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Case Study of the Month

Late Coronary Stent Thrombosis Complicating Urologic Surgery

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Abstract

The current practice of withdrawing antiplatelet therapy before major surgery has been challenged by the introduction of coronary drug-eluting stents (DESs) since evidence is accumulating that a DES requires dual antiplatelet therapy for at least a year. The authors present a case demonstrating difficulty in decision-making when it comes to appropriate perioperative antiplatelet therapy. The patient experienced a coronary stent thrombosis possibly due to discontinuation of clopidogrel prior to urologic surgery.

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1. Introduction

The introduction of coronary stents in the early 1990s has drastically improved the outcome of percutaneous coronary intervention (PCI) for obstructive coronary artery disease. To date, two different types of stents are available: bare metal stents (BMSs) and the newer drug-eluting stents (DESs). Various randomised controlled trials have demonstrated great advantages of DESs with respect to significant reduction of restenosis and recurrence of symptoms and improvement of clinical outcomes after PCI as compared to BMSs [1]. Since the introduction a few years ago, millions of DESs have been implanted. However, acute (<24 h), subacute (1–30 d), and late (>30 d after stent implantation) stent thrombosis is still the major downside to coronary stents (both BMSs and DESs) because this inevitably leads to myocardial infarction (90%) and death in up to 40% of the cases [2]. To prevent stent thrombosis, patients are treated with aggressive antiplatelet therapy. The current guidelines recommend a dual antiplatelet regimen with acetylsalicylic acid (ASA) and clopidogrel after PCI with stenting (Fig. 1, mechanisms of action of antiplatelet drugs). Clopidogrel maintenance therapy is recommended after BMS implantation for at least 4 wk (level of evidence 1a) and after DES implantation for 6–12 mo (level of evidence 1c) [3]. However, despite these narrowly evidence-based recommendations, the optimal duration of clopidogrel has not yet been established. Moreover, it is

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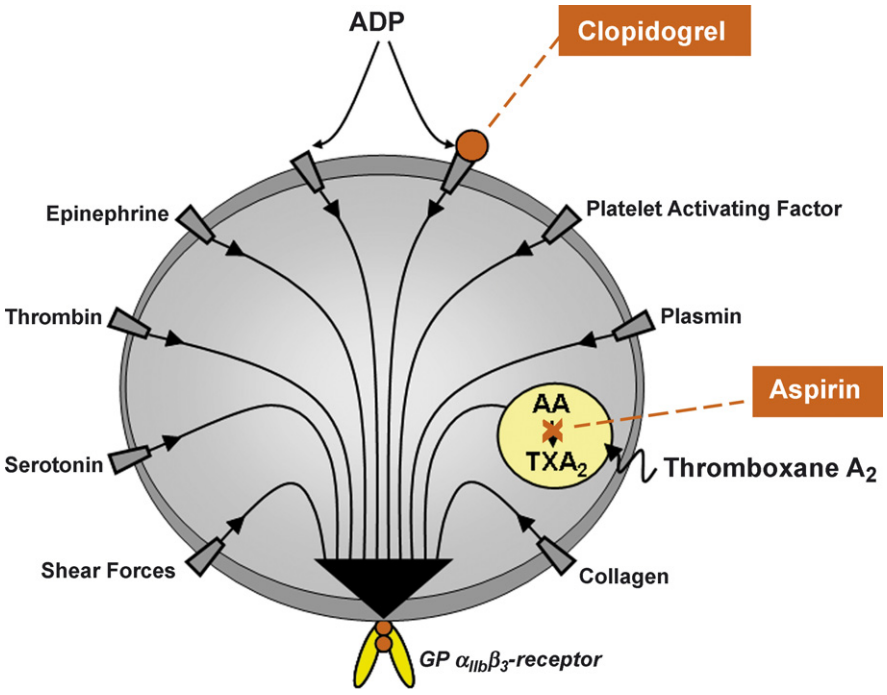

Fig. 1 – Mechanisms of action of the antiplatelet drugs aspirin and clopidogrel.

becoming clear that an extension of the duration of clopidogrel will probably further reduce the incidence of late stent thrombosis [4].

The problem with the current dual antiplatelet regimen with aspirin and clopidogrel is the fact that patients with coronary heart disease often have concomitant urologic problems that require adequate treatment as well, including surgery. This sometimes creates a dilemma for the clinician with respect to the most appropriate treatment, that is, when to operate and whether or not to stop antiplatelet therapy. The presented case demonstrates such a difficulty in decision-making.

2. Case report

A 77-yr-old man with no cardiovascular history, but with a positive family history for cardiovascular disease and dyslipidemia, underwent an elective coronary angiogram because of stable angina pectoris. Angiography revealed a significant stenosis in the proximal left anterior descending coronary artery. Stenting of the lesion was undertaken with implantation under high pressure of four DESs with a total length of 100 mm (Taxus® [paclitaxel], Boston Scientific, Natick, MA, USA, 2.75 × 32 mm, 2.5 × 24 mm, 2.5 × 24, mm and 2.5 × 20 mm). Prior to stent implantation, the patient was prescribed clopidogrel for at least 6 mo and lifelong aspirin. Exactly 2 mo after stent placement, he discontinued the clopidogrel for a scheduled laparoscopic pelvic lymph node dissection for staging of prostate cancer. Several hours after his surgery, he suddenly experienced heavy chest pain. Electrocardiography showed ST-segment depression in leads II, III, and aVF, and ST-segment elevation in V_2 till V_4, and a myocardial infarction was diagnosed. The patient was transported to the catheterisation laboratory and urgent angiography demonstrated that the stents were occluded by a massive thrombus (Fig. 2). Balloon angioplasty restored coronary blood flow but the patient remained hemodynamically unstable. An intra-aortic balloon pump was placed, but his clinical situation deteriorated and the patient died several hours later. At autopsy, a fresh thrombus was observed occluding the coronary DESs (Figs. 3 and 4).

3. Discussion

Stent thrombosis is a serious complication and is associated with a high morbidity and mortality [2]. Recent studies have identified major risk factors that are associated with an increased risk for the occurrence of a stent thrombosis, including early discontinuation of antiplatelet therapy and factors that lead to a prothrombotic state, such as renal failure, diabetes, and (major) surgical procedures.