The constrictive consequences of pericardial calcifications.

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April 28, 2020

Abstract

A 53 year old man presented with symptomatic severe pulmonary valve regurgitation. He underwent a diagnostic catheterization. A heavily calcified pericardium and the pressure tracings illustrate typical features of constrictive pericarditis physiology. This condition is important to recognize given the progressive nature and poor prognosis when left untreated.

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Number of words: 233

Number of figures: 1

Number of references: 2

Key Clinical Message

A 53-year-old man presented with symptomatic severe pulmonary valve regurgitation. He underwent a diagnostic catheterization. A heavily calcified pericardium and the pressure tracings illustrate typical features of constrictive pericarditis physiology. This condition is important to recognize given the progressive nature and poor prognosis when left untreated.

Accompanying text

A 53 year old male with a history of surgical pulmonary commissurotomy at the age of 12 presented with progressive shortness of breath, right sided pleural effusion and peripheral edema. He was in atrial fibrillation with adequate rate control. Echocardiogram showed normal systolic biventricular function and severe pulmonary regurgitation. Patient responded well to diuretics and underwent a successful cardioversion, after which rhythm control strategy was pursued. He was considered to be a suitable candidate for pulmonary valve replacement and underwent a diagnostic cardiac catheterization in the work up. How should the findings shown in Figure 1 be interpreted?

The diagnostic catheterization revealed constrictive pericarditis physiology. Extensive pericardial calcifications were evident during X-ray exposure at angiography. Mean right atrial pressure was significantly elevated

at 12mmHg. Simultaneous right and left ventricular pressure tracings revealed diastolic pressure equilibration (23-26mmHg) in the two chambers and the pathognomonic 'dip and plateau pattern', also known as the 'square root sign' (1). Left ventricular rapid filling (LVRFW) wave was accentuated and measured +/- 10mmHg. LVRFW > 7mmHg is representative of the increased early diastolic ventricular filling and is a sensitive marker for constrictive physiology (2). Patient had no obstructive coronary artery disease. He underwent an successful resection of the heavily thickened and calcified pericardium and a pulmonary valve replacement (25 mm pulmonary homograft). The post-operative recovery period was uneventful and patient is currently symptom free 6 months after the operation.

Statement of consent

All procedures performed involving the human participant were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The patient provided consent for publication of this clinical image case.

Conflicts of interest

The authors declare that they have no competing interests.

Author contributions

All authors were involved in analysis and interpretation of the diagnostic data described in the manuscript. All authors were involved in writing and editing of the manuscript. All authors have approved the manuscript for submission in its current form.

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Figure legends.

Figure 1. A. Selective coronary angiography of the right coronary artery showing no obstructive lesions, but revealing a remarkable radio-opaque aspect of the calcified pericardium.

B. Simultaneous right and left ventricular pressure tracings showing diastolic pressure equalization in both chambers and the 'square root sign' (encircled in red). Left ventricular rapid filling wave (LVRFW) is accentuated (blue arrow).

C. Pathological specimen of the surgically removed heavily calcified pericardium.