Occult Constrictive Pericarditis

SR Mittal *

Abstract

Four cases of occult pericardial constriction are presented. This condition is not uncommon, but needs high index of suspicion. Integration of detailed echocardiographic evaluation in a given patient with diseases known to cause pericardial involvement can clinch the diagnosis.

Case 1

A 45 years male was referred for evaluation of vague chest pain. Clinical examination revealed pulse rate of 120/min. JVP was not raised. There was no other abnormality. ECG showed T wave inversion in Lead II, III, aVF and V3 to V6. Skiagram of chest revealed bilateral pulmonary tuberculosis. Treadmill stress test upto target heart rate did not reveal any additional changes in ECG and there were no symptoms. Echocardiography revealed dilated inferior vena cava with diminished inspiratory collapse (Exp-17.3mm, Insp-11.3mm) with presence of spontaneous contrast (Figure 1A). Hepatic veins were dilated (11.9mm) (Figure 1B) with increased diastolic reversal of flow during expiration. (Figure 1C). Rest of the echocardiographic evaluation including detailed evaluation of right ventricular systolic and diastolic function was normal. There was no evidence of left ventricular hypertrophy or any regional wall motion abnormalities. Tissue Doppler imaging was normal. Pericardium was thickened (9.5mm) (Figure 1D) with thin layer of exudate.

Case 2

A 36 years male was referred for evaluation of abnormality in motion of interventricular septum on echocardiography. He had history of fever and pain in precordial region and left shoulder. Clinical examination was unremarkable except sinus tachycardia (pulse rate 100/min.) and relative hypotension (BP-80/60mmHg). ECG revealed QRS axis of +90° and shallow T wave inversion in leads V1 and V2. There was no other abnormality. Skiagram of chest was unremarkable. Echocardiographic evaluation showed early diastolic dip of interventricular septum.
towards LV (Figure 2A). End diastolic thickness and systolic thickening of IVS were normal. Tissue doppler imaging was normal. IVC and hepatic veins were dilated (Figure 2B). Hepatic vein flow showed blunted systolic and diastolic forward velocity with increased diastolic forward flow in inspiration (Figure 2C). On transoesophageal echocardiography, there was no ASD. All pulmonary veins were draining in left Atrium. Diastolic flow velocity was more than systolic in pulmonary veins. Pericardium was thickened (6.7 mm) with a thin layer of pericardial effusion (Figure 2D).

Case 3

A 17 years male presented with anorexia and pain epigastrum during effort. Clinical examination, ECG and skiagram of chest were normal. Treadmill stress test upto target heart rate was normal. On echocardiography inferior vena cava was dilated with diminished collapse (Figure 3A). Hepatic vein flow showed blunted systolic and diastolic forward flow velocity with increased diastolic forward flow in inspiration (Figure 2C). On transoesophageal echocardiography, there was no ASD. All pulmonary veins were draining in left Atrium. Diastolic flow velocity was more than systolic in pulmonary veins. Pericardium was thickened (6.7 mm) with a thin layer of pericardial effusion (Figure 2D).

Case 4

A 72 years male was admitted for melaena. He had aortic valve replacement 9 years back and was on oral anticoagulants. Clinical examination was normal. Prosthetic valve sounds were normal. ECG showed low voltage. There was no other abnormality. Echocardiographic examination revealed dilated IVC with diminished inspiratory collapse (Figure 4A). Hepatic vein was dilated with blunted forward flow, inspiratory increase in diastolic forward flow and increase in diastolic reversal (Figure 4B). Inferior and posterior pericardium were thickened (Figure 4C and 4D). Rest of the echocardiographic examination was within normal limits.

Discussion

In occult constrictive pericarditis, there are no classical symptoms or signs and patients may even undergo cardiac catheterisation and coronary angiography. Unmasking of clinical signs may require rapid infusion of one liter of saline solution over ten minutes. This is not safe. Electrocardiogram may show non-specific T wave abnormalities. Unexplained dilatation of hepatic veins and distention of inferior vena cava with blunted respiratory fluctuations may raise the suspicion. Abnormal posterior motion of interventricular septum may be another clue. This echocardiographic finding occurs because the LV pressure falls more quickly in early diastole than RV. Perital pericardial thickness of more than 4mm suggests the diagnosis of constrictive pericarditis. Normal pericardial thickness is 1 to 2 mm. It is, however, important to remember that pericardial
thickness may be normal in nearly 20% of patients with constrictive pericarditis. Constrictive pericarditis is not uncommon but frequently escapes clinical detection. Most of the classical symptoms, signs, echocardiographic and haemodynamic findings were derived from classic type of severe calcific constriction and may not be present in other forms of constriction. No single or combination of echocardiographic findings is diagnostic. Diagnosis needs careful integration of all echocardiographic findings and a consideration of clinical context. Although infectious diseases continue to be a common cause, incidence of previous cardiac surgery or radiation therapy, as an antecedent, is increasing.

**Conclusion**

Pericardial constriction should be suspected in all patients with unexplained non-specific T wave changes or unexplained dilatation of inferior vena cava and hepatic veins or unexplained abnormalities of motion of interventricular septum. Integration of detailed echocardiographic evaluation in a given clinical context may clinch the diagnosis.

**References**