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Misdiagnosis of constrictive pericarditis presenting with cirrhosis and ascites: a case report



¹Department of Internal Medicine, Dr. Masih Daneshvari Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran

²Department of Adult Gastroenterology and Hepatology, Loghman Hakim Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran

³Department of Endocrinology and Metabolism, Loghman Hakim Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran

⁴Department of Endocrinology and Metabolism, Imam Hossein Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran

⁵Department of Internal Medicine, Imam Hossein Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Correspondence to: Farnaz Saberian, Email:dr.f.saberian@gmail.com

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Abstract

Ascites, edema, dyspnea, and other non-diagnostic manifestations are among the various signs and symptoms of constrictive pericarditis. It is included in the differential diagnosis of several disorders that affect the heart, liver, pulmonary system, and other organs. In this report, a 44-year-old man presented with abdominal distention, sleep apnea, and lower extremity edema from one year ago. He was misdiagnosed as having right-sided heart failure, but one month later, he manifested icter, ascites, gross volume overload, elevated jugular venous pressure, and edema. Transthoracic echocardiography was compatible with constrictive pericarditis, and cardiac MRI also demonstrated constrictive pericarditis. We performed a total pericardiectomy and ventricular decortication via sternotomy. Patient's symptoms then alleviate following surgical pericardiectomy, since no complaint was detected yet. Constrictive pericarditis, a potentially fatal and uncommon condition, should be considered among the differential diagnoses in patients with ascites and edema.

Introduction

Constrictive pericarditis is rare involvement of the pericardium in adults (1). The pericardium is a fibroelastic structure that envelops the heart. It is a protective layer of the heart and has a significant role in influencing cardiac hemodynamics. When granulation tissue forms in the pericardium, it makes it less flexible, which in turn limits ventricular filling. This is what constrictive pericarditis is. While this condition is typically chronic, there are also reports of subacute, transient, and occult forms (2,3). Patients frequently exhibit chronic clinical These manifestations. manifestations may be associated with volume overload, as evidenced by weight gain and edema, or they may stem from reduced cardiac output, characterized by fatigue and dyspnea during physical activity. Additionally, patients might report an increase in abdominal circumference or discomfort in the abdominal region. Such abdominal issues are typically a consequence of either associates or congestive hepatomegaly (4).

Key point

In patients with ascites and edema, constrictive pericarditis should be one of differential diagnoses and transthoracic echocardiography should be done.

The identification of constrictive pericarditis as a potential cause of ascites necessitates a considerable level of suspicion, given that cardiac-related causes of associates are uncommon and frequently missed (5). In the current report, we presented a 44-year old man presented with a history of apnea and dyspnea who was firstly diagnosed as cirrhosis with ascites and finally diagnosed as constrictive pericarditis.

Case Presentation

A 44-year-old man presented with a history of apnea, dyspnea [function class (FC) II], and severe chronic fatigue during the last year. The patient does not give any history of previous illness or any special illness in her family. The symptoms led to his admission, and we evaluated him using

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polysomnography, pulmonary artery pressure (PAP) titration, and the apnea hypopnea index (AHI). AHI was equal to 32/h, and he needed continuous positive airway pressure (CPAP) with 8 cmH₂O pressure.

Eight months later, he referred to a hospital with chief complaints of severe bilateral lower extremity pitting edema, abdominal distention, and sleep apnea. During the physical exams, there was a lot of fluid in the body, with high jugular venous pressure up to the mandible's alignment, dullness during the abdominal exam, and 2+ pitting edema in the lower limbs. Vital signs were stable, with an oxygen saturation of 91% in room air. The ECG rhythm was normal sinus. The initial transthoracic echocardiogram showed a normal left ventricular size, normal systolic function, and a left ventricular ejection fraction (LVEF) of 50%. Due to exertional dyspnea, we performed myocardial perfusion imaging (MPI) with dipyridamole, which revealed mild ischemia in the apicolateral and inferolateral segments. There was adequate wall motion with acceptable thickening, so the patient was at low risk for subsequent cardiac events.

After treatment with diuretics, there was a little improvement in lower extremity edema, fatigue, and dyspnea. The patient was diagnosed with heart failure with preserved ejection fraction (HFpEF).

One month later, he presented with icterus, tense ascites, and FC-IV dyspnea. He was admitted to the hospital with a diagnosis of liver cirrhosis and spontaneous bacterial peritonitis (SBP) due to staphylococcus aureus and tense ascites. Laboratory tests were requested, and there was normocytic anemia, elevated total bilirubin of 13 mg/ dL, and elevated direct bilirubin to 9 mg/dL. Alkaline phosphatase and aminotransferase enzymes were normal. Ascitic fluid culture was revealed to be staphylococcus aureus. A drainage catheter was placed for draining the peritoneal fluid.

Portal and hepatic veins were assessed by color Doppler ultrasonography, and hepatic vein and inferior vena cava (IVC) had congestions that could be related to congestive heart failure (CHF).

We performed a right heart catheterization. We reported elevated side-filling pressures and mildly elevated PAP. Transthoracic echocardiography showed that the LV (left ventricle) was the right size and had normal systolic function. The LVEF was 50%, and there was noticeable septal bounce, a lot of variation in mitral inflow velocities, higher mitral annular É, and a thickened pericardium. These findings were suggestive of possible constrictive pericarditis, and further evaluation was recommended with cardiac magnetic resonance imaging (MRI). A mild mitral regurgitation, mild tricuspid regurgitation, and a peak tricuspid regurgitation gradient (TRG) of 18 mm Hg, with an estimated pulmonary artery systolic pressure (PASP) of 38 mm Hg, consistent with mildly elevated PASP, were found.

Cardiac MRI was done to look for pericardial thickness,

and a nonvascular finding was a diffuse, irregular thickening of the pericardium that is visible and measured 5 mm. There was obvious abnormal ventricular septal motion toward the LV in early diastole (septal bounce). other findings include marked distention of the IVC (Figures 1 and 2).

A diagnosis of constrictive pericarditis led to the patient's admission for pericardiectomy. We first performed an angiography, which revealed normal coronary arteries and no significant epicardial coronary disease. We noted mild left anterior descending intramyocardial bridging. There was a slow flow in the coronary arteries consistent with microvascular disease. Finally, we performed a total pericardiectomy and ventricular decortication via sternotomy. All of the symptoms gradually disappeared four weeks after pericardiectomy. The patient recovered well, and one year later, he is clinically stable at followup, with resolution of symptoms and near cessation of all cardiac medication (Table 1).

Discussion

In this report, we presented a 44-year-old man who had recurrent ascites and suspected cirrhosis, but the final diagnosis was constrictive pericarditis.

It is important to have clinical doubt when diagnosing constrictive pericarditis because the symptoms of this condition could be mistaken for other health problems. In instances of advanced constrictive pericarditis, prevalent symptoms include peripheral edema (76%), hepatomegaly



Figure 1. Coronal T2 weighted image: dilated IVC (wide arrow) and mild ascites (thin arrow) is seen.



Figure 2. In axial and sagital T2 weighted image diffuse pericardial thickening (wide arrow).

Table 1. Time line across months

Months	Definition
0 month	Chief complaint of sleep apnea, dyspnea (FC II), and severe chronic fatigue. He was admitted due to the symptoms and was evaluated with polysomnography. AHI was equal to 32/hr, and he needed CPAP with 8 cmH ₂ O pressure.
8 months	First misdiagnosed as right-sided heart failure, the MPI Scan and echocardiography were unremarkable; the initial TTE indicated a LVEF of 50%. after the treatment with diuretic, there was little improvement in edema of the lower extremity, fatigue, and dyspnea.
9 months	The symptoms were unsuccessfully treated, and he presented with icterus, tense ascites, dyspnea FC IV, liver cirrhosis, and SBP. The repeat TTE demonstrated normal LV size with low normal systolic function, LVEF: 50%, and prominent septal bounce; significant variation in mitral inflow velocities; increased mitral annulae; and thickened pericardium. Constrictive pericarditis was suggested. Further evaluation with cardiac MRI was recommended. Right heart catheterization reported elevated right-sided and left-sided filling pressures and mildly elevated PA pressure.
10 months	Received a diagnosis of constrictive pericarditis; after reviewing the initial results, the thickened pericardium in cardiac MRI was observed. This urged the physicians to get informed consent for pericardectomy.
11 months	All symptoms disappeared after pericardectomy; the patient recovered well, and one year later, he is clinically stable at follow-up, with resolution of symptoms and near cessation of all cardiac medication.

FC, Function class; CPAP, Continuous positive airway pressure; MPI, Myocardial perfusion imaging; LVEF, left ventricular ejection fraction; MRI, magnetic resonance imaging; SBP, spontaneous bacterial peritonitis.

(53%), ascites (37%), and pleural effusion (35%). These symptoms frequently result in the erroneous diagnosis of chronic liver disease. We recorded the mean duration of symptoms prior to undergoing pericardiectomy at about 11.7 months, with a range spanning from 3 days to 29.1 years (6). In a cohort study involving 218 patients presenting with ascites, the identified etiologies included cirrhosis (74%), heart failure (20%), peritoneal disease (5%), and constrictive pericarditis (<1%) (7). Despite the relative rarity of constrictive pericarditis, it is crucial to consider this diagnosis when the underlying cause of ascites remains unclear. In our case, he was diagnosed with cirrhosis due to his associates, and after several evaluations, finally, constrictive pericarditis was diagnosed because it is a rare disease, and the manifestation of the patient was accompanied with cirrhosis-like SBP and ascites.

The jugular venous pressure, on the other hand, is usually normal or much lower in people with cirrhosis from different causes, unless they have tense ascites. in patients with cirrhosis resulting from various etiologies, except in cases where tense ascites is present. Conversely, individuals with chronic portal hypertension frequently exhibit elevated jugular venous pressure, with a prevalence of 93% (8). Our case had elevated jugular venous pressure, and it could be a sign of portal hypertension. These manifestations are similar to other common disease manifestations, and due to these similarities, constrictive pericarditis is mostly misdiagnosed with other involvements.

Transthoracic echocardiography is the main diagnostic tool for constrictive pericarditis. This imaging modality commonly reveals thickening of the pericardium (9). We performed transthoracic echocardiography, and thickening of the pericardium was found.

One of the other valuable diagnostic methods for constrictive pericarditis is cardiac MRI. Bolen et al showed that the sensitivity and specificity of cardiac MRI for the diagnosis of constrictive pericarditis are more than 90% (10). We were doubtful about constrictive pericarditis after transthoracic echocardiography, and we requested a cardiac MRI, and the report was compatible with constrictive pericarditis.

Pericardiectomy represents the sole definitive treatment for chronic constrictive pericarditis, necessitating efforts to excise as much of the pericardium as feasible. The presence of extensive fibrosis and calcification within the myocardium correlates with unfavorable prognoses. The operative mortality rate varies significantly, ranging from 10% to 55%. Caution is advised when considering this procedure for patients exhibiting mild symptoms or those with advanced disease accompanied by additional comorbidities, given the elevated mortality risk associated with the surgery (11,12). We performed pericardiectomy for our patient, and his manifestations revealed until now. He is under routine follow-ups now, and the patient is normal.

Conclusion

Constrictive pericarditis is a rare and even lethal disease that physicians should be aware of. In patients with ascites and edema, constrictive pericarditis should be one of the differential diagnoses, and transthoracic echocardiography should be done.

Authors' contribution

Conceptualization: Alireza Ebadi, Farnaz Saberian.

Data curation: Sina Homaee, Shahriar Nikpour, Zahra Davoudi, Alireza Ebadi, Farnaz Saberian.

Formal analysis: Farnaz Saberian.

Funding acquisition: Sina Homaee, Shahriar Nikpour, Zahra Davoudi, Alireza Ebadi, Farnaz Saberian.

Investigation: Farnaz Saberian Methodology: Alireza Ebadi, Farnaz Saberian.

Resources: Alireza Ebadi, Farnaz Saberian.

Software: Alireza Ebadi, Farnaz Saberian.

Validation: Alireza Ebadi, Farnaz Saberian.

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Visualization: Farnaz Saberian.

Writing-original draft: Sina Homaee, Shahriar Nikpour, Zahra Davoudi, Alireza Ebadi, Farnaz Saberian. Writing-review & editing: Alireza Ebadi, Farnaz Saberian.

Conflicts of interest

The authors report no conflicts of interest.

Ethical issues

Ethical issues (including plagiarism, data fabrication, double publication) have been completely observed by the authors. The patient has given his informed consent regarding publication of this case report.

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