Surgical treatment of a giant left main aneurysm

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Abstract

Coronary artery aneurysms are a rare finding and even more any coronary dilation having a diameter 1.5 times greater than the adjacent artery qualified as giant. No established treatment protocol exists. We report the case of a 75-year old man with a clinical symptom of chest pain on exertion, worsening in the last 6 months, who was diagnosed with a giant left main aneurysm. Surgical ligation of the proximal left anterior descending artery and first diagonal and triple bypass, using saphenous vein graft to vascularize the proximal circumflex artery, left anterior descending artery and first diagonal, was performed.

Keywords: Giant coronary aneurysm • Left main • Cardiac surgery

INTRODUCTION

Coronary artery aneurysms are uncommon and even more are the giant aneurysms, defined as having a diameter >2–5 cm [1]. The prevalence of coronary artery aneurysms detected in populations undergoing angiography is 1.2–4.9% and 1.4% in autopsy studies [2]. Currently, there is not an established standard treatment, but surgical treatment seems to be the best long-term option.

In November 2015, a 75-year old man with a history of myocardial infarction in 1992 and diabetes mellitus type 2 attended for outpatient stress test in our hospital, but due to some ECG evidence and angina on exertion it was decided to proceed directly to coronary angiography. This test demonstrated a giant coronary artery aneurysm of the left main: 17.2 mm in diameter and 23.8 mm in length. The aneurysm was confined to the left main stem, and at its distal end, the left anterior descending (LAD) and circumflex (LCX) arise. The first diagonal branch showed a subtotal stenosis at its ostium, and the LCX also had a stenosis of 50% in its proximal segment (Fig. 1). An echocardiogram demonstrated an estimated ejection fraction of 30% with a large extensive area of apical akinesis. A computer tomography angiogram was performed and showed 30 x 19.5 x 17.6 mm distal left main coronary artery aneurysm. The LAD and LCX arise from the distal end of the aneurysm. The proximal LAD is also ectasic, extending over a distance of ~20 mm with marked calcified atheroma extending over a total distance of ~30 mm (Fig. 1). In January 2016, the patient visited his primary care physician, reporting worsening angina at rest. As to the position of the aneurysm, it was not possible to treat it percutaneously and the surgical option was decided. It was performed through a median sternotomy with cardiopulmonary bypass. The saphenous vein was harvested. After arresting the heart, the distal aneurysmatic left main and its bifurcation were identified. Distal anastomoses were performed on LCX, diagonal branch and LAD. Proximal LAD and diagonal were ligated. Owing to extensive calcification of the proximal part of the left circumflex coronary artery, the risk of embolization by calcium debris was deemed too high to proceed with surgical ligation. After an aortotomy, we excluded the proximal left main aneurysm with an autologous pericardial patch with 5/0 Prolene, occluding the left coronary ostium. The aortotomy was closed and proximal anastomosis performed with 7/0 Prolene on cross-clamp (Fig. 2).

His postoperative course was uneventful and at the first outpatient control, around a month after surgery, he was completely asymptomatic. A computed tomography coronary angiogram will be carried out as part of a routine postoperative 1-year follow-up to assess the mid-term results.

COMMENT

Since left main aneurysms are rare in the literature, there is no consensus regarding a standard treatment. Many management options have been reported: as conservative therapy, anticoagulation and percutaneous covered-stent implantation [3], and, as surgical procedures [4], ligation with or without resection and coronary bypass surgery. We are aware of the incomplete exclusion of the aneurysm in the case we reported, but we were aiming to balance the risk of complications related to a radical surgical approach. A reduction of the wall tension, which relates directly with the risk of rupture by reducing inflow into the aneurysm sac, was considered a reasonable compromise, anticipating also that...
the aneurysm sac will ultimately thrombose due to low blood flow velocity.

The risk of sudden death due to rupture or dissection and of thrombus formation, leading to myocardial infarction or stroke, should always be kept in mind for left main aneurysms; these reasons should address to surgery, even if there is still a lack of evidence in the literature about the best treatment.

Conflict of interest: none declared.

REFERENCES