

SHORT CASES IN CARDIOLOGY

Atrioventricular fistula: an unusual complication of a ventricular pseudoaneurysm after myocardial infarction

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A 68 year old man was referred to the cardiology outpatient department for investigation of deteriorating angina control. Three years earlier he had sustained an inferoposterior

myocardial infarction complicated only by a transient episode of hypotension and bradycardia.

Clinical examination was unremarkable apart from the finding of a soft systolic murmur at the apex and axilla. Investigations included an ECG, which confirmed an old inferior infarction, and chest radiography, which showed a normal cardiac silhouette and lung fields. An exercise tolerance test was abnormal at a low cardiac workload. Transthoracic echocardiography suggested an inferoposterior false aneurysm with otherwise normal left ventricular function. An abnormal structure of uncertain cause was also noted within the left atrial cavity. Transoesophageal echocardiography (fig 1) confirmed the presence of both an inferoposterior false aneurysm and an unusual ring structure within the left atrium. The latter appeared to be an extension of the false aneurysm itself invaginating the posterior left atrial wall. Colour flow Doppler imaging (fig 2) suggested a fistulous communication between this structure and the true left atrial cavity. To confirm this suspicion cardiac catheterisation was performed. Left ventriculography (fig 3) again showed a large inferoposterior false aneurysm, which passed posterior to the left atrium and invaginated it. In ventricular systole, opacification and pulsatile expansion was noted of both

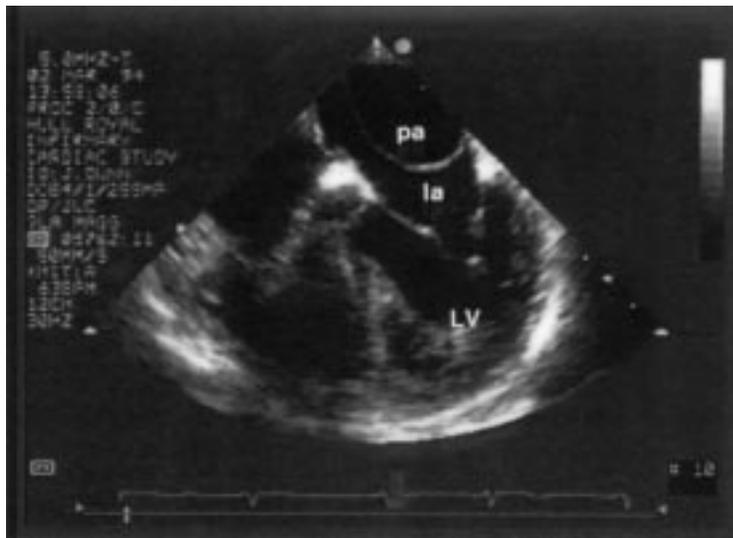


Figure 1 Transoesophageal echocardiogram showing the ventricular pseudoaneurysm (pa) invaginating the left atrial cavity (la). LV, left ventricle.

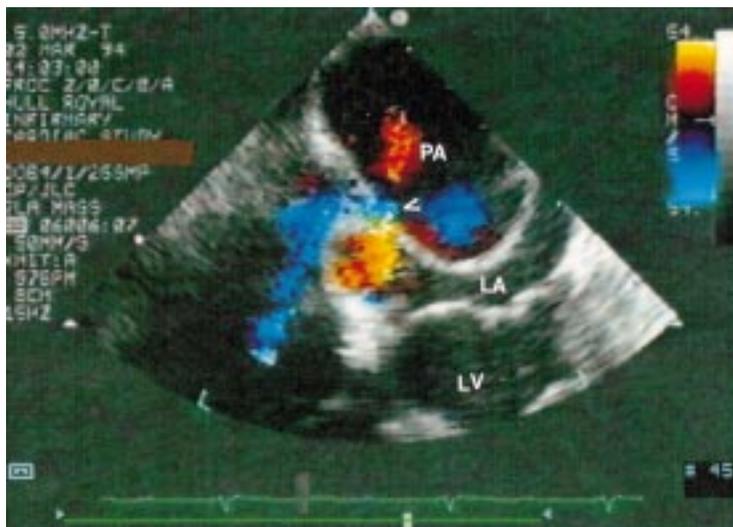


Figure 2 Transoesophageal echocardiography colour flow Doppler image identifying a fistulous communication (arrow) between the ventricular pseudoaneurysm (PA) and the left atrial cavity (LA). LV, left ventricle.

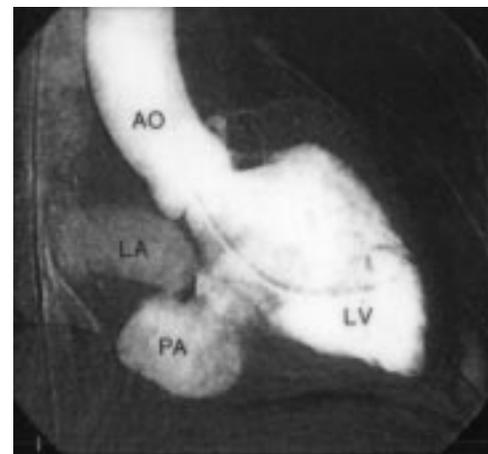


Figure 3 Left ventriculography demonstrating contrast opacification of an inferoposterior pseudoaneurysm (PA) and the left atrium (LA) via a fistulous communication. LV, left ventricle; AO, aorta.

the false aneurysm and the left atrium. The latter was seen to opacify in the absence of mitral regurgitation, confirming the suspicion of a fistulous communication between pseudoaneurysm and atrium. The right coronary and left anterior descending arteries were occluded.

The patient was referred for cardiothoracic surgical exploration, repair of the false aneurysm, and coronary artery bypass grafting. At the time of surgery a posteriorly arising false aneurysm was identified communicating with the left ventricle by way of a large posterior rupture. The false aneurysm itself communicated with the left atrial cavity by way of a sizeable fistula. The fistula and ventricular rupture were closed and the false aneurysm repaired. A solitary reversed saphenous vein graft was applied to the left anterior descending artery. Postoperative course was uneventful and to date the patient remains well and asymptomatic.

Discussion

Ventricular pseudoaneurysm formation is a rare complication of myocardial infarction as most cases of acute free wall rupture are complete and lethal. Factors associated with an increased risk of free wall rupture include previous myocardial infarction, advanced age, and

female sex.¹ Subacute rupture occurs less frequently but should be suspected in any patient postinfarction with abrupt transient hypotension and pericardial pain. Occasionally, patients with ventricular pseudoaneurysm do survive for prolonged periods without rupture,^{2,3} although they are probably the minority. While left ventricular to right atrial communications have been reported, they are rare and have been variably attributed to such pathologies as congenital defects, penetrating trauma, endocarditis or valve replacement, and rarely myocardial infarction.⁴ As far as we are aware, this is the first case reported of a fistulous communication between the left ventricle and left atrium arising as a complication of a postinfarction left ventricular pseudoaneurysm.

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- 3 Blinc A, Noc M, Pohar B, *et al.* Subacute rupture of the left ventricular free wall after acute myocardial infarction. Three cases of long-term survival without emergency surgical repair. *Chest* 1996;109:565-7.
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