Five Years on Dual-Antiplatelet Therapy DES Thrombosis After Clopidogrel Withdrawal

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SUMMARY

Drug-eluting stents (DES) have a moderately higher incidence of stent thrombosis compared to bare metal stents (BMS) and very late DES thrombosis has been frequently described. We report a case of a 66 year-old male who experienced very late stent thrombosis at 5 years after paclitaxel-eluting stent (PES) implantation and 3 days after clopidogrel withdrawal. Intravascular ultrasound (IVUS) performed during the index procedure showed that the previously implanted PES was undersized. Since the patient could not take clopidogrel, we treated him with only a noncompliant balloon (3.0 × 15 mm) with optimal expansion as confirmed by IVUS. This case report describes a patient who continued clopidogrel treatment for 5 years and was probably protected from a procedural failure. During the current hospitalization, the patient was found to be a responder to clopidogrel after a platelet function assessment with Multiplate (Dynabyte Informationssysteme GmbH, Munich, Germany). (Int Heart J 2013; 54: 234-236)

Key words: Stent thrombosis, Intravascular ultrasound, Platelet function assay

Drug-eluting stents (DES) have a moderately higher incidence of stent thrombosis compared to bare metal stents (BMS) and very late DES thrombosis has been frequently described.⁽¹⁾ There is now a consensus in recommending treatment with thienopyridine for at least 12 months in addition to life-long aspirin administration.

CASE REPORT

A 66 year-old male with a family history of coronary artery disease (CAD), hypertension, and hyperlipidemia underwent percutaneous coronary intervention (PCI) in January 2006 at a different hospital. A paclitaxel eluting stent (PES) (Taxus[®] 2.5 × 24 mm, Boston Scientific Corporation, Natick, MA, USA) was implanted in the mid left anterior descending coronary artery. After the procedure, the patient was treated with aspirin 100 mg plus clopidogrel 75 mg. In the next 5 years the patient refused any clinical cardiology follow-up and on his own accord did not interrupt both dual-antiplatelet therapy that his discharge therapy with beta-blockers, nitrates, angiotensin-converting enzyme inhibitor and statins. During this period, he was seen by his family physician only a few times. He was prescribed various medications, including clopidogrel. In January 2011, the patient was admitted to our hospital for an ischemic stroke of the right mid cerebral artery area with subsequent dysphagia. Consequently, clopidogrel administration was withdrawn while aspirin, nitrates and beta-blockers were continued by endovenous administration. Three days af-

ter clopidogrel withdrawal, the patient experienced an anterior ST segment elevation myocardial infarction (STEMI). Urgent coronary angiography revealed a stent thrombosis (ST) of the PES (Figure 1), with occlusion of the diagonal branch. After crossing the lesion with a guide wire, a manual thrombectomy was performed with an Export Catheter (Medtronic, Minneapolis, MN, USA). Intravascular ultrasound (IVUS) showed, in the mid LAD (reference vessel diameter = 3.3 mm), a malapposition caused by stent undersizing (2.5 × 24 mm) (Figure 2). Heparin and Reopro (0.25 mg/kg for the bolus and 0.125 µg/kg/minute for the subsequent intravenous infusion) were administered intravenously during the procedure and a loading dose of clopidogrel 600 mg was administered using a nasogastric probe. The persistent dysphagia did not allow clopidogrel administration so we only performed stent over-dilatation with a 3.0 × 18 mm noncompliant balloon without any other stent implantation (Figure 3). Final angiographic and IVUS control showed an optimal minimal luminal area (MLA = 7.1 mm²) (Figures 4, 5). The hospitalization was uneventful, and he was discharged 8 days later in stable condition. Antiplatelet therapy at discharge consisted of aspirin 100 mg and clopidogrel 75 mg, administered via a gastrostomy for parenteral nutrition, and nitrates administered transdermally. During the current hospitalization, the patient responded to clopidogrel after platelet function assessment with Multiplate (Dynabyte Informationssysteme GmbH, Munich, Germany) (AUC 270). The patient underwent cardiology control visit and clopidogrel administration was discontinued 12 months after hospital discharge. Six months after suspension of clopidogrel, follow-up

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Figure 1. Stent thrombosis of PES implanted in left anterior descending artery with an occlusion of third diagonal branch (white arrow and white line indicate the point at which IVUS findings are shown in Figure 2).

Figure 2. IVUS, after thrombectomy, showed an undersized PES with a minimal surface area of 3.6 mm².

Figure 3. Overdistention of PES with a noncompliant balloon (3.0 × 18 mm) with a good final angiographic result.

Figure 4. Final angiography (white arrow and white line indicate the point at which IVUS findings are shown in Figure 5).

did not reveal any events.

DISCUSSION

There are few reports about ST 5 years after the index procedure. Statistically significant predictors of ST are diabetes mellitus, renal failure, cardiomyopathy with low left ventricular ejection fraction, and bifurcation lesions.²⁾ Furthermore, late malapposition, incomplete apposition, and strut penetration into a necrotic core have all been linked to ST.³⁾ Local hypersensitivity reactions have been attributed to the polymers used in the manufacture of DESs, especially in earli-

er generations of stents that were produced for clinical use.⁴⁾ ST associated with drug-eluting stents is a complicated pathophysiologic phenomenon characterized by multiple patient-, procedure-, and device-related factors. In our case, ST was clearly related to the previously implanted DES undersizing and malapposition as confirmed by IVUS and the continuation of clopidogrel administration probably resulted in a procedural failure “repairing” mechanism. Early discontinuation of antiplatelet therapy is one of the most important causes of very late DES thrombosis,⁵⁻⁷⁾ however, the possibility of procedural suboptimal results should make the clinician take into consideration the opportunity to administer double antiplatelet therapy for more than 12 months.

Figure 5. Final IVUS (minimal surface area = 7.1 mm^3).

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