Giant Left Ventricular Pseudoaneurysm as a Late Complication of Myocardial Infarction

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Abstract

We present a case of a 63-year-old patient referred to a cardiology consultation due to progressive symptoms of heart failure. He had a history of an inferior ST elevation acute myocardial infarction 6 years ago. Echocardiogram revealed a giant left ventricular aneurysm/pseudoaneurysm involving the inferior and inferolateral left ventricular walls, with a massive mural thrombus. Additional characterization was done by cardiac magnetic resonance, essential in establishing the diagnosis of pseudoaneurysm and to guide subsequent management. In this case, we discuss the differential diagnosis between aneurysm and pseudoaneurysm and highlight the role of non-invasive multimodality imaging.

Keywords: Heart failure, myocardial infarction, pseudoaneurysm

INTRODUCTION

Pseudoaneurysm is a rare and serious mechanical complication of myocardial infarction. Its clinical presentation is variable and the differential diagnosis with aneurysm, although challenging, is essential for patient management.

CASE REPORT

A 63-year-old patient was referred to a cardiology consultation in our institution due to progressive symptoms of heart failure (New York Heart Association class II). He had a history of an inferior ST elevation acute myocardial infarction 6 years ago; at that time, angiography demonstrated a distal right coronary artery (RCA) occlusion and a 70%–90% stenosis in its medium segment, both successfully treated with two drug-eluting stents. At hospital discharge, he had preserved left ventricular systolic function with inferior wall hypokinesia. The patient repeated a new transthoracic echocardiogram, which showed severe left ventricular dysfunction and the presence of a giant left ventricular aneurysm/pseudoaneurysm (67 mm × 89 mm), involving the inferior and inferolateral left ventricular walls, with a massive mural thrombus (64 mm × 24 mm) [Figure 1]. Additional characterization was done by cardiac magnetic resonance (CMR) [Figure 2], revealing a sharp discontinuity of the left ventricle wall thickness involving the inferior and inferolateral walls, forming a large akinetic aneurysmatic cavity filled with thrombus. Even though its neck was not very narrow, the walls of this cavity seemed to be formed only by enhanced pericardium or a very thin rim of scar, suggesting pseudoaneurysm. Coronary angiography showed a 70%–90% stenosis in the mid-anterior descending coronary artery, a 50% in-stent restenosis in the mid-RCA, as well as stent occlusion of distal RCA. The patient was referred for surgical repair. Aneurysmectomy, ventricular reconstruction, and left anterior descending coronary artery bypass were performed. The patient died 3 days later due to refractory cardiogenic shock. Pathology examination of the excised sample confirmed the diagnosis of pseudoaneurysm.

DISCUSSION

Pseudoaneurysm is an uncommon complication of myocardial infarction associated with a high mortality rate. It derives from rupture of the left ventricle free wall contained by the overlying adherent pericardium or scar tissue. Differentiation between aneurysm and pseudoaneurysm, although difficult,
is crucial, to ensure appropriate management of these patients. Echocardiogram is the first imaging modality used, but usually, it fails to accurately establish the differential diagnosis.[1] Due to high spatial resolution and tissue characterization, CMR is the most powerful tool for detecting and characterizing ventricular pseudoaneurysm. There are no specific signs; however, certain CMR imaging features are more suggestive of a pseudoaneurysm, such us a narrow neck in relation to the aneurysm sac (orifice to aneurysm diameter ratio <1), origin in the inferior or lateral wall, discontinuity of the myocardium at the neck of the aneurysm, absence of coronary arteries overlying the aneurysm, and delayed pericardial enhancement in the wall of the pseudoaneurysm.[2,3] The present case illustrates the value of CMR findings to provide accurate diagnostic information and to guide subsequent intervention.

In this case report, although the inferior infarction was successfully treated 6 years ago, current coronary angiography showed a stent occlusion of distal RCA, which may raise the suspicion of an event recurrence in the same territory, probably asymptomatic or devalued by the patient, leading to wall rupture and pseudoaneurysm formation.

Pseudoaneurysms are believed to have poor prognosis. Stasis of blood flow inside the cavity can form thrombus and create embolic events. Furthermore, untreated pseudoaneurysms have a 30%–45% risk of rupture, carrying a mortality rate of almost 50% with medical treatment, so surgical resection is the preferred therapeutic option.[4,5] Nevertheless, surgical treatment is also associated with 23% of mortality.[9] The fatal outcome presented in this case, in a patient only slightly symptomatic despite the large dimensions of pseudoaneurysm, highlights the importance of carefully weighing the risk of rupture and embolism against the estimated risk of surgery, especially in the management of patients with chronic pseudoaneurysm. The risks at stake should be discussed within the Heart Team, the patient, and the family.

**Declaration of patient consent**
The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patient(s) understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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**Conflicts of interest**
There are no conflicts of interest.

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