
Encapsulated pericardial fat necrosis: uncommon mimicker of acute aortic syndrome

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Abstract: Pericardial fat necrosis is an uncommon benign cause of acute chest pain. Typically manifesting as severe acute chest pain, pericardial fat necrosis can be mistaken for a serious disorder, such as pulmonary embolism or myocardial infarction/ acute aortic syndrome. Contrast enhanced computed tomography provides a definitive diagnosis. We present a case of seventy year old female with pericardial fat necrosis, diagnosed tentatively based on radiographic findings.

Keywords: Pericardial fat necrosis, tomography

INTRODUCTION

The pericardium is a conical, flask-like, fibroserous sac which contains the heart and the roots of the great vessels [1]. Pericardial fat necrosis is an uncommon benign condition that was first described in 1957 [2–5]. Since the involved fat tissue is in the outer side of the pericardium, Pineda *et al.*; [3] suggested the term epipericardial fat necrosis. The pathogenesis of EPFN remains unclear. Potential causes include torsion of a pedicle and heavy lifting, which could cause intravascular pressure changes significant enough to cause hemorrhage into adipose tissue. Other potential causes include trauma, the Valsalva maneuver (increased thoracic pressure) which may increase the capillary pressure, which leads to haemorrhagic necrosis, high positioned epipericardial fat, or preexisting structural abnormalities of adipose tissue, such as lipoma, hamartoma, or lipomatosis [4].

CASE REPORT

A 70-year-old woman with a history of hypertension and morbid obesity presented with left-sided pleuritic chest pain and mild dyspnea. The pain was not positional and did not radiate, and was not reproducible by palpation. There was no associated diaphoresis, palpitation, syncope, or near syncope. She did not experience any substernal burning, nausea, emesis, anorexia, or other gastrointestinal symptoms. She was a nonsmoker and non alcoholic. On evaluation, her blood pressure was 166/90 mmHg with a pulse of 92 and regular. She was afebrile, and cardiac rate and rhythm were normal, as were chest and lung exams. ECG showed normal sinus rhythm with normal waveform. Trop T was normal. However due to high clinical suspicion she was referred to our department for contrast enhanced CT to rule out acute aortic syndrome or pulmonary thromboembolism. CECT revealed a well defined 2.2× 1.0 cms encapsulated fat attenuation area with central heterogeneity in close relation to pericardium anteriorly just beneath chest wall.

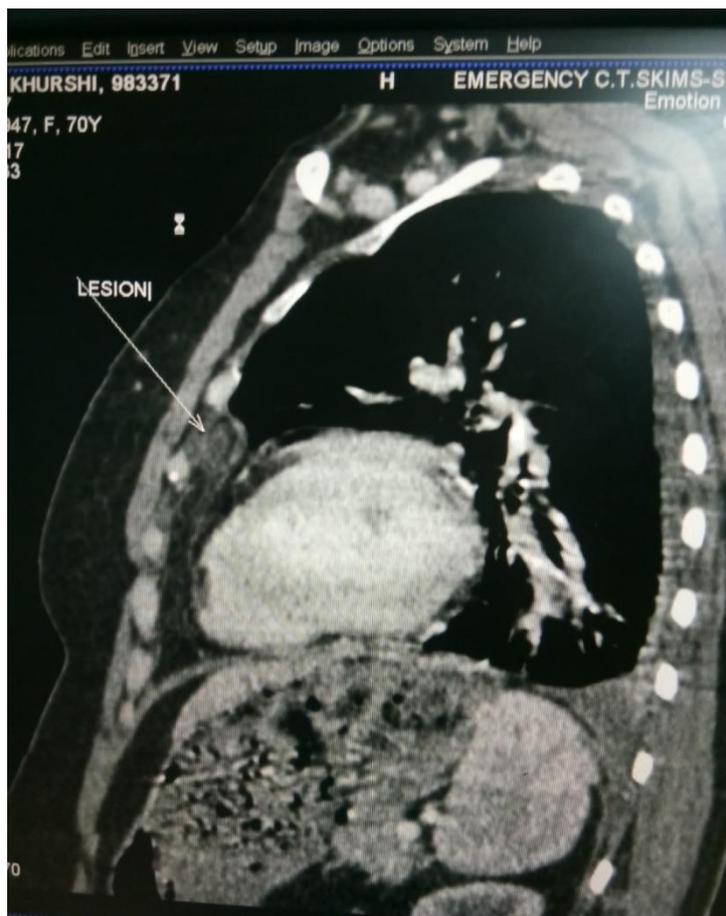


Fig-1: Sagittal CT images revealing well defined fat containing lesion with central heterogeneity overlying pericardium suggestive of encapsulated pericardial fat necrosis.



Fig-2: Coronal images revealing encapsulated pericardial fat necrosis

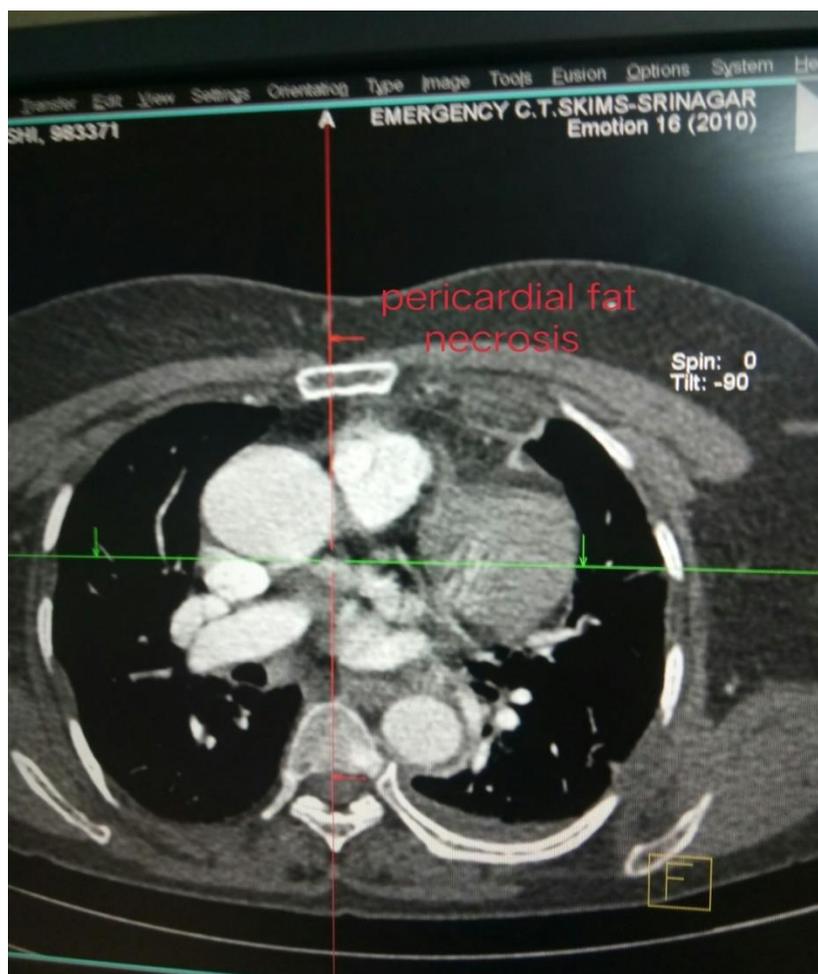


Fig-3: Axial images revealing encapsulated pericardial necrosis on left side overlying pericardium

DISCUSSION

In a patient with sudden onset of chest pain, the spectrum of diagnosis includes severe causes, such as myocardial infarction or pulmonary embolism, and less severe causes, such as pericarditis or pericardial fat necrosis [3, 6]. Pericardial fat necrosis should be suspected when patients present with acute chest pain but have no systemic symptoms and when laboratory tests and echocardiography reveal no abnormalities [3]. At chest radiography, juxtacardiac increased attenuation, usually on the left side of the heart and with or without concomitant pleural effusion, may be seen [3]. The typical CT finding is a lesion of fat attenuation surrounded by the increased attenuation of the anterior mediastinal paracardiac fat adjacent to the pericardium [3, 4].

Pathologic features of fat necrosis can be seen in other locations, such as the breast, omentum, and epiploic appendices, as well as in areas of pericardial fat necrosis that are similar to these other locations. Central necrotic fat cells are surrounded by lipid-filled macrophages and neutrophilic infiltrations in the early stages of disease, with progressive fibroblastic infiltration and fatty cell replacement by lipid-laden macrophages [4].

Differential diagnosis of pericardial fat necrosis includes mediastinitis and mediastinal abscess which present with fat stranding; however, these are usually accompanied by more radiologic findings for both the acute form and the chronic form [7]. Diaphragmatic hernias with abdominal fat occupying the cardiophrenic space, Primary fatty masses include lipoma and liposarcoma; other fatty infrequent masses in the cardiophrenic space are pericardial mesotheliomas, teratomas, and thymolipomas [6, 8, 9].

Most often it shows spontaneous resolution. Although surgical excision of encapsulated fat necrosis has been described [10, 11], it seems to be the treatment of choice in only those patients with no self-limited chest pain or no resolution of inflammatory changes in radiologic control.

CONCLUSION:

In summary, pericardial fat necrosis is an uncommon condition that can be diagnosed on the basis of its characteristic CT findings. Both radiologists and practicing clinicians should be aware of the clinical presentation of this uncommon but benign condition

and include it in their differential diagnosis of chest pain.

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