Drug-eluting Stent Thrombosis and Acute Myocardial Infarction in PACU

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Introduction

Lately, more patients have been presenting for noncardiac surgery after recent placement of cardiac stents, either bare-metal stents (BMSs) or drug-eluting stents (DESs). Noncardiac surgery performed following recent stent placement poses risk of acute stent thrombosis due to inherent hypercoagulable state of surgery as well as the common practice of perioperatively discontinuing antiplatelet therapy, which may result in major adverse cardiac events such as stent thrombosis, myocardial infarction and death. Acute stent thrombosis accounts for up to a 60% acute myocardial infarction rate and up to a 45% mortality rate. The risk of perioperative bleeding associated with continued antiplatelet therapy must be weighed against the catastrophic event of stent thrombosis. We report a challenging case involving DES thrombosis and acute myocardial infarction in the immediate postoperative period. This case highlights the importance of the scientific advisory recently released by the American Heart Association (AHA) and American College of Cardiology (ACC) against the premature discontinuation of antiplatelet therapy in patients with coronary stents. Factors which may lead to stopping thienopyridine medication earlier than recommended include drug cost, physician or dentist’s instruction to discontinue medication prior to procedures, and inadequate patient education and understanding of the importance of taking medication.

Case Report

67-year-old male with a history of coronary artery disease, seven coronary stent placements, hypertension, diabetes mellitus, gout, osteoarthritis and kidney stones, was admitted with infected penile prosthesis requiring surgical removal. Cardiology consultation was obtained and all the previous cardiac information was collected. Clopidogrel and aspirin were discontinued prior to surgery as per surgeon’s request. Prior to this infection, which resulted in swelling and pain at the infection site, patient was physically active and walked three miles daily.

Patient received general anesthesia for the surgery. Intraoperative course was uneventful. Patient was initially stable in the postanesthesia care unit (PACU) without any significant problems, but toward the very end of the recovery phase, he became tachycardic which was treated with beta-blockers. Soon ST-segment elevation was seen on the monitor. Patient had no symptoms other than feeling “weird” during the episode. Electrocardiogram showed ST elevation in the inferolateral leads and a new RBBB. The cardiologist emergently took patient for percutaneous coronary intervention (PCI) with diagnosis of acute inferolateral ST-segment elevation myocardial infarction.

Coronary angiography revealed acute in-stent thrombosis of DESs placed seven months prior. Successful PCI for the two occluded coronary vessel stents at posterior descending artery and posterolateral branch and new Paclitaxel-eluting TAXUS stent for 95% ostial stenosis of posterolateral vessel was done. During the PCI, patient went into ventricular tachycardia and was treated with 360 joules shock and intravenous lidocaine bolus which converted him to sinus rhythm. Following PCI, patient’s condition improved dramatically with quick recovery. No bleeding complication at surgical site was found by surgical team. Patient was discharged home on the fourth day in good condition.

Discussion

Pericoronary coronary angioplasty with stenting is commonly used for the treatment of symptomatic coronary artery disease, with more than 4 million stents implanted annually worldwide. The use of coronary stents has reduced the incidence of restenosis which had an occurrence rate of 30%-40% after coronary balloon angioplasty. Uncoated stents, however, have a high rate of restenosis. Recently, DESs were introduced to lower restenosis rates even further. Despite the initial enthusiasm for DESs, concern has grown about the risk of adverse perioperative outcomes related to stent thrombosis. Now thienopyridine therapy in combination with aspirin has become the mainstream antiplatelet therapy to prevent stent thrombosis and reduce the risk to less than 1%. Early discontinuation of dual antiplatelet therapy markedly increases the risk of stent thrombosis, a catastrophic event that frequently leads to major adverse cardiac events such as myocardial infarction and death. Predictors of stent thrombosis include premature cessation of antiplatelet therapy, bifurcation/ostial lesions, diabetes mellitus, renal failure, very long stented segment and low ejection fraction. The 2007 AHA/ACC advisory states that elective procedures for which there is significant risk of perioperative bleeding should be deferred until an appropriate course of thienopyridine therapy has been completed, which is at least four to six weeks for BMS and twelve months for DES. When surgery cannot be postponed and thienopyridine therapy must be interrupted, the guidelines suggest that aspirin therapy should be continued in the perioperative period and thienopyridine therapy should be restarted as soon as possible. Most experts recommend discontinuing aspirin therapy only if risk of bleeding exceeds cardiovascular risk. The use of other anticoagulants and antiplatelet agents may be considered to “bridge” these patients after discontinuation of dual antiplatelet therapy, although there is no scientific evidence available yet to support this practice.

Summary

Early noncardiac surgery after coronary stent placement is associated with an increased risk of major adverse cardiac events. The majority of these events are attributable to in-stent thrombosis due to the interruption of antiplatelet therapy in the perioperative period and is associated with an increase in adverse cardiac events, particularly in patients who undergo noncardiac surgery prior to the recommended time interval after coronary stent placement.

References