
SURGICALLY TREATED SACCULAR LEFT MAIN CORONARY ARTERY ANEURYSM

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Abstract: Coronary artery aneurysm is not a common diagnosis, and those of the left main coronary artery(LMCA) are extremely rare with an incidence of 0.1% of patients undergoing percutaneous coronary intervention(PCI). We report a case of 68-year-old male patient, hospitalized in interventional cardiology department with a retrosternal pain, where PCI was performed revealing a saccular aneurysm of the LMCA. Computed tomography(CT) scan confirmed the diagnosis of isolated coronary artery aneurysm 15mm distal to the orifice of the LMCA. Cardiac surgery procedure was performed including: double coronary artery bypass grafting(CABG), occlusion of the LMCA orifice combined with distal occlusion of the aneurysm. The postoperative course was uneventful and the patient was discharged on postoperative day 6 without any remarks. Even though the etiology of the aneurysm was not fully investigated, it was suspected to be a congenital one.

Keywords: Left Main Coronary Artery • Aneurysm • Coronary Artery Disease • Coronary Artery Bypass Grafting.

INTRODUCTION

The coronary artery aneurysms(CAA) are defined as localized coronary artery dilatations. There are two types of aneurysm: saccular and fusiform, fusiform being the more common. Saccular ones are more prone to rupture, thrombosis and fistulization. Regarding the localization, the right coronary artery(RCA) is the most common place(40-87%), followed by the left anterior descending(LAD) artery(25-50%), the circumflex(RCX) artery(24-50%) and the LMCA(7%)¹. Most of the aneurysms are secondary to atherosclerosis or other conditions including Kawasaki disease, Takayasu disease, trauma, syphilis, bacterial infection etc. Congenital aneurysms account for 20-30% of coronary aneurysms, associated with Ehlers-Danlos syndrome, Marfan disease, cyanotic congenital heart disease etc². Symptoms are frequent, most being indistinguishable from those of CAD: angina, congestive heart failure and myocardial infarction.

CASE PRESENTATION

We present a case of 44-year-old man admitted with clinical symptoms of dyspnea and chest pain. The patient denied a family history of cardiovascular diseases. PCI(Figure 1) was done showing a large saccular LMCA aneurysm with normal distal coronary bed. The patient was discussed at heart team meeting and decision was taken for surgical treatment as the best option for the case. At admission the 12-channel electrocardiogram showed sinus rhythm with normal QRS axis. The trans-thoracic echocardiography demonstrated left ventricle ejection fraction of 68%, aortic root diameter: 23mm, aortic bulbus: 39mm, ascending aorta: 37mm. Aortic, mitral and tricuspid valves were without deviations. The laboratory test results were within the normal ranges.

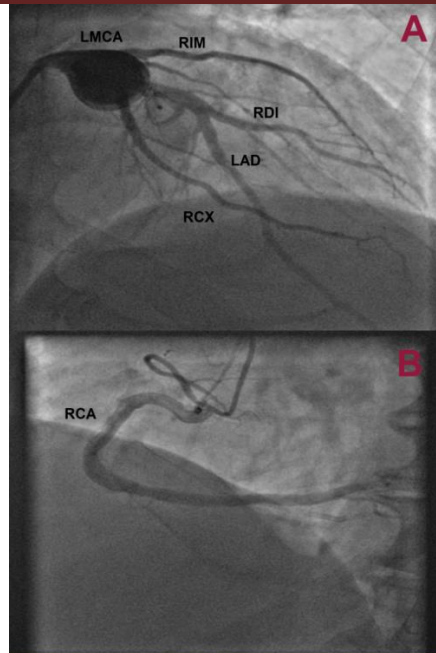


Figure 1: Preoperative PCI: A – Visible LMCA Aneurysm; B – normal RCA without lesions;

CT scan(Figure 2) was performed for determination of the exact location of the aneurysm revealing a 2.52x2.1cm saccular LMCA aneurysm 15mm distal to the orifice of the LMCA. The calculated EuroSCORE II (European System for Cardiac Operative Risk Evaluation) of the patient was 3.56%.



Figure 2: Preoperative CT-coronary scan reconstructions – visible saccular LMCA aneurysm.

The patient was operated in an elective manner, including double CABG: left internal thoracic artery(LIMA) to the LAD artery and right internal thoracic artery(RIMA)to the RCX. After that, the ascending aorta was opened and the LMCA orifice was closed with a 4/0 polypropylene suture followed by distal ligation of the aneurysm. The postoperative course was uneventful. The patient was discharged on medical therapy with acetylsalicylic acid 100mg/daily, rosuvastatin 10mg/daily and perindopril 5mg/twice daily. One month after the operation, a PCI was performed showing patent and normally functioning bypass grafts.

DISCUSSION

First described by Morgagni in 1731, a coronary artery aneurysm is defined as a localized coronary artery dilatation 1.5 times the adjacent normal coronary vessels¹. In adult population group the aneurysm origin is predominantly

atherosclerotic, yet other causes include Kawasaki Disease, trauma, infection, congenital malformation or iatrogenic after an angioplasty or intracoronary stent placement².

The incidence of CAA is higher in men than in women 2.2% vs 0.5% respectively³. Being very uncommon diagnosis, the optimal treatment options are still happen to be not fully explored and standardized. Management alternatives include conservative anticoagulant therapy, surgery or PCI with covered stent implantation³.

Conservative treatment with long-term use of antiplatelet or anticoagulant is mandatory for patients who refuse surgical or interventional treatment and have a considerable thrombosis and/or embolization risk.

Interventional treatment is reserved for patients with smaller in size and localized in one vessel aneurysms and in atherosclerotic coronary artery disease(CAD) free vessels.

Surgical treatment is preferred for patients with larger in size aneurysms which carry greater risk of rupture or embolization and located in the LMCA. Furthermore, it is recommended type of treatment for cases combined with atherosclerotic CAD⁴.

Regarding our choice of using both LIMA and RIMA over saphenous venous graft, numerous studies have confirmed excellent long-term graft patency and survival rates of arterial over venous grafts. According to Vazhev, which published data from patients operated using entirely arterial grafts for revascularization with 93% long-term survival and 0% cases of graft occlusion confirmed with PCI⁵.

Although CABG without aneurysm ligation or resection can be performed, we consider that aneurysm ligation or resection is essential for avoiding rupture or embolization. The direct approach to the aneurysm located in the LMCA is difficult because of its location just behind the pulmonary trunk. That is the reason we do not directly approach the aneurysm. Instead, we occlude the LMCA orifice from the inside of the ascending aorta and ligate the aneurysm distally, a method that is reported and possible in most of the cases^{6,7,8,9,10}.

Conflicts of interest: The authors have no conflicts of interest to declare.

Patient consent to publish: Obtained.

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