardial fat was seen as a hyperechoic mass, not a common echocardiographic finding. Surrounding pericardial effusion and some inflammatory reaction in the fat tissue may contribute to

this echocardiographic findings. Therefore, the echogenic mass was misdiagnosed as a metastatic tumor because of its irregular surface and coexistence with pericardial effusion. Sometimes, the fat can accumulate in a variety of places within the structure of the heart. The fat within the structure is echogenic and appeared as a mass.

The confirmation of epicardial fat was done through the open pericardiostomy. The pericardial fluid was found to be exudate and biopsy finding of pericardium was consistent with pericarditis.

The etiology of pericarditis with exudative pericardial effusion is infectious (viral, pyogenic, tuberculous, fungal etc.), noninfectious (acute myocardial infarction, uremia, neoplasia, myxedema, trauma, postirradiation, aortic dissection etc.), and presumably related to hypersensitivity or autoimmunity (rheumatic fever, collagen vascular disease etc.) (10). No definite etiology of pericarditis in this patient was determined.

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