Silent Left Ventricular Pseudoaneurysm and Rupture to a Second Pseudoaneurysm

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Left ventricular pseudoaneurysm is usually associated with myocardial infarction and ventricular wall rupture, although it can also be associated with other pathological conditions. Rupture causes shock, and death if not repaired urgently. We report the very rare case of a man with coronary lesions that resulted in a silent myocardial infarction with rupture of the myocardial wall and the subsequent development of a large, posterolateral, left ventricular pseudoaneurysm. This was followed by rupture of the primary pseudoaneurysm and the consequent creation of a second pseudoaneurysm, which finally resulted in shock and death.

Key words: Pseudoaneurysm. Cardiac rupture. Myocardial infarction. Imaging.

CASE STUDY

63-year-old patient, smoker of 20 cigarettes daily, with no other known cardiovascular risk factors or other clinical background of interest. The patient mentioned pleuritic pain in the left side present for 10 days before hospitalization, with a feeling of fever not confirmed with a thermometer, cough, yellowish phlegm, and worsening of clinical symptoms despite antibiotic therapy. He came to the emergency department, where the physical examination disclosed blood pressure of 130/70 mm Hg, temperature of 38°C, and heart rate of 100 bpm. The patient was eu-
paroxysmal atrial fibrillation at 155 bpm that spontaneously reverted to sinus rhythm. The patient developed signs of right-sided heart failure. The echocardiogram showed mild systolic dysfunction, left ventricular ejection fraction of 51%, and mild hypertrophy. In the middle lateral wall, an extensive ventricular pseudoaneurysm was seen with rupture of the free wall of the left ventricle at this level (Figure 1). The neck of the pseudoaneurysm measured 40 mm and the aneurysmal pocket, 90×60 mm; in the interior there was blood stasis and a thrombus adhering to the wall and occupying part of the pseudoaneurysm, limited by a wall of fibrinoid appearance. Moderate to severe pericardial effusion that was causing diastolic collapse of the right atrium and ventricle was evident, and Doppler showed signs of tamponade; mild mitral regurgitation and mild dilatation of the left atrium were also observed. The patient was immediately transferred to another hospital for surgery, where magnetic resonance imaging (MRI) and computed tomography (CT) (Figure 2) were performed while the operating theater was being prepared, with the patient perfectly stable and asymptomatic. The echocardiographic findings were confirmed and a second pseudoaneurysm neck and pocket was observed; rupture of the pseudoaneurysm content as well as pleural and pericardial effusion were seen. Coronary angiography showed insignificant irregularities and lesions in the right coronary artery, a severe lesion in the middle left anterior descending artery, and occlusion of the circumflex artery (Figure 3). Subsequent ventriculography showed the aneurysm and its second neck with formation of a second tubular aneurysmal pocket (Figure 3). The pseudoaneurysm ruptured during ventriculography and the patient went into cardiorespiratory arrest with transient recovery and posterior electromechanical dissociation from which he could not be resuscitated, despite transfer to the operating theater for immediate surgery.

DISCUSSION

Ventricular pseudoaneurysm is a rare entity that complicates up to 4%-12% of all acute myocardial infarctions. It can occur in relation to chest trauma,1 heart surgery,4 or infections5,6 and is sometimes found after a silent infarction.12 Rupture of the free ventricular wall normally results in immediate collapse with electromechanical dissociation and death. On occasions, however, the rupture is contained by the pericardium and fibrous tissue, producing a pseudoaneurysm. The clinical symptoms and ECG may not assist the diagnosis due to the lack of specificity.4 Unlike a true aneurysm, the wall of a left ventricular pseudoaneurysm contains only fibrous tissue and no muscle tissue. Due to the natural tendency of a pseudo-

Figure 1. Four-chamber echocardiographic image showing the rupture, with tearing and thrombotic threads from the ventricular wall, the large ventricular pseudoaneurysm, and the presence of pericardial effusion.

Figure 2. Magnetic resonance imaging (top) in the posterior sagittal view and scan (bottom). The arrows and square indicate the large pseudoaneurysm; the triangle and 2 circles mark the left pleural and pericardial effusion, and the single circle indicates the second aneurysmal neck evident in the MR image.
aneurysm to rupture, early repair surgery is recom-
mended, although cases of relatively good prognosis
with a conservative approach have been reported.9
Our case had an abnormal presentation, with few
symptoms, and no clinical or electrocardiographic
evidence of prior myocardial infarction. The nonspe-
cific discomfort, fever, and pleurocentesis results,
which showed fluid with insufficiently clear exuda-
tive characteristics, did not raise clinical suspicion.
The diagnosis was made on echocardiography, fol-
lowing an episode of paroxysmal atrial fibrillation
and chest pain which indicated the need for this ex-
amination. Although the diagnosis of ventricular
pseudoaneurysm is based on pathological anatomy
findings, there are typical echocardiographic charac-
teristics such as the presence of a narrow neck,
thrombosis of the cavity, a fibrous wall, and flow
from the ventricle to the cavity, all of them present in
our patient. Other diagnostic imaging methods in-
clude conventional MRI10 or gadolinium-enhanced
sequences for the wall,11 which make it possible to
distinguish the presence of muscle and assist in the
differential diagnosis with a true aneurysm. Helical
CT12 and contrast ventriculography added to coro-
nary angiography provide useful information. In ad-
dition to the echocardiogram (Figure 1), our patient
underwent conventional MRI and CT (Figure 2), con-
firming the diagnosis and allowing better anatomical
characterization with the presence of a second aneu-
yrusmal neck, as well as the diagnosis of complica-
tions. Coronary angiography was also performed,
showing occlusion of the circumflex artery (Figure 3)
and lesions in the left anterior descending artery and
right coronary. As in our patient, a clinical course
with minimal symptoms has been reported in other
occasions.7,8 The final outcome raises some questions
about the need to use aggressive diagnostic imaging
methods beyond coronary angiography to provide in-
formation for surgery, when noninvasive methods are
available.

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