PARTIAL HEPATIC RESECTION IN PATIENTS WITH A RECENT DRUG ELUTING STENT IN THE CORONARY ARTERY: A CLINICAL CASE

*GIOVANNI CANTARELLA, GIUSEPPA LA CAMERA, LUCA VITALE, DANILO CARMELO GRASSO, PIERFILIPPO DI MARCO
*Department of Medical and Petriatic Sciences-Section Cardiology, Department of Medical Surgical Specialties-Section Anaesthesia and Intensive Care, University of Catania, Italy

[Resezione epatica parziale in paziente con impianto recente di drug eluting stent in arteria coronarica: caso clinico]

ABSTRACT

The authors describe the case of a patient with a recent drug eluting stent implant who underwent non-elective surgery, and report the results of substituting dual anti-platelet therapy (clopidogrel and ASA) with a bridge therapy (flurbiprofen and tirofiban) in the perioperative period to reduce the risk of thrombosis of the device.

Key words: Drug eluting stent, dual anti-platelet therapy, AMI.

Received *May 11, 2013;* ***Accepted*** *May 28, 2013*

Introduction

In contrast to the spontaneous appearance of acute coronary syndromes, the pathological mechanisms of post-operative AMI are well-known, predictable and largely controllable. An inflammatory condition may lead to a rupture or fissure in an unstable or vulnerable plaque (type 1 AMI), as may tachycardia (e.g. on interruption of beta-blockers), or hypotension (pain sedatives) that occur after surgery. In addition, surgery and stress (including emotional stress) may cause a coagulation cascade and provoke a slowing down of the process of fibronolysis. For a few days after surgery the assimilation of antithrombotic drugs (oral or by gastronasal tube) is also insufficient, above all clopidogrel. These reasons are probably the basis of coronary stent thrombosis immediately after surgery. The EKG may show ST depression or elevation (less that 2% of cases). It's also possible that the first manifestation is the appearance of ventricular fibrillation which may be followed by cardiac shock. Early death of patients due to perioperative infarct varies from 3.5% to 25% depending on the population, which shows a correlation with the release of troponin[1].

Materials and methods

A patient aged 52 in need of a partial hepatic resection due to metastasis secondary to colon carcinoma operated six months previously was studied by the authors in October 2012. In the perioperative period the patient developed an acute coronary syndrome and for this reason subsequently underwent angioplasty and a drug eluting stent implant. In addition to clinical evaluation and an EKG the patient received an echocardiogram to evaluate cardiac kinetics before surgery and to reveal possible changes after surgery[1]. The therapy in progress at the time included ace inhibitor (ramipril), beta-blocker (bisoprolol), statin (atorvastatin), and dual anti-platelet therapy (ASA, clopidogrel). We maintained the ace inhibitor, statin and beta-blocker until the evening before the surgery, adjusting the beta-blocking to maintain a frequency between 60-70 bpm and SBP above 100mmHg[2]. In consultation with the surgeon we interrupted the ASA and thienopyridine (clopidogrel), irreversible inhibitor of the P2Y12 platelet, 5 days before surgery, substituting flurbiprofen at the dose of 50mg/day and tirofiban iv. three days before surgery (dose 0.4mcg/kg/min for 30 minutes), and continuing the

infusion at the rate of 0.1mcg/kg/min. We suspended the flurbiprofen 24 hours before surgery and tirofiban 6 hours before. Tirofiban was resumed 3 hours after surgery, and 4 days after thienopyridine was resumed along with the rest of the oral therapy. Both drugs were initially administered at the loading dose.

Results

Upon regaining consciousness the patient was observed in the ICU to monitor bleeding of the surgical wound and the possible appearance of myocardial ischemia. Six hours later the EKG showed an inversion of the T wave without ST depression, and in the echocardiogram regional changes of cardiac kinetics were observed. The changes observed by lab tests were accompanied by vague clinical signs and a slight increase of troponin. For these reasons a re-examination of the surgical wound was deemed appropriate. Since there was a significant risk of intrastent thrombosis, tirofiban was administered iv. (0.4 mcg/kg/min for 30 minutes, then 0.1 mcg/kg/min), and heparin not fractional (5,000 units iv. Bolus), followed by an infusion of 1,000 U/hour titrated on the basis of the Activated Partial Thromboplastin Time (APTT), maintaining values at approximately twice the normal level. By the fourth day oral therapy was resumed because the patient appeared stable and he was transferred to the inpatient ward. Subsequent observations did not reveal significant bleeding or acute myocardial ischemia.

Discussion

The early cessation of dual anti-platelet therapy in patients with a recent coronary stent implant entails an increased risk of thrombosis of the device: 15-25%[3], while continuation significantly increases the risk of perioperative bleeding. Current guidelines advise the continuation of dual anti-platelet therapy for 6-12 months after a drug eluting stent[2-4]. In addition, in the case of non-elective surgery the continuation of therapy with ASA is advised when the surgery has no increased risk of hemorrhage[2]. Clinical trials conducted so far are not sufficient to establish a universal process in the perioperative management of patients with a recent drug eluting stent implant who must be operated on without delay. It is possible to consider suspending the ASA and thienopyridine (clopidogrel), which inhibits irreversible and long-lasting platelet aggregation), and the use of bridge therapy with drugs having a brief duration of action: NSAIDs and glycoprotein IIb and IIIa platelet inhibitors (tirofiban, epitifibatide). This approach allows the early suspension of ASA and thienopyridine and the possibility to control coagulation immediately or postoperatively, the period when most infarcts occur. Nonetheless, as with therapy using low molecular weight heparin which lacks high-level studies to support this approach, the first method mentioned has been approved by the French Society of Anesthesiology and Intensive Care[5], and the second method has been approved by the Ethics Committee of the Niguada Hospital in Milan, Italy[6].

Conclusions

Careful attention is needed to control coagulation in patients with a recent coronary stent implant who undergo surgery, to prevent complications of hemorrhage or thrombosis. The use of flurbiprofen and tirofiban, whose effects are quickly reversible and modifiable according to bleeding, allows the early resumption of dual anti-platelet therapy and significantly reduces the risk of intrastent thrombosis. In addition, since the only effective therapy for intrastent thrombosis is percutaneous angioplasty to reopen the artery and remove the thrombus, it is advisable that the surgery take place in a hospital equipped for coronary surgery 24 hours a day, and where an ICU is available for postoperative observation until resumption of oral anti-platelet therapy.

References

1) Thygesen K, Alpert JS, White HD et al. "*Third universal definition of Myocardial Infarction*". Circulation 2007; 116: *2634-2653*.
2) Poldermans D, Bax JJ, Boersma E, et al. "*Guidelines for pre-operative cardiac risk assessment and perioperative cardiac management in non-cardiac surgery: the Task Force for Preoperative Cardiac Risk Assessment and Perioperative Cardiac Management in Non-cardiac Surgery of the European Society of Cardiology (ESC) and endorsed by the European Society of Anaesthesiology (ESA)*" Eur Heart J 2009; 30: *2769-2812*.
3) Camenzind E, Steg PG, Wijns W. "*Stent thrombosis late after implantation of first-generation drug-eluting stents: a cause for concern*" Circulation 2007 Mar 20; 115(11): *1440-55*.

4) Fleisher LA, Beckman JA, Brown K A, et al. "*ACC/AHA 2007 guidelines on perioperative cardiovascular evaluation and care for noncardiac surgery*" J Am Coll Cardiol 2007; 50: *159*.
5) Albaladejo P, Marret E, Piriou V, Samama CM. "*Perioperative management of antiplatelet agents in patients with coronary stents: recommendations of a French Task Force*" Br J Anaesth 2006; 97: *580*.
6) D'Urbano M, Barlocco F, Poli A, Fetiveau R, Vandoni P, Savonitto S, De Servi S. "*Unplanned surgery after drug eluting stent implantation: a strategy for safe temporary withdrawal of dual oral antiplatelet therapy*" J Cardiovasc Med 2008; 9: *737*.

Acknowledgement: Thanks to native speaker Frank Adamo for help with the English. English4doctors@hotmail.com

Request reprints from:
Dott. DI MARCO PIERFILIPPO
Via Orchidea, 18
95100 Catania
(Italy)