Ther Adv Cardiovasc Dis
(2013) 7(6) 343–345
DOI: 10.1177/1753944713513220

Constrictive pericarditis in a young patient with very thick pericardium initially diagnosed as cirrhosis

Erdal Durmus, Murat Sunbul, Tarik Kivrak, Ibrahim Sari and Bulent Mutlu

Abstract: Constrictive pericarditis (CP) is a disease of pericardium that restricts filling of the heart. Patients with CP generally present to hospitals with exercise-induced dyspnea, pretibial edema and abdominal ascites, and it is sometimes mistakenly diagnosed as liver or renal disease. Pericardial thickening, which is defined as more than 4 mm in diameter, is observed in nearly 80% of patients. In the present paper, we describe a case of CP with a pericardial thickness of 12 mm that was initially diagnosed as cirrhosis.

Keywords: cirrhosis, constrictive pericarditis, thick

Introduction

Constrictive pericarditis (CP) is a disease of pericardium that restricts filling of the heart. Patients with CP generally present to hospitals with exercise-induced dyspnea, pretibial edema and abdominal ascites and it is sometimes mistakenly diagnosed as liver or renal disease [Föll *et al.* 2010]. Pericardial thickening, which is defined as more than 4 mm in diameter, is observed in nearly 80% of patients [Talreja *et al.* 2003]. In the present paper, we describe a case of CP with a pericardial thickness of 12 mm that was initially diagnosed as having cirrhosis.

Case presentation

A 21-year-old male patient was sent to our hospital from Afghanistan for liver transplantation due to cirrhosis. On admission, his complaints were fatigue, exercise-induced dyspnea, pretibial edema and abdominal distension which started 2 years ago and progressively increased over the last 2 months. He had no remarkable medical history. Physical examination revealed enlarged liver, massive abdominal ascites, bilateral pretibial edema, jugular venous distention, blood pressure of 114/64 mmHg and heart rate of 78 beats/min. The rest of the physical examination was within normal limits. Surface electrocardiography revealed sinus rhythm, low QRS amplitudes in all leads and T wave inversion in inferior derivations. Hepatobiliary ultrasonography, hepatitis serology, autoimmune markers and routine biochemistry were not consistent with liver cirrhosis. He was referred to our cardiology department to investigate any potential cause to explain his complaints. We performed transthoracic echocardiography which revealed normal left ventricular systolic and diastolic function, septal bounce with inspiration, respiratory variance of mitral inflow velocities, thickened pericardium (Figure 1A) and pericardial effusion in the posterior area. Respiratory variability of inferior vena cava diameter was less than 50%. Transthoracic echocardiography was consistent with CP. To confirm the diagnosis, we performed left and right heart catheterization. Simultaneous right and left ventricular end diastolic pressures were equalized and increased, and also respiratory ventricular interdependence (Figure 1B) was observed in heart catheterization. After the echocardiography and catheterization, the most probable diagnosis was CP. Before surgery to evaluate the pericardial anatomy and calcification, thorax computed tomography (CT) was performed. In thorax CT, visceral and parietal pericardial thickening and localized calcification was detected (Figure 2A). Globalized marked thickening of visceral and parietal pericardium of approximately 12 mm were observed after the total pericardioectomy operation (Figure 2B). Investigations to reveal the possible cause of CP including mycobacterium

Correspondence to:
Murat Sunbul, MD
Department of Cardiology, Faculty of Medicine, Marmara University, Fevzi Cakmak Mahallesi, Mimar Sinan Caddesi, No: 41 Ustkaynarca, Pendik, İstanbul, Turkey
drsunbul@yahoo.com.tr

Erdal Durmus, MD
Department of Cardiology, Faculty of Medicine, Marmara University, Istanbul, Turkey

Tarik Kivrak, MD
Ibrahim Sari, MD
Bulent Mutlu, MD
Department of Cardiology, Faculty of Medicine, Marmara University, Istanbul, Turkey

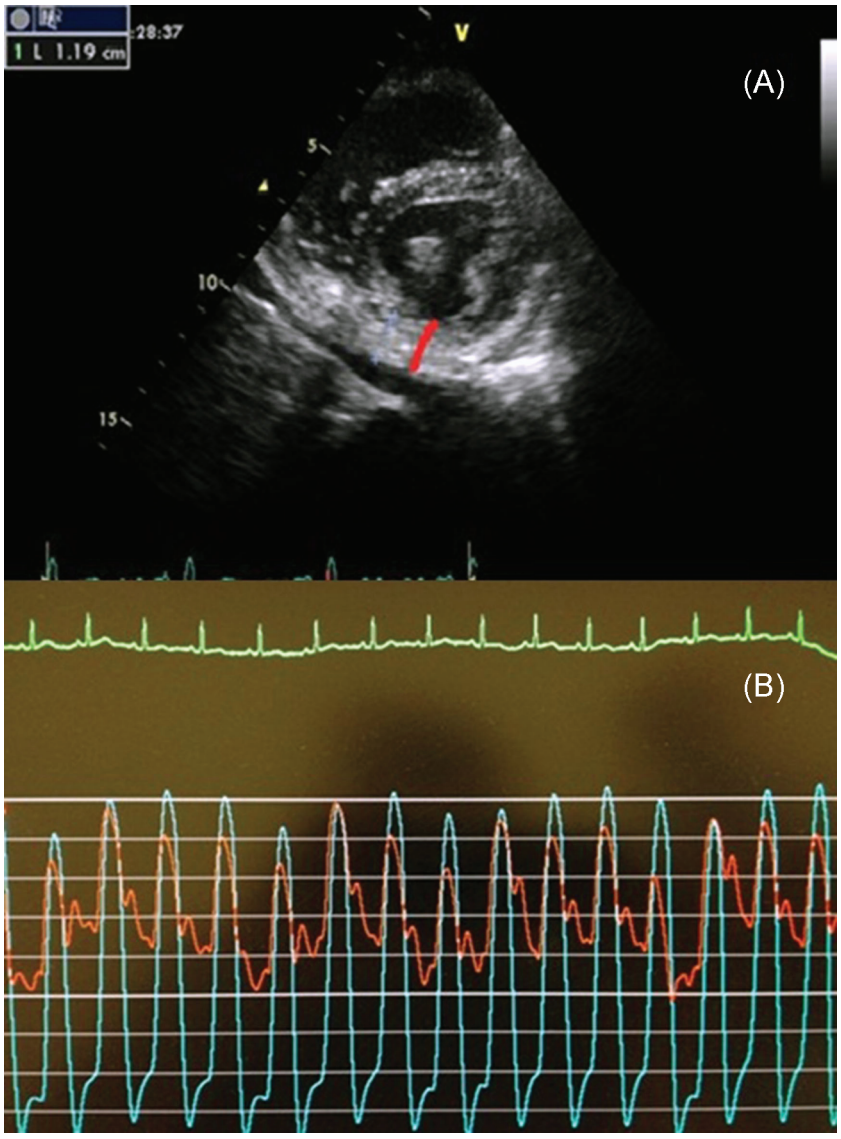

Figure 1. (A) Thickened pericardium with a diameter of 12 mm. (B) Respiratory ventricular interdependence of the right (red line) and left (blue line) ventricle.

culture, sputum acid fast bacilli, connective tissue disease test and human immunodeficiency virus antibody were negative. Pericardial tissue culture was negative for mycobacterium tuberculosis. The patient had no history of cardiac surgery or radiation exposure. After surgery, he recovered quickly and jugular venous distention, pretibial edema and abdominal distension were improved.

Discussion

In the present paper, we have described a rare case of CP with very thick pericardium initially diagnosed as cirrhosis which has not been reported previously.

The heart is enveloped by pericardium which is of paramount importance for proper functioning. Pericardium not only stabilizes the heart in the mediastinum but also helps it to work in a low-friction environment. If CP develops, it restricts diastolic filling of the heart because of thickening and/or stiffening of the pericardium. It causes a decrease in cardiac output (left heart failure), jugular venous distention, abdominal distention and pretibial edema (right heart failure), which will ultimately cause the death of the patient. Therefore, timely diagnosis and management of CP is very important.

CP can be caused by a variety of diseases such as tuberculosis, connective tissue disease,

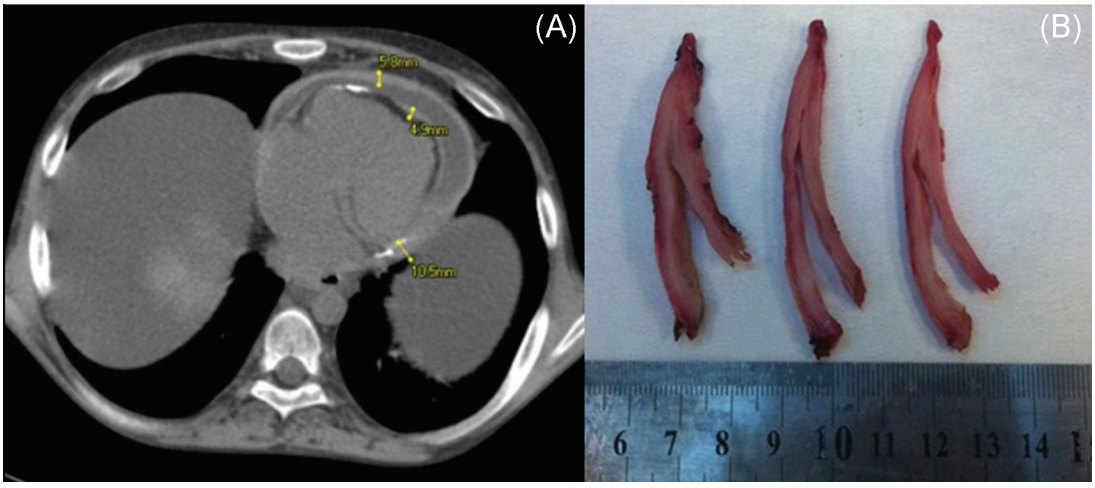

Figure 2. (A) Visceral and parietal pericardial thickening and localized calcification. (B) Surgery specimen, showing that the total diameter of pericardium was approximately 12 mm.

radiotherapy, cardiac surgery, trauma, neoplasm and may also be idiopathic. Most commonly seen findings are ascites, enlarged liver, pretibial edema and hypoalbuminemia [Yetkin *et al.* 2003]. In our patient, we were not able to find the cause of CP. Interestingly he was sent to us for liver transplantation due to cirrhosis. Actually he was not cirrhotic and echocardiographic examination, subsequent catheterization and thorax CT confirmed that the patient's complaints were due to CP.

To diagnose CP, pericardial thickening and/or restrictive diastolic filling properties must be shown. However, in some patients with CP, pericardial thickening might be local [Hasuda *et al.* 1999] or pericardium thickness might be normal [Talreja *et al.* 2003]. Combined evaluation of echocardiography, heart catheterization, CT and cardiac magnetic resonance imaging can be used for the diagnosis or exclusion of CP [Zwas *et al.* 2012]. In patients with CP with thickened pericardium, most commonly seen causes are tuberculosis and idiopathic [Talreja *et al.* 2003; Lin *et al.* 2012].

Our case has important clinical implications. First, patients with CP generally have a thickened pericardium that is more than 4 mm in diameter; in some cases, such as the present case, it can be very thick. Second, pericardium with normal thickness does not exclude CP. Third, because the clinical signs and symptoms are not specific, it is sometimes difficult to diagnose and can be confused with other diseases.

Funding

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

Conflict of interest statement

The authors declare no conflicts of interest in preparing this article.

References

Föll, D., Geibel-Zehender, A. and Bode, C. (2010) [Constrictive pericarditis: etiology, diagnostic work-up, and therapy]. *Herz* 35: 80–85.

Hasuda, T., Satoh, T., Yamada, N., Sakamaki, F., Kyotani, S., Nakanishi, N. *et al.* (1999) A case of constrictive pericarditis with local thickening of the pericardium without manifest ventricular interdependence. *Cardiology* 92: 214–216.

Lin, Y., Zhou, M., Xiao, J., Wang, B. and Wang, Z. (2012) Treating constrictive pericarditis in a Chinese single-center study: a five-year experience. *Ann Thorac Surg* 94: 1235–1240.

Talreja, D., Edwards, W., Danielson, G., Schaff, H., Tajik, A., Tazelaar, H. *et al.* (2003) Constrictive pericarditis in 26 patients with histologically normal pericardial thickness. *Circulation* 108: 1852–1857.

Yetkin, U., Kestelli, M., Yilik, L., Ergunes, K., Kanlioglu, N., Emrecan, B. *et al.* (2003) Recent surgical experience in chronic constrictive pericarditis. *Tex Heart Inst J* 30: 27–30.

Zwas, D., Gotsman, I., Admon, D. and Keren, A. (2012) Advances in the differentiation of constrictive pericarditis and restrictive cardiomyopathy. *Herz* 37: 664–673.