

Calcific constrictive pericarditis in a patient presenting with right heart failure

Sağ kalp yetersizliği ile başvuran bir hastada kalsifiye konstriktif perikardit

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A 45-year-old man presented with gradual dyspnea, abdominal distension, and pedal edema of six-month history. A lateral chest x-ray demonstrated severe, dense calcification of the pericardium. Two-dimensional and pulsed-wave Doppler echocardiography demonstrated signs of constrictive pericarditis. Chest computed tomography showed diffuse, incomplete calcification of the pericardium and a dilated superior vena cava. The patient refused pericardiectomy, so medical treatment was instituted.

Key words: Calcinososis; echocardiography; heart failure; pericarditis, constrictive/pathology.

Kırk beş yaşında erkek hasta, altı aydır var olan nefes darlığı, karında şişkinlik ve ayak ödemi yakınmaları ile başvurdu. Yandan çekilen akciğer filminde yoğun perikardiyal kalsifikasyon izlendi. İki-boyutlu ve nabız dalgalı Doppler incelemesinde konstriktif perikardit bulguları vardı. Göğüs tomografisinde, diffüz, perikardiyal tamamen sarmayan kalsifikasyon ve genişlemiş superior vena cava izlendi. Hasta perikardiyektomi ameliyatını kabul etmediği için ilaç tedavisine başlandı.

Anahtar sözcükler: Kalsinoz; eko-kardiyografi; kalp yetersizliği; perikardit, konstriktif/patoloji.

Constrictive pericarditis is associated with scarring and loss of elasticity of the pericardium, causing impaired cardiac filling. Clinical signs and symptoms of right heart failure accompanied by existing risk factors for pericardial disease should raise suspicion for constrictive pericarditis.

CASE REPORT

A 45-year-old male presented with worsening dyspnea on exertion, abdominal distension, and pedal edema of six-month history. On examination, the patient was afebrile with a blood pressure of 130/80 mmHg and a regular pulse of 69 bpm. He had elevated jugular venous pressure, hepatomegaly, ascites, and pedal edema. He was a smoker (30 pack-year) and did not have any history of tuberculosis, surgery, trauma, or irradiation. On cardiac auscultation, there was a regular rhythm with a mild early and mid-systolic murmur at the right sternal border without gallops, clicks, rubs, or pericardial knock. Electrocardiography showed right bundle branch block with sinus rhythm. On the chest X-ray (lateral view), there was a dense pericardial calcification surrounding the heart (Fig. 1a). Echocardiography showed mildly dilated right heart chambers with normal-sized left ventricle and particular

thickening of the pericardium on the right atrium and in the middle of the right ventricle (Fig. 1b). A septal bounce (inspiratory septal shift to the left) was readily visualized in the apical four-chamber view. There was an increased respiratory variation of the early diastolic wave through the mitral valve (>25%) (Fig. 1c). The inferior vena cava was dilated and noncollapsing in the subcostal views. Tricuspid regurgitation was trivial with a pulmonary artery pressure of 35 mmHg. Tissue Doppler echocardiography showed an early diastolic mitral annular velocity (E') of 14.7 cm/sec at the septal mitral annulus (Fig. 1d). Computed tomography of the thorax showed diffuse, incomplete calcification of the pericardium with a thickness ranging from 3 mm to 20 mm and a dilated superior vena cava associated with a turbulent flow (Fig. 1e). The diagnosis was made as calcific constrictive pericarditis. Pericardiectomy was planned but the patient did not accept surgery. Medical treatment consisting mainly of diuretics was designed.

DISCUSSION

Constrictive pericarditis may develop after pericardial diseases due to scarring and loss of elasticity of the pericardial sac, which results in fluid overload or diminished cardiac output in response to exertion.

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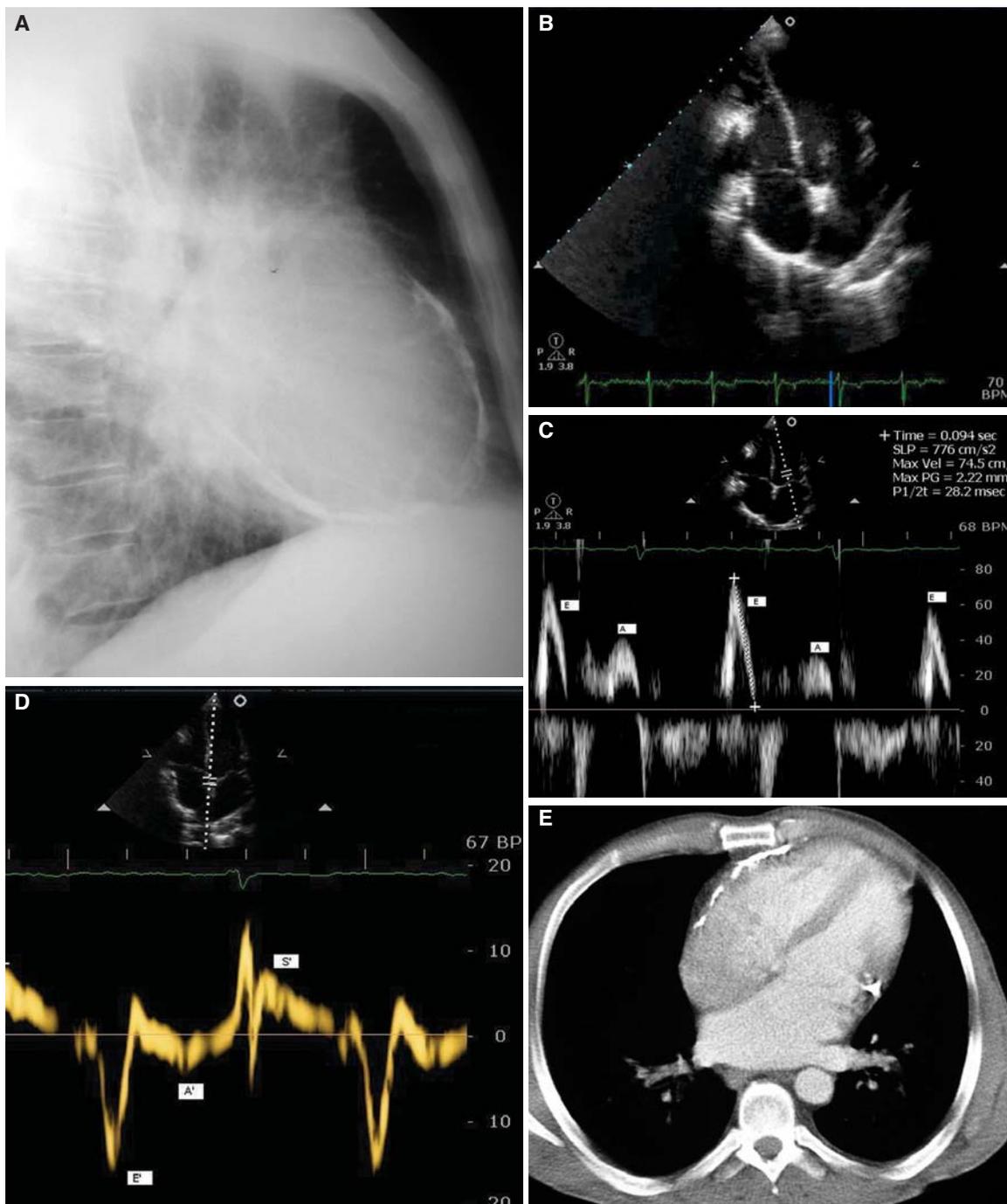


Figure 1. (A) Lateral chest x-ray demonstrates pericardial calcification. (B) Pericardial calcification and minimal pericardial effusion over the middle-third of the right ventricle. (C) Pulsed-wave Doppler at the mitral valve shows increased respiratory variation and decreased deceleration time of the E wave. The first two E waves are during expiration and, with inspiration, E wave velocity suddenly decreases (third E wave). (D) Pulsed-tissue Doppler at the septal mitral annulus. (E) Chest computed tomography scan shows generalized incomplete thickening of the pericardium and dilated superior vena cava.

A high level of suspicion is required to confirm the diagnosis.^[1,2] Among the available diagnostic tests, echocardiography is a class I indication in patients with suspected pericardial disease.^[3] On chest X-rays, though they are not of great help in the diagnosis, signs of pericardial calcification are suggestive

of constrictive pericarditis; however, as stated by Lorrell,^[4] “Calcified pericardium is not necessarily a constricted one.” Computed tomography (CT) and magnetic resonance imaging (MRI) are the two methods which allow direct visualization of the pericardium and are presently the standard methods

for accurate measurement of pericardial thickness. However, pericardial thickening detected on CT or MRI is not diagnostic for constrictive pericarditis and, on the other hand, normal pericardial thickness does not rule out the diagnosis of constrictive pericarditis.^[5] Finally, invasive hemodynamic evaluation may be necessary in some patients for the diagnosis.^[1]

Constrictive pericarditis should be suspected in patients with clinical features of right-sided heart failure. Other cardiac diseases, in particular right atrial myxoma, tricuspid valve dysfunction, and restrictive cardiomyopathy must be ruled out. A previous medical history of pericarditis, open-heart surgery, chest trauma, or radiotherapy suggests the existence of pericardial constriction. Our patient presented with right heart failure, but did not have a particular etiology for pericardial constriction. Echocardiographic detection of excessive respiratory flow changes through the heart valves, right ventricular systolic pressure less than 50 mmHg, and an early diastolic mitral annular velocity (E') of ≥ 8 cm/sec by tissue Doppler echocardiography enabled us to rule out restrictive cardiomyopathy.^[5,6]

The treatment of constrictive pericarditis consists of diuretics, salt restriction, and supportive therapy for the underlying condition. In advanced cases, pericardiectomy is recommended for most patients with a central venous pressure of 12 mmHg to 15 mmHg. Higher pressures and liver dysfunction secondary to passive congestion are indications for urgent surgery.^[7] Survival of the patients following pericardiectomy is better than that of individuals treated without surgery.^[8]

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