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Authors: Kinga Zujko, Narcyza Żygieło, Małgorzata Knapp, Anna Lisowska

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**Complications of percutaneous coronary intervention in 70 years old patient
with multivessel coronary artery disease and prostate cancer**

Powikłania przezskórnej interwencji wieńcowej u 70-letniego pacjenta z wielonaczyniową chorobą wieńcową i rakiem prostaty

Kinga Zujko, Narcyza Żygieło, Małgorzata Knapp, Anna Lisowska

Department of Cardiology, Medical University of Białystok, Białystok, Poland

Address for correspondence: Kinga Zujko MD, Klinika Kardiologii, Uniwersytet Medyczny w Białymstoku, ul. M. Skłodowskiej-Curie 24a, 15–276 Białystok, Poland, phone: +85 831 86 56, e-mail: z_kinga@wp.pl

Abstract

A 70-year-old man with chronic coronary artery disease (CAD), disseminated atherosclerosis, heart failure with mildly reduced ejection fraction, hypertension, diabetes mellitus type 2 and prostate cancer was admitted to the Department of Cardiology because of low effort tolerance for further cardiological assessment before chemotherapy of prostate cancer. Due to the progression of CAD in coronarography, he was consulted at the Heart Team meeting and classified for two-step percutaneous coronary intervention (PCI). After PCI of the left anterior descending artery, he had a myocardial infarction with the ejection fraction decreased from 43% to 28%.

Key words: percutaneous coronary intervention, multivessel coronary artery disease, atherosclerosis, heart failure, myocardial infarction; oncology, prostate cancer

Introduction

The multivessel disease is characterized by significant stenosis $\geq 50\%$ in at least two major coronary arteries. The strategies of revascularization are percutaneous coronary intervention (PCI) and coronary artery bypass grafting and both are effective in extending human lives. The selection of a method should be discussed in every case separately [1]. Every invasive

treatment is connected with risk and adverse effects. One of them is myocardial infarction type 4a which is related to coronary procedure events and includes elevation of cardiac troponin greater than 5 times the 99th percentile, electrocardiogram and imaging examination changes within 48 h after PCI. In these patients, the optimal pharmacotherapy to reduce cardiovascular risk in the future must be established.

Case report

A 70-year-old man with chronic coronary artery disease (CAD), after past myocardial infarction, with disseminated atherosclerosis and heart failure (HF) with mildly reduced ejection fraction (EF) was admitted to the Department of Cardiology for further cardiological assessment before chemotherapy of prostate cancer due to a decrease of effort tolerance.

Furthermore, this patient had a history of hypertension, diabetes mellitus (DM) type 2 and prostate cancer diagnosed a few months earlier. In 2004 he underwent PCI of the right coronary artery (RCA) with 1 drug-eluting stent implantation in a course of inferior myocardial infarction

On the hospital admission, the patient was haemodynamically stable and denied any chest pain. However, he reported low exercise tolerance and shortness of breath after walking about 50 meters and periodically feelings of heart palpitations. Physical examination showed heart rhythm 65/min, blood pressure 114/68 mm Hg, and normal vesicular breath sounds without pulmonary congestion. Laboratory tests revealed elevated level of N-terminal pro-B-type natriuretic peptide 585.7 pg/mL, HbA1C 9.4% and normal concentration of high-sensitive troponin 17 ng/L. In electrocardiogram there was regular sinus rhythm, features of enlargement of the left atrium and previous inferior myocardial infarction. The echocardiography examination showed a mildly decreased ejection fraction of the left ventricle (EF 43%), left ventricle hypertrophy, grade 1 diastolic dysfunction (impaired relaxation), mild mitral and tricuspid regurgitation.

The patient underwent the coronarography which revealed progression of CAD, left anterior descending coronary artery (LAD) with 90% stenosis, ramus circumflexus dexter with 99% stenosis. He was consulted at the Heart Team meeting and classified for PCI of LAD and to repeat PCI of RCA. PCI of LAD and diagonal artery with rotablation and implantation 2 drug-eluting stent stents were made urgently. The procedure was technically difficult because of advanced, massive atherosclerosis in coronary arteries. After PCI the patient reported a new pain in the chest; also, an elevated level of highly sensitive troponin

was observed, which was typical for the acute coronary syndrome. Myocardial infarction type 4a was recognized (after PCI) which was also confirmed by depressed ST segment in the inferior and lateral leads in electrocardiogram. An echocardiographic examination showed a reduction of left ventricular ejection fraction to 28% and new regional myocardial contractility abnormalities. The patient was consulted with an invasive cardiologist and was classified to continue conservative treatment because of the high risk of the repeated invasive procedure.

The patient received typical complex pharmacotherapy for acute coronary syndrome and heart failure. Furthermore, after consultation with a diabetologist, the treatment of DM was modified — the insulin therapy was maintained and added were flozin and metformin. The left ventricular ejection fraction improved to 41% during hospitalization. After improvement of vital signs, the patient was discharged from the hospital without severe contraindications to chemotherapy for prostate cancer.

Conclusions

A patient with multivessel CAD, before planned chemotherapy of prostate cancer, was qualified for PCI LAD, which conflicted with acute myocardial infarction type 4a. Due to prostate cancer, oncological treatment was a priority and after an improvement of the left ventricular ejection fraction, the patient should immediately have chemotherapy without planned new percutaneous intervention.

Discussion

Cardiotoxicity is a very common adverse action of cancer chemotherapy and a frequent cause of death [2]. One of the first reports about cardiotoxicity in oncological treatment was proved already in 1973 [3]. It revealed most of the ten abnormalities in electrocardiography or congestive HF. Echocardiographic measurement of ejection fraction is important to assess systolic function before and after chemotherapy [4, 5]. Some patients have a higher risk of HF during oncological therapy. The patient-related risk factors are age, sex, hypertension, HF, previous cardiovascular disease, obesity and DM [6, 7]. In this case report, the patient had chronic CAD and HF with reduced EF which was a poor prognosis. Due to the decrease of EF after PCI of LAD, the patient was disqualified from PCI RCA and only pharmacotherapy treatment of chronic ischaemic heart disease was possible. The most important is to value the

risks and benefits of chemotherapy in patients with cardiovascular diseases and HF. It is proved, however, that benefits of chemotherapy outweighed the risk of cardiac dysfunction [8].

Conflict of interest

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