ST-elevation myocardial infarction with local infusion of abciximab using thrombectomy catheter in a patient with very late stent thrombosis

Zawal serca z uniesieniem odcinka ST spowodowany późną zakrzepicą w stencie metalowym, leczony dowieńcowym podaniem abciksimabu oraz aspiracyjną trombektomią

Zbigniew Siudak¹, Jacek Godlewski¹, Leszek Badacz²

¹Department of Interventional Cardiology, Intercard, Pinczow, Poland
²Department of Interventional Cardiology, John Paul II Hospital, Krakow, Poland

Abstract

A case of a 56-year-old male with a diagnosis of ST-segment elevation myocardial infarction caused by in-stent thrombosis in a previously implanted bare metal stent after discontinuation of aspirin is presented. On admission there were ST segment elevations in leads II, III, aVF with Q wave in III and aVF in the electrocardiogram. Three years before the admission patient had suffered from inferior wall myocardial infarction and was treated successfully with primary percutaneous coronary intervention (PPCI) of the right coronary artery with bare metal stent (BMS) implantation. Twelve months after the index PPCI patient stopped receiving all medications including ASA. He felt he was in good health condition and did not need to take medications any longer. For the next 2 years he had never visited doctor for follow-up visit. In current angiography occlusion of the right coronary artery with thrombus was identified. Patient was treated with aspiration thrombectomy which revealed large thrombus burden and with intralesion administration of bolus of abciximab via thrombectomy catheter. Afterwards PCI with drug eluting stent implantation was performed. Patient was discharged home after 5 days. At discharge his antiplatelet therapy consisted of acetylsalicylic acid (75 mg once daily) for life, and clopidogrel (75 mg once daily, for at least 12 months).

Keywords: abciximab, myocardial infarction, thrombectomy, stent thrombosis

Słowa kluczowe: abciximab, zawał serca, trombektomia, zakrzepica

Corresponding author/Adres do korespondencji:
Zbigniew Siudak MD, PhD, Department of Interventional Cardiology, Intercard, 22 Armii Krajowej St, 28-400 Pinczow, Poland, tel.: +48 41 370 10 94, e-mail: zbigniew.siudak@gmail.com
Praca wpłynęła: 14.08.2012, przyjęta do druku: 31.08.2012.
Introduction

Stent thrombosis although more rare with new antiplatelet drugs (prasugrel, ticagrelor) but also improved stent platforms is still a life-threatening issue in patients after percutaneous coronary interventions (PCI) both with drug-eluting and bare metal stents. In daily practice, however, it is not only confined to the first months or the first year after the procedure but may unexpectedly occur at a later time. Unfortunately, it is usually associated with patient non-compliance to prescribed dual antiplatelet therapy.

We report a case of acute myocardial infarction caused by late in-stent thrombosis successfully treated with a combination of intraluminal administration of abciximab and thrombus aspiration with a thrombectomy device in a patient who discontinued acetylsalicylic acid 1 year after the initial PCI procedure with bare metal stent (BMS) implantation.

Case report

A 56-year-old male patient was transferred directly from his home by ambulance to our department with a working diagnosis of ST-segment elevation myocardial infarction (STEMI). He complained of a burning retrosternal chest pain lasting approximately 11 h. There were ST segment elevations in leads II, III and aVF with Q wave in III and aVF in the electrocardiogram on admission (Fig. 1). The patient was haemodynamically stable with minor crepitation over lungs (Killip class II), with arterial blood pressure of 130/85 mm Hg and regular pulse rate of 65 beats per minute. His risk factors included arterial hypertension, hypercholesterolaemia and smoking habit. Three years before admission the patient had suffered from inferior wall myocardial infarction and was treated successfully with primary percutaneous coronary intervention (PPCI) of the right coronary artery with BMS implantation. The final outcome of that PPCI was optimal with TIMI 3 flow. The patient was prescribed dual antiplatelet therapy with acetylsalicylic acid (ASA) (75 mg once daily) for life and clopidogrel (75 mg once daily) for 12 months. Twelve months after the index PPCI the patient stopped receiving all medications including ASA. He felt he was in a good health condition and did not need to take medications any longer. For the next 2 years he had never visited the doctor for a follow-up visit.

During the transfer by ambulance the patient received 300 mg of aspirin and 300 mg of clopidogrel. On admission to our cath lab 300 mg of clopidogrel were added on top of previous medications. Immediate coronary angiography using a right femoral access site and standard 6 F diagnostic catheters was performed, revealing an acute occlusion of the proximal right coronary artery (infarct-related artery) with large thrombus burden probably caused by in-stent thrombosis (Fig. 2 A). The remaining vessels were normal with the exception of an 85% diameter stenosis in the circumflex artery. Percutaneous coronary intervention of the infarct-related artery was started using a Launcher (Medtronic Vascular, USA) 6 French Judkins right 4.0 guiding catheter. A bolus of unfractionated heparin was administered (9000 IU). Appropriate anticoagulation was confirmed by activated clotting time measurement (> 250 s). The occlusion was crossed with a 0.014-inch Whisper ES (Abbott Vascular, USA) guidewire. Then three consecutive passages with Export aspiration catheter (Medtronic Vascular, USA) were performed. Large thrombus debris was visualized and retrieved from the coronary artery (Fig. 3). Partial flow was restored in the artery with a visible remaining thrombus proximally to the previously implanted stent with signs of restenosis and residual thrombus (Fig. 2 B). At that point a standard bolus of abciximab (Reopro by Eli Lilly and Company) was administered through the thrombectomy catheter slowly to the lesion. A significant reduction of thrombus burden was observed (Fig. 2 C). The continuous i.v. infusion of abciximab was continued for 24 h. At that stage predilatation with a Maverick (Boston Scientific, USA) balloon catheter 2.5 mm × 20 mm

**Fig. 1** ECG on admission to cath lab

**Ryc. 1** EKG przy przyjęciu do pracowni hemodynamiki
at 18 atm was performed with transient slow-flow. Due to persistent stenosis a BMS, Prokinetic (Biotronik, Germany) 4.0 mm × 15 mm, at 18 atm was implanted at the site of the previous stent. The operator decided to implant a BMS due to large vessel diameter and expected poor patient compliance to the prescribed antplatelet therapy (Fig. 4). After PCI the patient was symptom-free and peak levels of cardiac markers after PCI were: CK 2359 IU/l, CK-MB 118 IU/l, Troponin T 4.0 ng/ml, and Troponin I 1.1 ng/ml.

**Fig. 2.** A – Initial angiography of right coronary artery. B – Angiography after thrombectomy (previously implanted stent is marked by arrow). C – Angiography after abciximab bolus infusion

**Fig. 3.** Thrombus debris

**Fig. 4.** Final angiography of right coronary artery
was tested in the INFUSE AMI trial [9]. Local administration of abciximab was associated with significant reduction of thrombus burden when compared to no abciximab, but the most pronounced benefit was observed when local infusion of abciximab was combined with prior thrombectomy. It seems that such administration in vulnerable patients with a large thrombus burden might facilitate thrombectomy itself.

In conclusion, both intralesoinal abciximab administration and thrombus aspiration may be considered for patients with an occluded artery with a high thrombus burden, i.e. caused by stent thrombosis, but the efficacy of such an algorithm still needs to be evidenced in large clinical trials.

References

1. De Servi S, Roncella A, Reimers B. Causes and clinical implications of premature discontinuation of dual antiplatelet therapy. Curr Opin Cardiol 2011; 26 Suppl 1: S15-21.
2. Buchanan GL, Basavarajah S, Chieffo A. Stent thrombosis: incidence, predictors and new technologies. Thrombosis 2012; 2012: 956962. Epub 2012 Mar 11.
3. Yamaji K, Inoue K, Nakahashi T, et al. Bare metal stent thrombosis and in-stent neointernalcrosis. Circ Cardiovasc Interv 2012; 5: 47-54.
4. Kalesan B, Pilgrim T, Heinimann K, et al. Comparison of drug-eluting stents with bare metal stents in patients with ST-segment elevation myocardial infarction. Eur Heart J 2012; 33: 977-87.
5. De Luca G, Dirksen MT, Spaulding C, et al; Drug-Eluting Stent in Primary Angioplasty (DESERT) Cooperation. Drug-eluting vs bare-metal stents in primary angioplasty: a pooled patient-level meta-analysis of randomized trials. Arch Intern Med 2012; 172: 611-21.
6. Wijns W, Kolh P, Danchin N, et al. Guidelines on myocardial revascularization. Eur Heart J 2010; 31: 2501-55.
7. Montalescot G, Antoniucci D, Kastrati A, et al. Abciximab in primary coronary stenting of ST-elevation myocardial infarction: a European meta-analysis on individual patients’ data with long-term follow-up. Eur Heart J 2007; 28: 443-9.
8. Thiele H, Wöhrl H, Hambrecht R, et al. Intracoronary versus intravenous bolus abciximab during primary percutaneous coronary intervention in patients with acute ST-elevation myocardial infarction: a randomised trial. Lancet 2012; 379: 923-31.
9. Stone GW, Maehara A, Witzenbichler B, et al; INFUSE-AMI Investigators. Intracoronary abciximab and aspiration thrombectomy in patients with large anterior myocardial infarction: the INFUSE-AMI randomized trial. JAMA 2012; 307: 1817-26.