Embolic acute myocardial infarction treated by intracoronary catheter aspiration embolectomy in a patient with mechanical aortic valve prosthesis

Mekanik aort kapak protezli bir olguda embolik akut miyokart enfarktüsünün intrakoroner kateter aspirasyon embolektomi ile tedavisi

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Introduction

Atherosclerotic plaque is the main cause of myocardial infarctions. Coronary embolism should be considered especially when there is a predisposing factor such as intracardiac prosthesis, infective endocarditis, mural thrombus or a cardiac tumor.

We present a patient who has had a mechanical aortic valve and was admitted to the hospital for a non-ST elevation myocardial infarction.

Case Report

A 33-year- old male presented with a severe, ongoing chest pain for 8 hours. He had received a St Jude mechanical aortic valve five years earlier, because of a bicuspid stenotic aortic valve. On admission, his blood pressure was 120/70 mmHg and the heart rate was 85 beats /min. Systolic ejection murmur grade 2/6 on the second right parasternal space and a mechanical valve click were the cardiac auscultation findings of the patient. Electrocardiography (ECG) showed sinus rhythm and 2 mm downsloping ST depression in leads V1-V4. He was transferred to coronary care unit and echocardiography was performed. An ejection fraction of 45%, left ventricular anterior wall hypokinesia of the mid and apical segments and a functional mechanical aortic bileaflet prosthesis were determined. Afterwards, transesophageal echocardiography was done and neither a dissection flap nor a mechanical valve thrombus was seen. Laboratory tests revealed troponin T level of 0.9 ng/ml and creatinine kinase-MB level of 78 U/L, both of which were all above the upper limit. The patient's INR level was 1.59 reflecting an unprotected, prothrombotic state. Medical therapy was initiated with 300 mg aspirin, 600 mg clopidogrel, intravenous unfractionated heparin, glyceryl trinitrate and tirofiban. Despite intense medical treatment, anginal chest pain and ECG changes persisted and the patient underwent cardiac catheterization in the sixth hour following admission.

The angiogram revealed a focal, large, saddle shaped filling defect in the mid portion of left anterior descending artery (Fig. 1). After advancing a 0.014 inch floppy guidewire and passing through the lesion, we tried to aspirate the thrombus by using a thrombus aspiration catheter (Export Medtronic, Minneapolis, Minnesota). During the first attempt, distal embolism developed, which completely obstructed the lumen (Fig. 2). After a few attempts, the thrombus was aspirated (Fig. 3). The patient's anginal pain resolved, ST depression normalized and the final coronary angiogram was normal (Fig. 4). Warfarin was initiated and tirofiban infusion was continued for 24-hours. After an event free period of seven days,

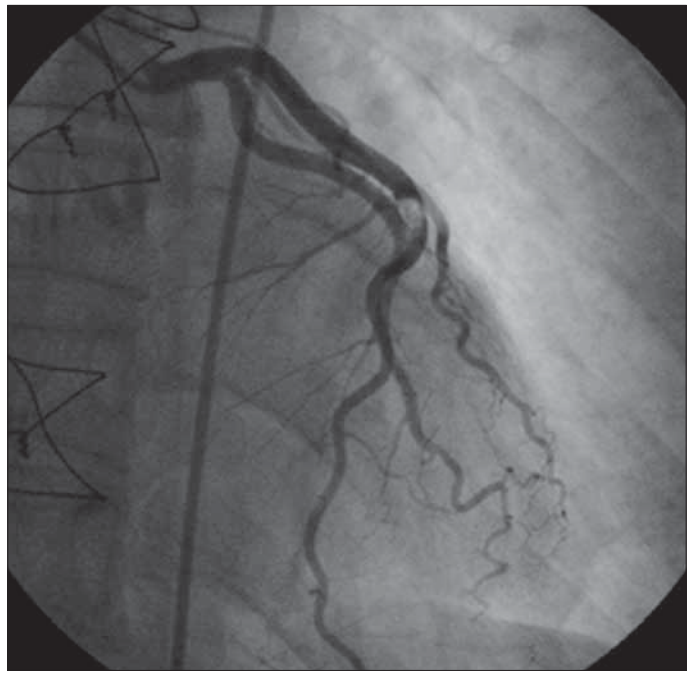

Figure 1. Coronary angiographic view of a focal, large, saddle shaped thromboembolism in the midportion of left anterior descending artery

Figure 2. Coronary angiographic view of a periprocedural distal embolism during catheter aspiration thromboembolectomy, completely obstructing the distal lumen of left anterior descending artery

the patient was discharged under maintenance of warfarin (with an INR value of 3, 4) together with aspirin, carvedilol and ramipril.

Discussion

Coronary embolism is a rare cause of myocardial infarction, which should be considered, especially when there is a predisposing factor such as endocarditis, intracardiac prosthesis, valvular diseases, atrial

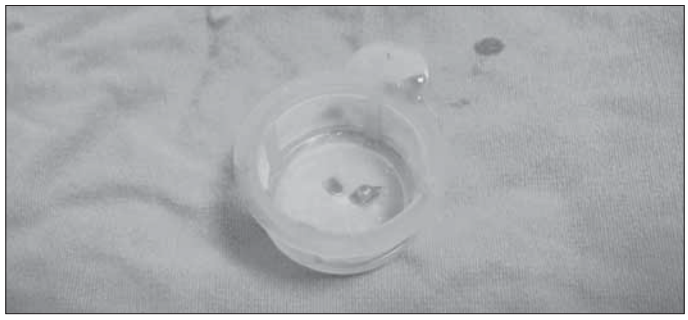

Figure 3. Macroscopic view of the thrombus aspirated from left anterior descending artery

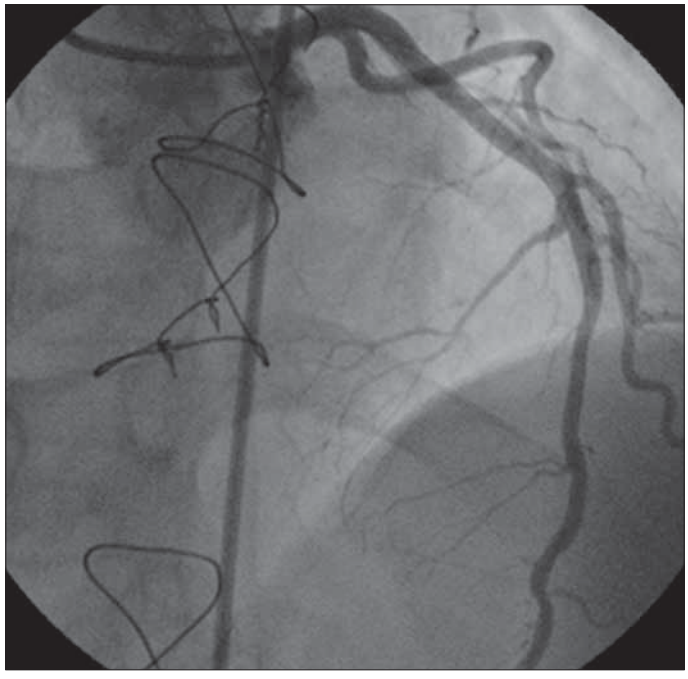

Figure 4. Angiographic view of the left main coronary artery, left anterior descending artery, and left circumflex artery after transcatheter aspiration embolectomy

fibrillation or cardiac tumors (1-4). Coronary embolisms are mostly seen in the left anterior descending artery (LAD) territory rather than the other main coronaries because of the usual straighter course of the proximal part of LAD.

There is no consensus about the optimal management for coronary embolism. Percutaneous catheter aspiration embolectomy, percutaneous transluminal coronary angioplasty with or without stent placement and administration of systemic thrombolytic agents are the current treatment options (5, 6). Among these recanalization techniques, stent implantation is not recommended (7).

Combination protocols have been tried for coronary embolism. Atmaca et al. (8) reported a successfully managed coronary embolism in a patient with a mechanical mitral valve by using a half dose tissue plasminogen activator and tirofiban. We have administrated intravenous tirofiban to our case in the first 24-hours although there is no consensus for the use of glycoprotein 2b/3a inhibitors and subsequently performed catheter aspiration embolectomy. In recent expert reports, thrombus aspiration embolectomy is the suggested treatment option for coronary embolism (9, 10). Since the efficacy and safety of triple anticoagulation therapy (warfarin + dual antiplatelet therapy) in embolic acute coronary syndromes remain unclear, we have ordered warfarin plus aspirin to our patient in the maintenance therapy.

Conclusion

Although there is no consensus about the optimal reperfusion strategy of embolic myocardial infarctions, catheter aspiration embolectomy may be the most valuable strategy for suitable cases.

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Available Online Date/Çevrimiçi Yayın Tarihi: 05. 07.2011

doi:10.5152/akd.2011.116

Late bare-metal stent thrombosis in a patient with Crohn's disease

Crohn hastalıklı bir hastada geç çıplak metal stent trombozu

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