

## IMAGING VIGNETTE

## BEGINNER

## CLINICAL VIGNETTE

# Occlusion of Epicardial Coronary Arteries by Localized Pericardial Calcification



Yassin N. Yassin, MD, Pavol Tomasov, MD, PhD, Jan Horak, MD, PhD, Rostislav Polasek, MD

## ABSTRACT

Localized pericardial calcification is a relatively rare finding of often unknown etiology. We present the case of a 68-year-old man who was found to have bulky pericardial calcification, resulting in external compression of epicardial coronary arteries. (**Level of Difficulty: Beginner.**) (J Am Coll Cardiol Case Rep 2019;1:671-2) © 2019 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Localized pericardial calcification is a relatively rare finding often of unknown etiology. Pericardial calcifications, although often asymptomatic, may be a sign of diffuse pericardial scarring and consequent constrictive pericarditis or even lead to complications including occlusion of epicardial coronary arteries (1).

We present the case of a 68-year-old man with permanent atrial fibrillation in whom echocardiography detected moderate left ventricular systolic dysfunction (ejection fraction 40% to 45%) with diffuse hypokinesis, left ventricular restriction filling pattern, and left atrial dilation. Constrictive pericarditis was suspected because of localized pericardial calcification on the inferior and posterior walls (Figure 1A). Our patient exhibited chronic exertional dyspnea (New York Heart Association functional class II). Physical examination revealed a moderate jugular venous distention without other features of right heart failure. Laboratory investigations including tests for calcium metabolism and liver and renal tests were normal. Previous tuberculosis was excluded because of a normal interferon gamma level. There was no history of pericarditis.

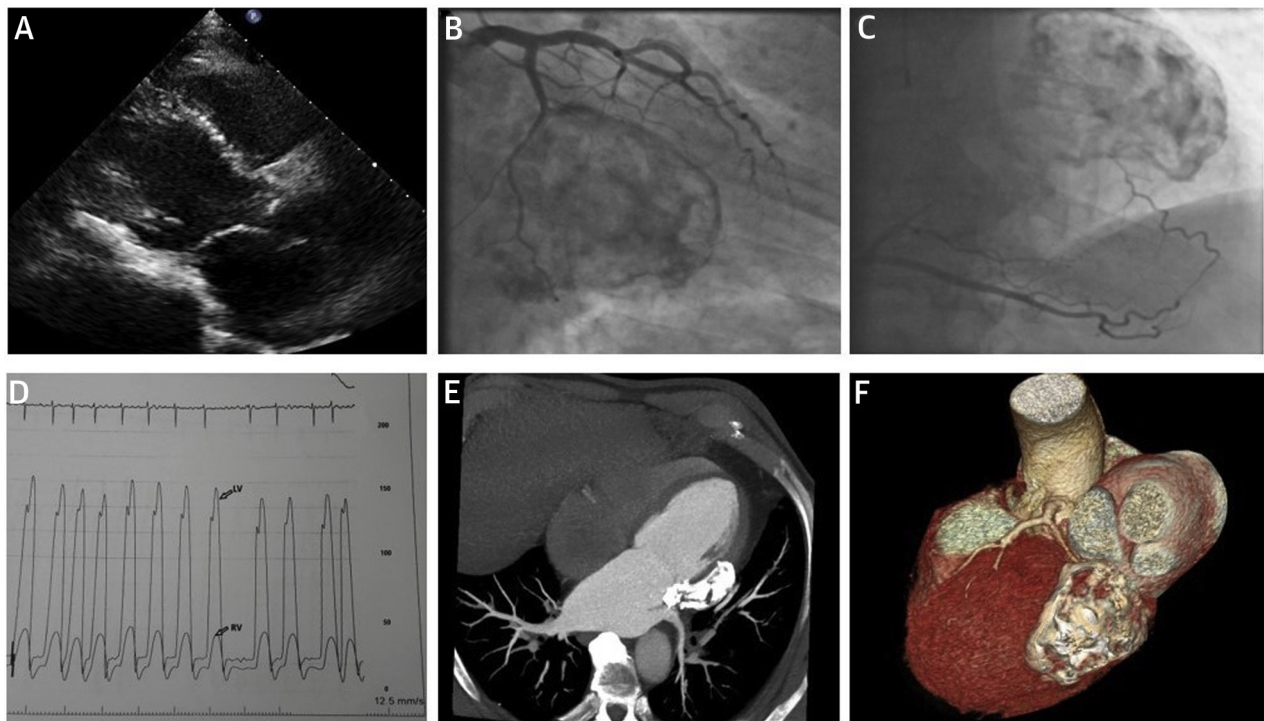
Selective coronary angiography showed a collateralized occlusion of 2 obtuse marginal branches running through the calcification. Otherwise, the coronary arteries were free of signs of atherosclerosis (Figures 1B and 1C, Video 1). Hemodynamic examination showed mild postcapillary pulmonary hypertension and increased filling pressure in cardiac compartments without equalization (pulmonary artery of 41/24 [31] mm Hg, pulmonary capillary wedge pressure of 24 mm Hg, pulmonary vascular resistance of 2 Wood units, right atrium mean pressure of 24 mm Hg, right ventricular pressure of 40/17 mm Hg, and left ventricular pressure of 150/27 mm Hg). Pressure waveforms from the right and left ventricles showed the “dip and plateau” shape without ventricular pressure discordance during respiration (Figure 1D). The findings did not meet all the criteria for the diagnosis of constrictive pericarditis. Furthermore, computed tomography of the chest showed a 6 cm × 6 cm × 2 cm bulky calcification of the laterodorsal pericardium without further intrathoracic pathology (Figures 1E and 1F).

Cases of external compression of epicardial coronary arteries with annular calcification of the pericardium treated with pericardiectomy or percutaneous intervention have been described (2,3). In our case, in which the coronary arteries were not atherosclerotic, we suspect that the chronic occlusion of the 2 obtuse marginal arteries was very likely due to external compression by the bulky calcification. The etiology of pericardial

From the Department of Cardiology, Liberec Regional Hospital, of Cardiology, Liberec, Czech Republic. The authors have reported that they have no relationships relevant to the contents of this paper to disclose.

Informed consent was obtained for this case.

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**FIGURE 1** Localized Pericardial Calcification

**(A)** Transthoracic echocardiography, parasternal long-axis view, shows marked echogenicity below the posterior wall of the left ventricle. **(B)** Selective coronary angiography shows total occlusion of 2 obtuse marginal branches running through the calcification. See [Video 1](#). **(C)** Right coronary artery angiogram demonstrates collateral flow from the right coronary artery to the obtuse marginal branches. **(D)** Left ventricular (LV) and right ventricular (RV) hemodynamic pressure tracings show elevated end-diastolic filling pressures and a square root sign on both tracings without equalization and without discordance during respiration. **(E)** Contrast-enhanced computed tomography demonstrates calcifications in the laterodorsal pericardium. **(F)** Computed tomography 3-dimensional reconstruction demonstrates bulky calcification.

calcification is most often idiopathic, as in our case (1). The known causes of pericardial calcification include infections (tuberculosis is the primary cause in developing countries), connective tissue diseases, neoplasms, post-operative/post-traumatic conditions and radiotherapy of the chest (1).

In our case, because of the absence of ischemic symptoms and the exclusion of significant pericardial constriction, we proceeded conservatively with rate control of atrial fibrillation and pharmacotherapy for heart failure.

**ADDRESS FOR CORRESPONDENCE:** Dr. Yassin N. Yassin, Liberec Regional Hospital, Department of Cardiology, Husova 357/10, 46 063, Liberec, Czech Republic. E-mail: [yassinyassin@seznam.cz](mailto:yassinyassin@seznam.cz).

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**KEY WORDS** coronary artery occlusion, pericardial calcification

**APPENDIX** For a supplemental video, please see the online version of this paper.