

A long-term consequence of pericarditis

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Articles in this section use cases to illustrate the emergency management of patients presenting in general practice with cardiac problems. They are inspired by, but not based on, real patient situations.



Mr RD, a 47-year-old flight attendant, presents to you with subacute exertional dyspnoea and minor bilateral leg swelling. He first noticed these symptoms around two months ago when he started becoming easily fatigued on long flights. His breathing has also been worsening when walking up stairs.

The practice nurse performs an ECG and spirometry, both of which return normal results. Considering the patient's worrying nonspecific symptoms and the possibility of venous thromboembolism or heart failure, you refer him to hospital for further investigation and management.

A careful history is taken on Mr RD's arrival in the emergency department. When asked about previous clots in a limb or a lung, he reports none. He says that he has had a few episodes of chest pain in the past – the most severe episode occurred about 15 years ago while he was in Spain. He attended a hospital there and remembers having a heart ultrasound and blood tests but no coronary angiography. He thinks the results of these investigations were 'mostly normal'. He has not had any chest pain recently. He is asked about cough and phlegm, of which he has had small amounts. He denies fevers and rigors.

The patient is a current smoker with a 10 pack-year history. He has no other medical problems and takes no regular medications. He is not married and he lives alone.

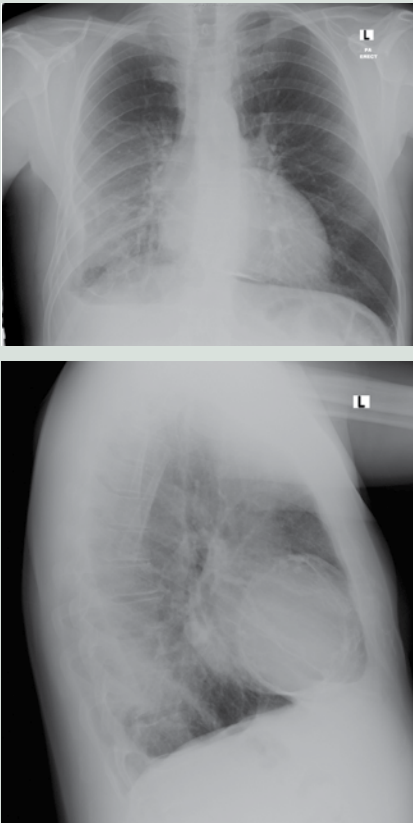
What is looked for on clinical examination?

Mr RD's vital signs are within normal limits and his pulse is regular. There is no conjunctival pallor. Throat and neck examination are normal but it is thought that the jugular venous pressure may be mildly elevated (4 cm above the sternal angle [normal <3 cm]). His apex

beat is not palpable, heart sounds are dual with no murmurs and there is no clear pericardial rub. Lung auscultation is mostly clear with minor crackles at the bases. The patient's abdomen is mildly distended but not tender. There is mild bilateral pitting oedema peripherally. His calves are soft and not tender.

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Figures 1a and b. Chest x-rays, in anteroposterior (a, top) and lateral (b, above) views, showing right lower zone consolidation and small right pleural effusion. Incidental pericardial calcification is also noted.

What investigations are required?

A full blood count and renal and liver function tests are requested for Mr RD, which return normal results. A chest x-ray is performed, which shows consolidation (Figures 1a and b), but the patient's symptoms do not correlate well with pneumonia. Screening for tuberculosis, which is necessary in international travellers who have nonspecific symptoms, is conducted and returns negative results.

Given Mr RD's flight time, smoking status and dyspnoea, a CT pulmonary angiogram is required to examine for pulmonary emboli (which would explain a raised jugular venous pressure), but his scan shows normal vasculature and no luminal defects to suggest pulmonary embolism. The CT scan shows right-sided interstitial and pleural fluid, with normal lung spaces elsewhere; mediastinal lymph nodes are not enlarged. Heavy circumferential pericardial calcification is visible (Figure 2). There is dilatation

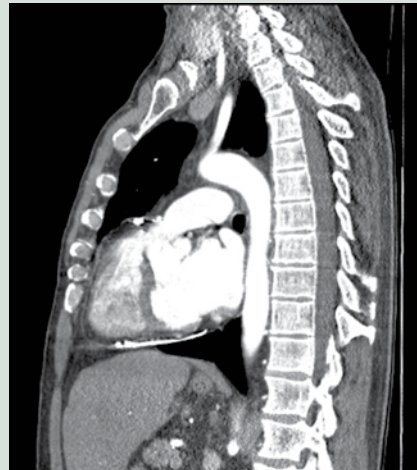


Figure 2. Sagittal view of CT scan showing marked pericardial calcification caused by recurrent pericarditis.

of the inferior vena cava and hepatic veins, but it is unlike congestive cardiac failure because there is no cardiac chamber dilatation.

The angiogram suggests constrictive pericarditis, and the radiologist recommends formal cardiology review.

What further investigations are required?

The cardiologist arranges a transthoracic echocardiogram for Mr RD, which shows normal left ventricular size and function (ejection fraction >60%). There is no significant valve disease. Pulse-wave Doppler reveals exaggerated respiratory variation of mitral inflow, suggesting fixed extracardiac pressure. The pericardium is moderately thickened with marked calcification but there is no pericardial effusion (Figure 3).



Figure 3. Transthoracic echocardiogram in the short-axis parasternal view showing pericardial calcification without a pericardial effusion.

What is the diagnosis and appropriate initial management?

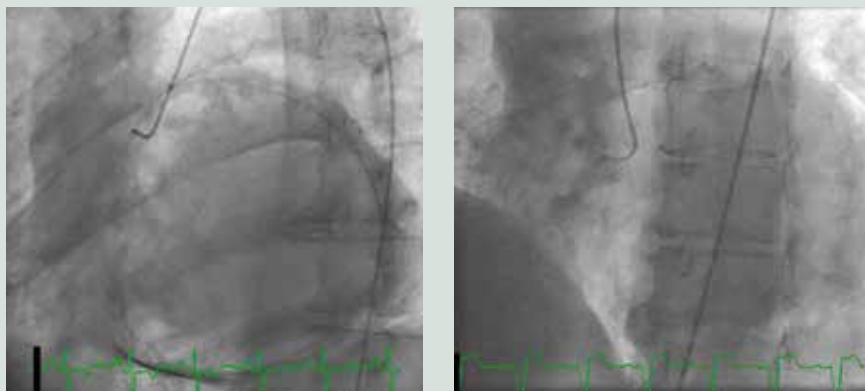
The cardiologist makes a provisional diagnosis of constrictive pericarditis with New York Heart Association (NYHA) Class II symptoms (Table).¹

Constrictive pericarditis is a disabling chronic process that arises from scarring to the normal fibroelastic pericardium following pericarditis.² About 50% of cases are idiopathic (presumably viral in origin). Common known causes include cardiac surgery and radiation therapy. Curable causes include connective tissue disease, tuberculosis, toxoplasmosis and myxoedema, but these are uncommon.² For Mr RD, the condition is likely idiopathic, with intermittent pericarditis being the cause of the episodes of chest pain he

Table. The New York Heart Association stages of heart failure¹

Class	Patient symptoms
I	No limitation of physical activity; ordinary physical activity does not cause undue fatigue, palpitations or dyspnoea (shortness of breath).
II	Slight limitation of physical activity; comfortable at rest; ordinary physical activity results in fatigue, palpitation or dyspnoea.
III	Marked limitation of physical activity; comfortable at rest; less than ordinary activity causes fatigue, palpitation or dyspnoea.
IV	Unable to carry on any physical activity without discomfort; symptoms of heart failure at rest; if any physical activity is undertaken, discomfort increases.

GP EMERGENCY MANAGEMENT CONTINUED



Figures 4a and b. Cardiac catheterisation. a (left). A circumferential opacity of pericardial calcification from recurrent pericarditis. b (right). Normal pericardium from another patient, shown for comparison.

has experienced over the past 15 years.

Patients with pericardial constriction may have signs of pulmonary congestion, ascites or peripheral oedema. In such individuals, a low-dose diuretic can be used sparingly. Strenuous physical activity should be avoided.

How can you determine the need for surgery?

The only definitive treatment for chronic constrictive pericarditis is pericardiectomy. Surgical intervention may be required in patients who have persisting symptoms despite medical therapy. The work-up includes echocardiography, spirometry (to exclude airways disease as the cause for symptoms), coronary angiography

(to assess the need for concomitant bypass surgery), right and left heart catheterisation (to assess the pathophysiology [Figures 4a and b]) and cardiac MRI (to examine the pericardium and myocardium). This work-up helps to distinguish constrictive pericarditis from restrictive cardiomyopathy (which has a similar presentation and cannot be treated by pericardiectomy) and provides information about the severity of disease.

Pericardiectomy is a long and often complex procedure. Potential complications include excessive bleeding, arrhythmias and ventricular wall rupture. For this reason, each patient needs to be considered carefully before proceeding to surgery.

Outcome: Mr RD underwent cardiac catheterisation and cardiac MRI, which revealed circumferential calcification from recurrent pericarditis and no features of restrictive cardiomyopathy. There was no coronary artery disease. The findings were consistent with constrictive pericarditis owing to recurrent episodes of pericarditis. Importantly, no other cause for his symptoms was identified. He underwent review by a cardiothoracic surgeon, who proceeded to pericardiectomy. There were no perioperative complications and Mr RD recovered well from his sternotomy. At his three-month follow up, his symptoms had resolved and he did not require any further management other than assistance with smoking cessation. **CT**

References

1. Criteria Committee of the New York Heart Association (NYHA). Nomenclature and criteria for diagnosis of diseases of the heart and great vessels. 9th ed. Boston: Little, Brown & Co; 1994.
2. Adler Y, Charron P, Imazio M, et al; European Society of Cardiology (ESC). 2015 ESC Guidelines for the diagnosis and management of pericardial diseases: The Task Force for the Diagnosis and Management of Pericardial Diseases of the European Society of Cardiology. *Eur Heart J* 2015; 36: 2921-2964.

COMPETING INTERESTS: None.

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