Case Report

Recurrent Pleural and Pericardial Effusions after Off-Pump Coronary Artery Bypass Grafting–Rare Case of Constrictive Pericarditis

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Abstract

We hereby present a case of a 70-year-old patient who developed constrictive pericarditis after off-pump coronary artery bypass grafting. The diagnosis was based on the fact that, 3 months after the operation, during the follow up appointment, the man complained about dyspnea and the chest pain. The echocardiography as well as the CT scan of the thorax revealed fluid in pericardium and both pleural cavities, which was evacuated via the thoracentesis. Two more recurrent cases of catheterizations, performed in the short period of time, drew our attention to perform the MRI of the heart. Visible thickening of the pericardial wall confirmed the hypothesis. The patient was diagnosed with constructive pericarditis.

Keywords: Constrictive pericarditis; Coronary artery disease; Fibrosis; Myocardial infarction

Introduction

Constrictive pericarditis is characterized by pericardial fibrosis, which results in impairment of heart work, due to the insufficient cardiac filing. It may lead to systolic dysfunction. Majority of patients have this condition de novo after previous cardiac surgeries [1]. Among other causes we can distinguish: Tuberculosis, viral, bacterial, fungal and parasitic infections, irradiation of the thorax as well as the result after myocardial infarction. During the diagnostic process we should direct our attention into the patients' symptoms which are suspicious for the pleural and pericardial effusions, which are for example: Dyspnea, fatigue, chest pain, orthopnea. They are shown in the Table 1.

Case Report

A 70-year-old patient was admitted to the Cardiosurgery Department due to the coronarography (NYHA I/II). Man presented several chronic illnesses, including arterial hypertension, diabetes mellitus type 2, atherosclerosis and gout. Stress test was positive and CT scan of the coronary arteries showed the multivessel coronary artery disease including critical stenosis of the left anterior descending artery and critical stenosis of the right coronary artery [2]. Echocardiography revealed that there are no contractility disturbances and the ejection fraction was equal to 60%. Off-pump coronary artery bypass grafting (left internal mammary artery – left anterior descending artery, aorta – left marginal artery) has been successfully performed without the need for post-operation blood transfusion and the patient has been discharged home in good general condition. During the follow up appointment (3 months afterwards) our patient complained about dyspnea and the pain located in the left part of the thoracic cavity. He declared that he has lost 3kg after the operation. The D dimer was elevated up to 2226. In the echocardiography we've noticed the fluid in both pleural cavities (approximately 3 cm) and in the pericardial sac (7 mm-8 mm) underneath the right ventricle and right atrium. There was no contractility dysfunction. In the ECG there was a sinus rhythm, normal axis, 74/min. In order to broaden the diagnostic process, man had the CT scan of the thorax performed in order to search for noncardiogenic causes of the effusion, such as pulmonary embolism as well as acute aortic syndrome – both of them were excluded [3]. Upon these results, he had the drainage of both pleural cavities done. In the interim patient had the empirical Antibioticotherapy implemented due to the fact that the CRP was equal to 41. Two weeks later, the patient came back to the hospital with similar symptoms but this time the pain was located on the right side of the chest – USG showed 8 mm in the pericardium and 5,5 cm of fluid in the right pleural cavity near the base of the right lung–100 ml-150 ml of the yellow fluid has been evacuated. USG revealed that there is no more free fluid in the pleural cavities. In the echocardiography the right ventricle didn't show any signs of pulmonary arterial hypertension, the inferior vena cava wasn't

Table 1: Symptoms which are suspicious for the pleural and pericardial effusions.

Symptoms of pericardial effusion	Symptoms of pleural effusion
Dyspnea	Dyspnea
Fatigue	Fatigue
Pain located behind the sternum	Pleuritic pain
Orthopnea	Orthopnea
Swollen abdomen	Dry cough, which is nonproductive
Swollen lower limbs	Fever

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plethoric. Left ventricular diastolic function was normal, E/A>1, e' equal 10m/s with no contractility dysfunctions of the left ventricle. Two months after this procedure, the man had the 3rd drainage performed, the fluid has been located mostly on the right pleural cavity (up to 5 cm), again the fluid after evacuation was yellow. Recurrent thoracenteses have drawn our attention to search for the signs of cancer in the abdominal cavity. Fortunately the laboratory tests as well as the medical imaging withdrew this hypothesis. The next step was to look for characteristics of constrictive pericarditis [4].

Discussion

During the next echocardiography (month later), the contractility of the right ventricle has been diminished (TAPSE 16 mm), without the pulmonary arterial hypertension (AccT was approximately 110 ms). There was also a small mitral and tricuspid valve regurgitation. The inferior vena cava has been dilated up to 26 mm with the degree of inspiratory collapse <50% and the plethora of hepatic veins was up to 15 mm [5].

Pericardial sac had approximately 5 mm-6 mm of fluid nearby the right atrium and right ventricle. In the right pleural cavity there was a fluid layer equal to 8 cm-10 cm. Patient had an MRI of the heart performed and the hypothesis was confirmed – there was an increased thickness of the pericardial wall. After this establishment, the patient is attending follow up appointments in case his symptoms associated with pleural and pericardial effusions are arising [6]. The decision whether this patient will need the definitive treatment in the form of pericardiectomy will be made upon the risk stratification for the development of post-operative heart failure and according to the literature fairly high mortality rate encountering up to 15%.

Conclusion

Constrictive pericarditis might be a result of cardiac surgery that's why it's so important to monitor our patients after each and every operation and in case of many catheterizations direct our attention into this disease entity. The role of the MRI of the heart in light of the recent research is questionable, however it is still an auxiliary tool to discover the thickening and possible calcifications of the pericardium.

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Conflict of Interest

The Author declares that there is no conflict of interest.

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