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Giant Distal Left Main Coronary Artery Aneurysm

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ABSTRACT

Coronary artery aneurysms are rare entities most commonly detected during coronary angiography incidentally. The incidence has increased during the recent years due to widespread use of drug eluting stents. Stasis with the aneurysm may lead to thrombosis and occurrence of myocardial ischemic symptoms. Percutaneous intervention strategies and surgical options are available. Here, we report a case with distal left main coronary artery aneurysm presented with acute coronary syndrome and treated successfully with surgery.

Key Words: Coronary aneurysm; acute coronary syndrome; myocardial infarction; coronary artery bypass

Dev Distal Sol Ana Koroner Arter Anevrizması

ÖZET

Koroner arter anevrizmaları, sıklıkla koroner anjiyografi sırasında insidental olarak saptanan nadir olgulardır. Son yıllarda ilaç salınımlı stentlerin sık kullanımına bağlı olarak insidans artmıştır. Anevrizma içerisindeki staz, tromboz oluşumuna ve miyokardiyal iskemik semptomların gelişmesine neden olur. Perkütan girişim stratejileri ve cerrahi seçenekler tedavide mevcuttur. Bu çalışmada, akut koroner sendrom ile başvuran ve cerrahi ile başarılı biçimde tedavi edilen bir distal sol ana koroner arter anevrizması sunulmuştur.

Anahtar Kelimeler: Koroner anevrizma; akut koroner sendrom; miyokard infarktüsü; koroner arter bypas

INTRODUCTION

Coronary artery aneurysms are localized dilatations of the native coronary arteries by 1.5 times of more in diameter. Its incidence is reported to range between 1.5 and 5% with right coronary artery and male predominance[1-3]. Aneurysms of the left main coronary artery are rarer with an incidence of 0.1%[2]. The etiology is most frequently atherosclerosis and less commonly connective tissue diseases, vasculitis (mostly Kawasaki disease), trauma, congenital, mycotic, cocaine abuse and idiopathic[3-5]. There is increased number of cases presented following percutaneous interventions[5]. The hypersensitivity vasculitis due to drug-eluting stents is responsible for this association[2]. The clinical manifestation is mostly myocardial ischemia and/or infarction due to embolism. Rupture of the aneurysm is very rare. The treatment options include covered stents, anticoagulation and surgery[3,6].

Here, we report a case with giant aneurysm of the left main coronary artery presented with acute coronary syndrome.

CASE REPORT

A 28-year-old male patient was admitted to our hospital with prolonged severe chest pain and dyspnea following moderate exercise. Acute coronary syndrome was diagnosed. Physical examination was normal. Evaluation of the coronary arteries with coronary angiography revealed a 3x2 cm saccular aneurysm originating from the distal left main coronary artery. Left anterior descending (LAD) coronary artery was occluded at its proximal portion. The aneurysm was also extending to LAD, circumflex and intermediate coronary artery origins (Figure 1).

The patient had hemodynamic instability and underwent an emergency operation with the diagnosis of acute myocardial infarction and congestive heart failure. Access was through a median sternotomy and cardiopulmonary bypass was not employed. The aneurysm was exposed in the atrioventricular groove. Intravenous 5000 U heparin was administered and ACT was kept around 200 seconds. Deep pericardial suture was employed. Estech® tissue stabilizer system (Estech, Danville, Ca, USA) was used for both anastomoses. Intracoronary shunt was not employed. Intravenous metoprolol was administered to decrease heart rate and inotropic agents were used to increase blood pressure when necessary. Coronary artery bypass grafting (CABG) was performed with saphenous vein placed to LAD and second diagonal artery.

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The patient stayed in the intensive care unit for 48 hours. The whole postoperative course was uneventful and he was discharged on seventh postoperative day.

The patient was asymptomatic two years after the operation. The bypass grafts were patent and the aneurysm was stable, so no intervention was planned for the aneurysm up to now (Figure 2).

DISCUSSION

Coronary artery aneurysms, particularly aneurysms of the left main coronary artery are very rare pathologies. The aneurysms are mostly silent. Murmur related with associated fistula can be detected together with the findings of congestive heart failure[6]. The diagnosis is usually made incidentally during coronary angiography, but with the development of less invasive techniques like multidimensional computerized tomography, the rate of incidental diagnosis has increased[7].

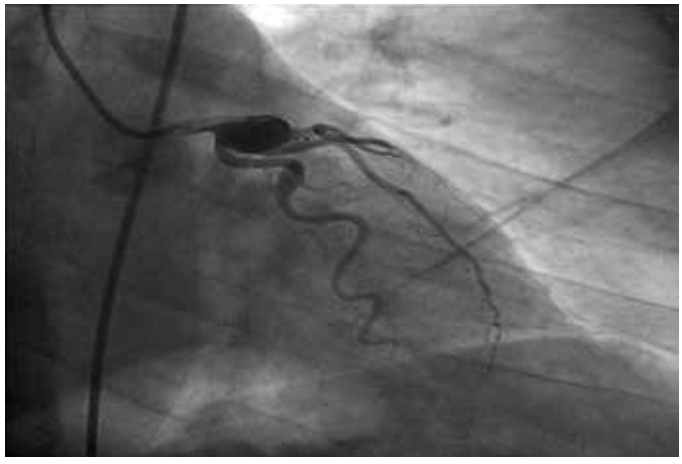

Figure 1. Coronary angiography documented aneurysm of the distal left main coronary artery which included the osteum of LAD, intermediate and circumflex arteries. There was total occlusion of the proximal LAD

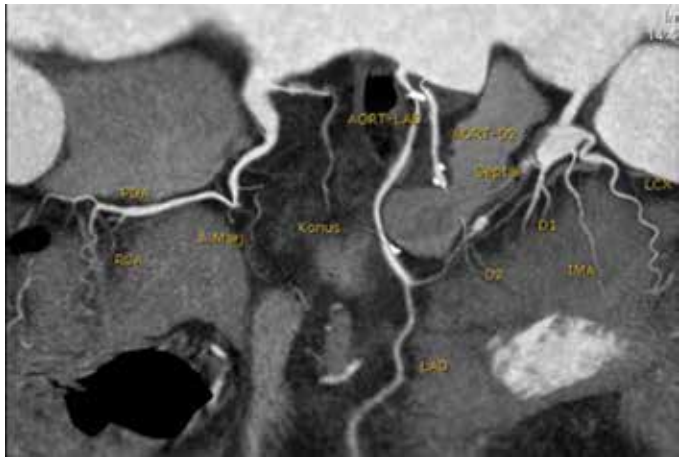

Figure 2. Postoperative cardiac computerized tomography: LAD and diagonal grafts were patent and the aneurysm was stable

The natural history of atherosclerotic coronary artery aneurysms is unknown, but without any significant stenosis, the 5 year survival rate is reported as 91% compared to 95% in the control group. The rupture is infrequent, but may occur during percutaneous interventions[8]. In cases with findings of myocardial ischemia or infarction, usually acute coronary syndrome is diagnosed followed by identification of the pathology during coronary angiography which was the case in our patient. The mechanism of myocardial ischemia is explained by the turbulent blood flow occurring within the aneurysmatic segment and its consequences. This is documented by coronary angiography with the findings of slow flow, stasis and segmental backflow[6].

The etiology was probably congenital in this case due to absence of previous history of vasculitis or percutaneous intervention. The age of the patient was too young for development of atherosclerotic disease. We think that congenital aneurysm lead to turbulent blood flow followed by stasis and thrombosis of LAD.

The treatment option usually depends on the size and location of the aneurysm and presence of endovascular thrombosis[8]. But, there is still no consensus on the treatment strategy due to its rare entity. Polytetrafluoroethylene-covered stents, vein-covered stents, uncovered stents and embolization have been employed in the treatment of coronary artery aneurysms[6]. Surgical treatment has also been advocated; resection or plication and CABG were performed. This approach is being more commonly employed[1,7]. The surgical treatment of the aneurysmal sac is resection or ligation concomitant with revascularization procedure. In huge aneurysms of the proximal left main coronary artery, aortotomy and patch closure of the orifice to gain proximal control may be performed[9]. But, it is also reported that coronary aneurysms do not spontaneously rupture more frequently than non-aneurysmatic ones and surgery may not be warranted[6]. On contrary, spontaneous rupture of coronary artery aneurysms has been reported previously[10].

We also believe that coronary aneurysms do not rupture spontaneously, so we planned percutaneous treatment for the aneurysm (if required) during follow-up and performed off-pump CABG surgery due to associated coronary stenosis. The reason for ischemic symptoms of the patient was occlusion of the proximal portion of the LAD, so only LAD was bypassed, circumflex system was not bypassed.

In conclusion, due to rarity of the pathology, the treatment strategy is still based on anecdotal reports and personal perspective of the cardiologist and cardiovascular surgeon. The surgical intervention is almost always inevitable in cases of acute coronary syndrome due to accompanying need for revascularization, but incidentally diagnosed aneurysms may be good candidates for percutaneous treatment modalities.

CONFLICT of INTEREST

The authors reported no conflict of interest related to this article.

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