Case report

Giant coronary artery aneurysm following implantation of Endeavour stent presenting with fever

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KEYWORDS

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ABSTRACT

Coronary artery aneurysms are a known but uncommon complication of percutaneous coronary intervention (PCI) probably related to effects of vessel wall trauma and possibly a combination of hypersensitivity and incomplete endothelialisation associated with drug-eluting stents (DES). We present here a case of giant coronary artery aneurysm 3 months following implantation of a zotarolimus eluting endeavour stent presenting with fever.

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Introduction

Development of coronary aneurysm following drug-eluting stent (DES) implantation has been increasingly reported in the past few years.¹ We report a case of giant aneurysm formation following implantation of a zotarolimus DES. This patient presented with systemic inflammatory manifestations along with chest pain, and was discovered to be having a giant aneurysm at the stent implantation site.

Case report

A 50-year-old male diabetic, hypertensive, non-smoker was admitted for elective percutaneous coronary intervention (PCI) to left anterior descending artery (LAD). The patient had a prior history of myocardial infarction. Recently, he was having worsening of angina despite full medical therapy. His two-dimensional (2D) echocardiography showed no wall motion abnormality with normal left ventricular ejection fraction. His coronary angiography showed a right coronary artery (RCA) total occlusion, and a mid LAD 99% lesion (Figure 1A). After an informed consent, a decision for revascularisation of the LAD with a DES was taken. A floppy wire was passed

and the lesion predilated with a 2.5 mm × 15 mm SPRINTER Balloon (Medtronic, Minneapolis, USA), inflated at 10 atm and subsequently a 3.5 mm × 30 mm endeavour stent (Medtronic, Minneapolis, USA) was deployed at 14 atm pressure with good thrombolysis in myocardial infarction (TIMI) 3 flow (Figure 1B). The patient received standard care in terms of anticoagulant and anti-platelet medication and standard peri procedure guidelines were followed. He was discharged on the 2nd day on dual anti-platelet therapy along with atorvastatin 80 mg, metoprolol 100 mg, along with oral antihyperglycaemic drugs. Three months later, the patient had an episode of high-grade fever with chills and pyrexia lasted for 7 days. He was prescribed oral antibiotics by his local physician. However, the fever continued, and no cause could be ascertained. He also started experiencing left precordial pain which was constant, dull ache and had a dragging character. On occasions, the pain was relieved with sublingual nitrates for which he was again sent to us for evaluation. In this background, a repeat angiography was planned. His glycaemic and renal status was normal throughout. The repeat angiography showed an aneurysmal dilation approximately 2.5 cm in size in the proximal part of the LAD where the stent had been deployed along with lesion proximal to the stent (Figure 2A). He was advised to undergo an emergent coronary artery bypass grafting (CABG) and resection of the aneurysmal sac. During surgery, a large aneurysm of the proximal LAD approximately 2.5 cm in diameter was noted. It was proximally

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Figure 1 (A) Diagnostic angiogram. (B) Final result after drug-eluting stents deployment.

ligated and a left internal mammary artery (LIMA) graft to LAD used to bypass the lesion (Figure 2B). He is now well on follow-up after 3 months.

Discussion

Coronary artery aneurysms after PCI are rare, with a reported incidence of 0.3–6.0%, and most ‘aneurysms’ are in fact pseudoaneurysms rather than true aneurysms.¹ Aneurysms after PCI are more commonly reported after ablative techniques particularly excisional atherectomy, residual dissection and deep arterial wall injury caused by oversized balloons or stents, high-pressure balloon inflations, and laser angioplasty have all been associated.^{1,2} Dissection of the coronary artery during the time of balloon angioplasty has long been known as the major factor related to the occurrence of coronary artery aneurysm.³ As stents were used for the management of dissection, they also lead to restenosis which lead to the development of DES for the prevention of restenosis. The anti-proliferative mechanism of the anticancer drugs were thought to cause impaired healing effect, which ultimately may be counter-productive and lead to the formation of coronary artery aneurysm.^{1,4} In present case, the patient had a giant aneurysm, which was probably because of the zotarolimus eluting stent which had prevented proper healing along with an intense local and systemic inflammatory response. The patient presented with fever along with raised hsCRP at the time of the aneurysm formation. Intravascular ultrasound

Figure 2 (A) Giant aneurysm of left anterior descending artery. (B) Giant aneurysm as seen during surgery.

(IVUS) would be an essential tool in planning a therapeutic strategy. However, treatment of these cases has to be individualised using best clinical judgement. Simply stenting with a covered stent over the origin of the dilated segment will often cover the entrance of the dilated system resulting in closure of the aneurysm area. However, in our case, the patient was advised emergent bypass surgery with resection of the aneurysm as there was suspicion of infection and the aneurysm was large in size. Safety of DES in the long-term remains a cause of concern, and as newer stent technology becomes available which promote both healing and accelerate endothelialisation in the stented segments need to be explored, measures to decrease inflammation at the stent implantation site will also need to be utilised effectively.

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