

Patient with non-ST-segment elevation myocardial infarction treated by Absorb bioresorbable scaffold implantation

Pacjent z zawałem serca bez uniesienia odcinka ST leczony implantacją stentu bioresorbowalnego Absorb

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Abstract

We present the case of a 57-year-old male patient with a diagnosis of non-ST-segment elevation myocardial infarction. Taking into consideration the clinical presentation and angiographic findings, the patient was qualified for emergent percutaneous coronary intervention with aspiration thrombectomy and bioresorbable vascular scaffold implantation (BVS; Absorb, Abbott), with good angiographic result.

Key words: myocardial infarction, bioresorbable scaffold, thrombus aspiration, Absorb

Kardiol Pol 2013; 71, 10: 1091–1092

INTRODUCTION

Non-ST-segment elevation myocardial infarction (NSTEMI) is a common cause of acute myocardial ischaemia. Crucial to the management of NSTEMI is an early coronary angiography and percutaneous coronary intervention (PCI), to restore blood flow in the infarct-related artery. There are by now several generations of coronary stents, which can be used during a PCI procedure. The newest concept of coronary artery disease (CAD) treatment is an implantation of bioresorbable vascular scaffold (BVS). BVS seems to have several advantages compared to a drug-eluting stent/bare-metal stent (BMS). One of them is lower impact on the vasomotoric activity of treated vessels. Patients after BVS implantation can be more easily qualified for diagnostic procedures (such as MRI or CT) and for surgical treatment (such as CABG).

We present a 57 year-old male patient with a diagnosis of NSTEMI. Taking into consideration the clinical presentation and angiographic findings, the patient was qualified for emergent PCI with aspiration thrombectomy and BVS implantation (Absorb, Abbott), with good angiographic result.

CASE REPORT

A 57-year-old male patient was admitted to the cardiology department due to recurrent chest pain, which occurred for the first time one day before admission and relieved after 20 min of rest, but recurred 10 h before admission. The patient had CAD confirmed previously in coronary angiography, which was performed due to unstable angina diagnosed 6 years before admission. That coronary angiography revealed critical stenosis of the right coronary artery and a PCI procedure with BMS implantation (Biodivisio 2.75 × 18 mm, Biocompatibles Cardiovascular Inc., USA) was performed. Due to the previously diagnosed CAD, the patient was receiving acetylsalicylic acid, carvedilol, ramipril, and simvastatin. Additionally, due to diabetes mellitus diagnosed 10 years before admission, the patient was receiving insulin. He had also arterial hypertension and hypercholesterolaemia.

On admission to the cardiology department, his blood pressure was 170/85 mm Hg, with regular pulse 100/min, and without any abnormalities. Electrocardiography on admission revealed sinus rhythm 100/min with negative T-wave in II, III, aVF, V₅–V₆ leads. In echocardiogram akinesis without

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scar of posterior, lateral and basal segment of inferior wall was diagnosed, with preserved ejection fraction of the left ventricle (approx. 50%). Blood tests revealed an increased level of myocardial necrotic enzymes — troponin I 0.95 $\mu\text{g/L}$ (N: < 0.01), CK-MB 59 U/L (N: 3–25), CK 235 U/L (N: 20–200), while other parameters such as blood count, electrolytes and creatinine were within the normal range. The patient was transferred to the cath-lab for a coronary angiogram.

Coronary angiography performed from radial access showed a normal left coronary artery, with no evidence of significant atherosclerotic lesions. The right coronary artery was critically narrowed in the middle part — *de novo* lesion proximally to previously implanted stent (Fig. 1). We decided to perform immediate PCI of the right coronary artery. After introduction of a Sheathless Eaucath 6.5FJR4.5 (Asahi Intecc, Japan) guiding catheter, thrombus aspiration by ASAP device (MeritMedical, USA) was performed. After thrombectomy, to optimise preparation of the lesion for BVS implantation, predilatation by non-compliant balloon catheter 3.5 \times 20 mm was performed up to 12 atm. (Fig. 2). Then BVS Absorb (Abbott, USA) 3.5 \times 20 mm was implanted up to 14 atm. with optimal result (Fig. 3).

After 5 days of hospitalisation, the patient was discharged home in a good general condition, with a recommendation to regularly take acetylsalicylic acid, clopidogrel, ramipril, carvedilol and atorvastatin.

DISCUSSION

Early invasive strategy in the course of treatment of patients with high-risk NSTEMI is common practice in our cath-lab, but the highly innovative aspect of the presented procedure was implantation of BVS into the infarct-related lesion. Our centre has broad experience in treating patients with stable angina with BVS implantation, but this was the first procedure in an unstable patient.

Several issues during the PCI procedure were unknown. First, there is no data regarding the implantation of BVS in a thrombus containing lesions. We tried to prepare optimally the culprit lesion for BVS implantation, but we were aware of the possibility of a damaged target vessel and distal embolisation by small parts of thrombus if predilatation would be too aggressive. Manual aspiration thrombectomy was used to reduce thrombus load and to reduce the risk of distal embolisation and the occurrence of no-reflow phenomenon.

Regarding longer follow-up consideration of patients after BVS implantation, there has been no extended data published. Most studies have investigated the results of BVS implantation on a group of stable patients qualified for a planned PCI procedure. In one of them, the 6-month results of Absorb implantation confirmed good angiographic result with good endothelialisation of scaffold struts. There are several studies designed to check the treated artery reactivity in long-term follow-up after BVS implantation, but the results of these studies are not yet known.

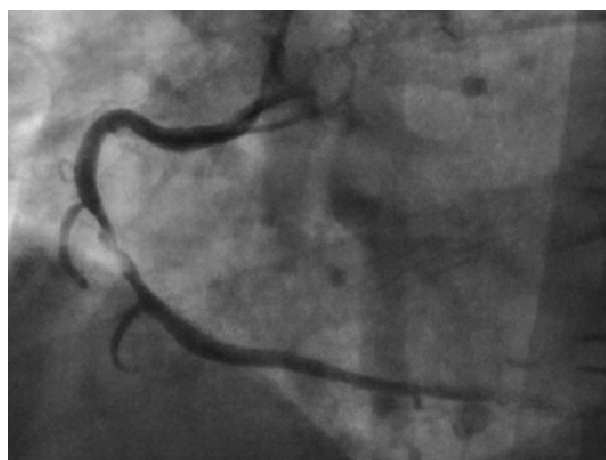


Figure 1. Baseline angiography of the right coronary artery

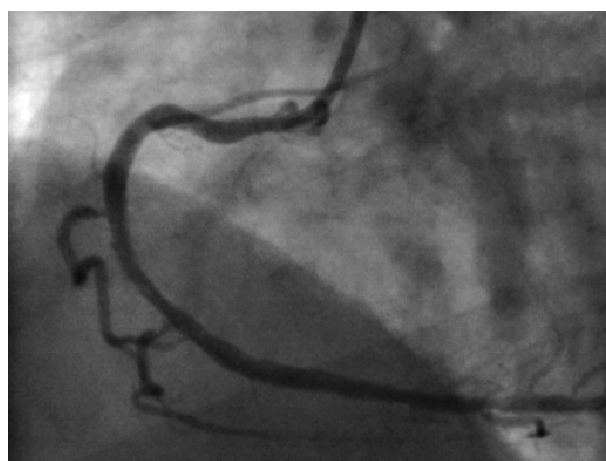


Figure 2. Result after predilatation with non-compliant balloon



Figure 3. Final result

Conflict of interest: Dariusz Dudek — grants from clinical research grant, personal fees from Advisory Board member, outside the submitted work.