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Case report

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BRIGHTNESS AND DARKNESS OF THE COURSE AND THERAPY OF CORONARY ARTERY DISEASE

SUMMARY

The paper presents the evolution of atherosclerotic process which was manifested as coronary and peripheral arterial disease. Invasive therapeutic interventions diminish symptoms and improve the quality of life of patients with atherosclerosis. However, in the case reported, the effect of every invasive procedure lasted very shortly. The conclusion is that primary prevention is less expensive than treatment of patients with atherosclerosis.

***Key words*: coronary artery disease, myocardial revascularisation, implantable cardioverter defibrillator**

CASE REPORT

The male patient, P.S., 57 years old, was admitted to the Institute "Niska Banja" on the 26th of September in 2005 for cardiovascular rehabilitation after the implantation of cardioverter defibrillator (ICD). The patient has the following cardiovascular risk factors: dyslipidemia, glucose intolerance, positive familiar anamnesis and previous smoking history.

The first symptom was the intermittent claudication (1986), while claudication distance was 300 meters. When claudication distance was diminished to 100 meters, iliofemoral by-pass surgery was performed in the right leg in 1988 and in the left leg in 1992.

The first coronary event was inferior myocardial infarction, which occurred in August in 1994. The first coronary angiography was performed in November in 1994, when occlusion of the right coronary artery (RCA) and circumflex artery (CxA) was found. The left ventricular ejection fraction was 40% (figure 1).

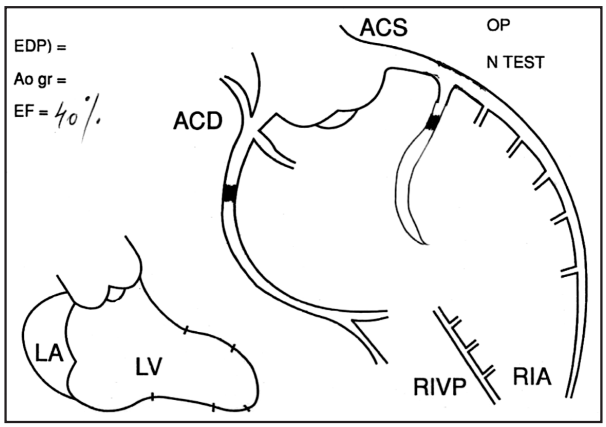

Figure 1. Coronary angiography performed in November in 1994

Myocardial revascularisation was performed by three by-pass grafts (CABG) on the 25th of November in 1994: for RCA, for OM1 and for OM2 artery; endarterectomy was performed on CxA (7 cm) with patch reconstruction of OM2 and OM3 artery. The patient had no symptoms for fourteen months. At the beginning of 1996, the chest pain

appeared only during strong effort. The second coronary angiography was performed in July in 1996, which showed that all grafts were occluded. The appearance, duration and characeristics of chest pain remained unchanged. The third angiography was performed in September in 1997, and the result was the same as the previous one (figure 2).

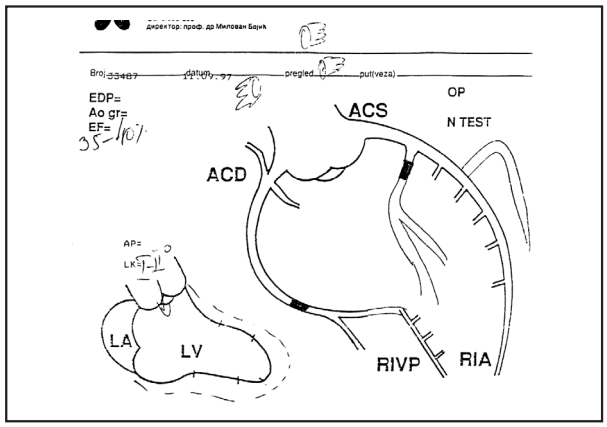

Figure 2. Coronary angiography performed in September in 1997

The anginal pain became more frequent and stronger. The second CABG was performed on the 4th of March in 1988, when aortocoronary by-pass graft was implanted on ACD with exploration of OM1 and OM2. The patient had no symptoms for one year.

The forth angiography was performed in June in 1999 and showed: occluded graft for RCA, occluded graft for OM2, and patent graft for OM1. The left main artery and proximal LAD had 50% of stenosis. PTCA with stent implantation in the left main artery and LAD was done on the 16th of July in 1999 (figure 3).

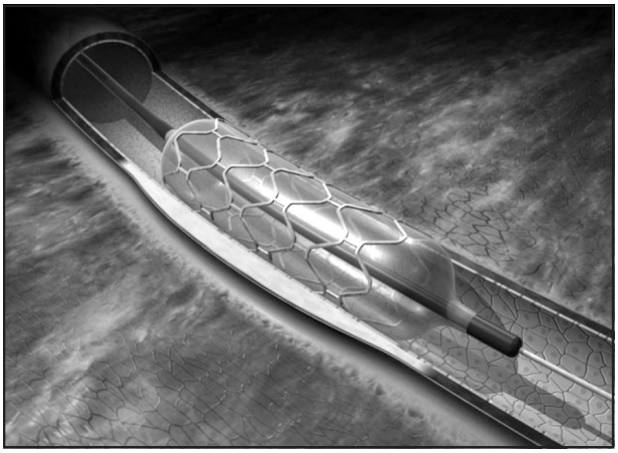

Figure 3. Artistic presentation of the stent

The patient had no symptoms for seven months. The symptoms appeared again and coronary angiography was performed on the 7th of March in 2000, when 60% of restenosis was found in the stent. PTCA was performed immediately. Control angiography was done in May in 2000, when 40% of in-stent restenosis was found and PTCA was repeated. In January in 2002, repeated in-stent restenosis of 60% was registered and PTCA was performed. During this hospitalization, because of dissection and thrombosis of the left axillary artery, thrombectomia and reconstruction by Dacron patch were performed.

The onset of dizziness and syncope appeared during spring in 2003. It was the consequence of sustained ventricular tachycardia (VT), which was found in the 7-day holter monitoring. The sustained ventricular tachycardia was induced on the 11th of June in 2003 during electrophysiological examination and was resistant on amiodarone and lidocaine. The VT was terminated by DC shock when ablation of VT focus was performed. Shortly after electrophysiological examination, syncope appeared again. The patient was put on the waiting list for implantable cardioverter defibrillator. In the course of eleven years, the ejection fraction diminished from 40% to 15% (figure 4).

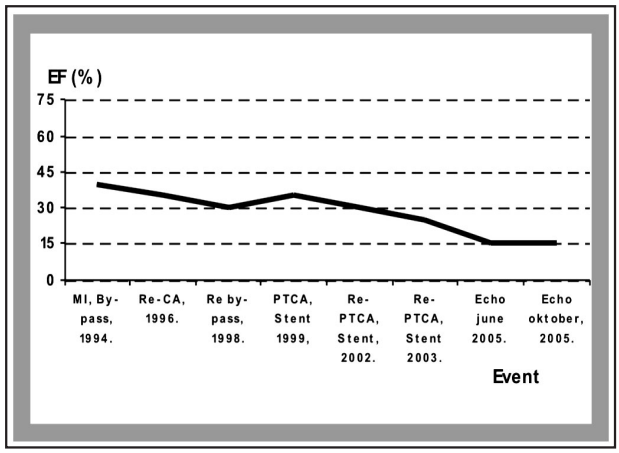

Figure 4. Changes of ejection fraction during coronary disease

MI - Myocardial infarction, CA - Coronary arteriography, PTCA - Percutaneous transluminal coronary angioplasty

The intermittent claudication appeared again in 2005. Replacement of "Y" prothesis by Silver Dacron graft was done on the 8th of March in 2005. The cardioverter defibrillator was implanted on the 2nd of June in 2005 (figure 5), and the patient was referred to cardiovascular rehabilitation which was conducted in the Institute "Niska Banja" between the 26th of September and the 17th of October in 2005.

On admission to cardiovascular rehabilitation, *auscultation of heart* showed: regular heart rhythm, splitting of the first and third heart sounds, systolic regurgitant murmur grade 3/6 on the apex. Blood pressure was 130/80 mmHg and the heart rate was

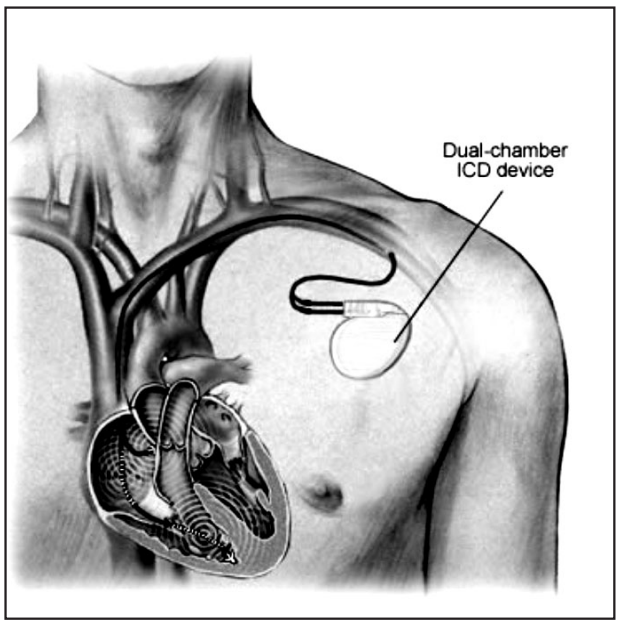

Figure 5. Implantable cardioverter defibrillator (ICD)

80 beats per minute. ECG: complete left bundle branch block. *Laboratory examination:* INR 3.0, WBC 5.1 x 10^{12}/L, RBC 4.15 x 10^{9}/L, HGB 141 g/L, HTC 0.41, PLT 106 x 10^{9}/L, K^{+} 4.3 mmol/L, Na^{+} 137 mmol/L, Cholesterol 4.7 mmol/L, HDL-cholesterol 0.95 mmol/L, LDL-cholesterol 3.16 mmol/L and glycaemia 6.7 mmol/L. *Radiographic chest examination:* absence of pulmonary congestion. *Echocardiography:* the left ventricle was dilated and remodelated. Segmental kinetics of left ventricle wall - akinetic segments were medial and apical segment of septum, apical segment of anterior wall, all segments of inferior wall and posterior wall. Left ventricular ejection fraction was 15%. Mitral regurgitation was 2+ and tricuspidal was 2+.

During rehabilitation, the patient was stable. Only one episode of anginal pain occurred without any ECG changes. The patient was discharged from the Institute with the following medical therapy: metoprolol 50 mg divided in two daily doses, amiodarone 100 mg daily, enalapril 10 mg per day, isosorbid-5-mononitrate 80 mg per day, molsidomine 8 mg every evening, furosemide 60 mg per day, spironolactone 25 mg per day, simvastatin 20 mg every evening, anticoagulant therapy according to INR (from 2 to 3) and diasepam 5 mg daily.

DISCUSSION

Atherosclerosis is progressive disease with different clinical presentations. A great number of invasive interventions have diminished symptoms and improved the quality of life in patients with atherosclerosis. Unwanted events after coronary bypass tend to increase in frequency between 5 and 10 years after the operation, apparently coinciding with gradual occlusion of vein grafts. Approximately 50% of vein grafts are closed within 10 years after the operation. However, in some cases, the effect of every invasive procedure lasted quite shortly. As for our patient, the benefit of myocardial revascularisation lasted only 12–14 months. All invasive procedures, performed in this case, were necessary according to the guidelines of American College of Cardiology and American Heart Association (1,2).

The patient had allergic manifestation on acetylsalicylic acid. Therefore, he had to receive only anticoagulation drugs. After stent implantation, the patient received additional ticlopidine. CAPRIE study showed that the clopidogrel was more effective than aspirin for each vascular-related endpoint. The patients treated with clopidogrel had an annual 5.32% risk of ischaemic stroke, myocardial infarction, or vascular death compared with 5.83% in those treated with aspirin. These rates reflect a statisticaly significant (p=0.043) relative-risk reduction of 8.7% in favour of clopidogrel (3). The CURE study has shown the best effect of clopidogrel in combination with aspirin. In this study, 12 562 patients were randomized to clopidogrel or placebo in addition to aspirin, and the primary outcome was cardiovascular death, myocardial infarction, or stroke. The benefits versus risks of an early and long-term clopidogrel therapy (absence of cardiovascular death, myocardial infarction, stroke, or life-threatening bleeding) were similar in those undergoing revascularization (CABG or PCI) and in the study population as a whole (4). This patient could not afford clopidogrel, because of its high cost.

We can suppose that in-stent restenosis would probably not happen or that it would begin after more than 10 months if the patient had received drug-coated stent. The RAVEL study showed 2.5% target lesion revascularization compared with 13.6% in control group ($p < 0.002$) during the-two year follow-up. TAXUS II study demonstrated the safety and efficacy of sirolimus-eluting Bx Velocity stents 2 years after the implantation in humans. In-stent lumen dimensions remained essentially unchanged during the 2-year follow-up (5, 6). The prices of these stents are very high compared with bare-metal stents. The third PTCA was effective in our patient. Control angiography showed patent artery with the stent after the two-year follow up.

MADIT II study showed better survival in patients with ICD than in patients who received amiodarone (7). The ICD and amiodarone will prevent arrhythmic death in an outpatient, but very low EF is the main factor which determine his prognosis. The COMET study suggested that carvedilol extended survival compared with metoprolol (8). The overall mortality was 34% for carvedilol and 40% for metoprolol (p=0.0017). Regarding our patient, we continued previous medical therapy, because he tolerated metoprolol better than other beta blockers.

CONCLUSION

The paper presents the evolution of atherosclerotic process which was manifested as coronary and peripheral arterial disease. With various successes, a great number of non-invasive and invasive therapeutic methods and implantation of expensive devices were applied in the treatment of this patient. One should bear in mind that primary prevention is less expensive than treatment of patients suffering from atherosclerosis.

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SVETLOST I TAMA TOKA I LEČENJA KORONARNE BOLESTI

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SAŽETAK

U ovom radu prikazana je evolucija aterosklerotskog procesa koji se ispoljio u vidu bolesti koronarnih i perifernih arterija. Invazivne terapijske metode ublažuju simptome i poboljšavaju kvalitet života kod bolesnika sa aterosklerozom. Međutim, kod prikazanog bolesnika, efekat svake invazivne metode trajao je vrlo kratko. Pouka ovog prikaza je da je primarna prevencija jeftinija od lečenja bolesnika sa aterosklerozom.

***Ključne reči*: koronarna bolest, revaskularizacija miokarda, implatibilni kardioverter defibrilator**

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