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Case Report

Endovascular management of giant coronary artery aneurysm

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Introduction

Coronary artery aneurysms defined as localized coronary dilations with diameters atleast 1.5 times the diameters of adjacent normal coronary segments.¹ It is commonly seen secondary to atherosclerosis but has also been reported in patients who have vasculitis (Kawasaki syndrome), connective tissue disorders (Ehlers-Danlos or Marfan syndrome), and in patients who have undergone interventional procedures.^{2–5} A growing incidence of coronary artery aneurysms have been recently described after implantation of drug-eluting stent (DES).^{6–8} We report one such case which was treated successfully using a covered stent.

Case report

A 65-year-old male hypertensive patient, non-diabetic, nonsmoker underwent angioplasty with sirolimus eluting coronary stent to left anterior descending (LAD) and left circumflex (LCX) coronary artery in a peripheral hospital. He presented 4 months post angioplasty to our hospital for evaluation of recent onset class III angina. He denied any history of fever, dyspnea, syncope or fatigue. Clinical examination was unremarkable. Routine biochemical, hematological parameters and cardiac enzymes were normal. Electrocardiogram showed normal sinus rhythm with no fresh ST/T changes. In view of class III angina he was taken up for coronary angiogram, which revealed a large saccular aneurysm (11 × 14 mm) arising from the proximal part of LAD overlying stented segment (Fig. 1). The left circumflex and right coronary artery (RCA) were normal. In view of rapid growth of aneurysm, the risk of rupture and symptoms, patient was taken up for percutaneous transluminal coronary angioplasty (PTCA) of the LAD aneurysm with covered stents. Left main coronary artery (LMCA) was hooked with extra-backup (EBU) 7 Fr guide catheter (Medtronic AVE, Danvers) and the lesion was crossed with cougar guidewire (Medtronic AVE, Danvers). LAD aneurysm was covered with two polytetrafluoroethylene (PTFE) graft covered stents (Jostent Graftmaster, Abbott Vascular,

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Fig. 1 – Coronary angiogram showing a giant pseudoaneurysm arising from the proximal part of left anterior descending artery.

Abbott Park, IL, USA; 3.5×19 mm and 3×16 mm) (Fig. 2). Both the stents were post dilated with 4×9 mm sprinter NC balloon (Medtronic, Inc., Minneapolis, Minnesota). The end result was good with no residual leak of contrast into the aneurysm sac (Fig. 3). The postoperative period was uneventful, and the patient was discharged from the hospital on aspirin, clopidogrel, ramipril, atorvastatin, and metoprolol. At the four-week follow-up visit the patient was asymptomatic. A follow-up visit and a noninvasive

coronary angiography by computed tomography has been planned at 6 months.

Discussion

Coronary aneurysm post DES implantation is very rare and has been reported from three days to four years after DES implantation.^{6–8} It may be due to delayed re-endothelialization, malapposition of stent or hypersensitivity reaction to polymer^{6,7} compounded by vascular injury (residual dissections, contained perforations) secondary to usage of high-pressure inflations and atherectomy devices.⁵ Some investigators have reported the exceedingly rare occurrence of mycotic aneurysms resulting from direct contamination of the device at the time of delivery or from subsequent bacteremia.⁸

The fate of the coronary aneurysm seems to depend on its anatomical details (size, site of origin, layer of the arterial wall).⁷ Intravascular ultrasound (IVUS) appears to be superior to angiography and has now become the gold standard in providing this critical diagnostic information.⁷ In the present case IVUS was not done due to non-availability of the equipment.

Most of the patients with coronary aneurysm have a varied presentation from asymptomatic state at one end of spectrum to severe angina at the other end.^{6–8} There are case reports of patients with coronary aneurysm presenting with atypical symptoms resulting from irritation of pleura/pericardium.⁹ Our patient presented with classical angina hence was taken up directly for diagnostic coronary angiogram. Hence it is prudent to evaluate all patients with chest pain post PTCA as it can be harbinger of more sinister cause. Noninvasive tools like echocardiography and contrast enhanced multi slice computed tomography scans may be of help as part of initial evaluation.⁷

The clinical course of coronary artery aneurysms after DES implantation is variable. Some aneurysms resolve naturally, but others can lead to life-threatening complications like rupture, thrombosis, embolization, myocardial infarction, and even sudden death.^{1,6,7,9,10} In view of this all the aneurysms need to be

Fig. 2 – Balloon mounted polytetrafluoroethylene (PTFE) graft covered coronary stents being implanted in the proximal (a) and distal (b) part of left anterior descending coronary artery.

Fig. 3 – Coronary angiogram post stent graft implantation showing complete exclusion of the aneurysmal sac.

treated urgently. Treatment options vary from aggressive surgical ligation of the aneurysm to percutaneous implantation of a PTFE-covered stent or conservative medical management in small aneurysms with antiplatelets.^{1,11} In the present case all the therapeutic options were explored. In view of the symptomatic status of patient and large size of the aneurysm it was decided to intervene percutaneously and exclude the aneurysm using PTFE-covered stent. Data from the literature encouraged us to use PTFE-covered stents; surgery was kept as a backup in case of failure of PTCA with covered stent.^{1,11}

This case highlights the utility of PTFE-covered stents as minimally invasive, rapid, efficient, and safe method for the treatment of coronary artery aneurysms.

Conflicts of interest

All authors have none to declare.

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