

Giant Left Ventricular Apical Pseudoaneurysm

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Abstract

Left ventricular free wall rupture (LVFWR) can occur after myocardial infarction. Sometimes LVFWR can be contained by a pericardium leading to the formation of the pseudoaneurysm. In view of the high tendency to expand and rupture an urgent surgery is indicated. We experienced a rare case of giant left ventricular apical pseudoaneurysm which was successfully managed with surgical intervention.

Case

A 47-year-old male patient came to our hospital with an acute onset of chest pain and was diagnosed with anterior wall myocardial infarction (MI) which was managed conservatively. Four weeks later he came to his physician with a complaint of heaviness in chest since 12 hrs. Transthoracic echocardiogram (TTE) revealed a large 12x10cm pseudoaneurysm located at the left ventricular (LV) apex that communicated with the pericardial cavity through a 24mm defect (Figure 1; Video 1). Flow across the defect was confirmed by color flow Doppler (Figure 2; Video 2). Coronary angiography revealed complete occlusion of the left anterior descending artery. Emergency surgery was planned in view of massive LV pseudoaneurysm. After the induction of anesthesia, a median sternotomy was done. A large LV apical pseudoaneurysm was visualized which was contained by a thick, densely adherent fibrous capsule of the pericardium. The Cardiopulmonary bypass (CPB) was initiated after systemic heparinization. After aortic cross-clamp, a complete dissection of the heart was performed, to avoid systemic embolization. Antegrade cold blood cardioplegia was delivered to arrest the heart. The aneurysm sac was opened by a longitudinal incision (Figure 3). The defect was located close to the apex of the LV, which was closed with a Gore-Tex patch to avoid possible distortion of the heart structures. Biogluce was applied over it and the patient was taken off bypass. The CPB was terminated with inotropic support of milrinone 0.4mcg/kg/min and noradrenaline of 0.05mcg/kg/min. The patient was successfully shifted to the intensive care unit with stable hemodynamics and the trachea was extubated after 24 hours. A written informed consent was taken from the patient and the case was approved by the institutional review board.

Discussion:

The left ventricular free wall rupture (LVFWR) after MI decreased drastically in the current era due to the advancement of effective early revascularization strategies. Sudden cardiac death is a common sequel of LVFWR, however, in some cases, it can be contained by the superimposing adherent pericardium resulting in the formation of the pseudoaneurysm. The pseudoaneurysm communicates with the LV cavity by a narrow neck, whose diameter is less than 50% of the maximum internal dimensions of an aneurysm.¹ Whereas, LV true aneurysm develops due to scar thinning of the myocardial wall after MI. It contains all the three layers of LV i.e endocardium, myocardium, and epicardium, and has a wide neck, smooth margins. The posterolateral wall is the most common location for LV pseudoaneurysm, whereas, a true aneurysm, located commonly in the apicoanterior wall. TTE is used as an initial diagnostic modality for the assessment of heart after MI. It not only helps in diagnosis, but also helps in determining the location and extent of the

lesion. Due to its high tendency to expand and rupture, early surgical intervention is recommended in LV pseudoaneurysm. Our case had developed a giant LV pseudoaneurysm four weeks after the development of MI which was successfully managed by the surgical intervention.

Reference :

Eren E, Bozbuga N, Toker ME, et al. Surgical treatment of post-infarction left ventricular pseudoaneurysm: a two-decade experience. *Tex Heart Inst J* 2007;34:47–51.

Legends :

Figure 1 - Apical four chamber view showing an apical pseudoaneurysm (red arrow) with narrow neck (green arrow). RA, Right atrium; RV, Right ventricle; LA, Left atrium; LV, Left ventricle.

Figure 2 - Colour Doppler in apical four chamber view showing a free blood flow between left ventricular cavity and pseudoaneurysm (red arrow). RA, Right atrium; RV, Right ventricle; LA, Left atrium; LV, Left ventricle.

Figure 3 – Surgical image showing a ruptured left ventricular apex (green arrow).

Video 1 : Apical four chamber view showing an apical pseudoaneurysm with narrow neck.

Video 2 : Colour Doppler in apical four chamber view showing a free blood flow between left ventricular cavity and pseudoaneurysm.



