

Iatrogenic Left Main Coronary Artery Thrombosis During Percutaneous Coronary Intervention

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Özet

The patient was admitted to our clinic with the diagnosis of unstable angina pectoris. In the coronary angiography, two stenoses (proximal 90%, distal 60%) in the circumflex artery (CX) were seen. Left anterior descending (LAD) and right coronary arteries were normal. In another session, coronary balloon angioplasty was performed for the CX lesions after which a residual stenosis was detected and stent implantation was decided. Unfortunately, it was not possible to cross the proximal lesion with the 3,0x18 mm stent. Immediately, after pulling back the stent, the patient had severe chest pain. Angiography revealed a thrombotic sub-total occlusion of left main coronary artery (LMCA).

During the stent implantation to the LMCA lesion, the thrombus moved distally into the circumflex artery possibly by the movement of the guide wire, leaving the LMCA totally free of thrombus. Accompanied by immediate relief of chest pain, ECG demonstrated at least 80% resolving in the ST segment elevations. The proximal lesion in CX artery was stented and successful angioplasty was performed for distal lesion afterwards, resulting a TIMI III flow. The patient was completely symptomfree in the follow-up period, and control angiography 1 month later revealed a patent stent in CX beside normal LAD, LMCA and right coronary artery.

An extremely rare, iatrogenic, subtotal left main coronary artery thrombotic stenosis in a patient who had undergone prior PTCA-stenting of the left circumflex artery was discussed in the light of the literature. (*Türk Kardiyol Dern Arş 2004; 32: 197-200*)

Key words: Left main coronary artery, percutaneous coronary intervention, thrombosis

Summary

Perkütan Koroner Girişim Sırasında İatrojenik Sol Ana Koroner Trombozu

Kliniğimize kararsız angina pectoris tanısıyla yatırılan hastanın yapılan koroner anjiyografisinde sirkumfleks arterin (CX) proksimalinde %90, distalinde %60 lezyon tespit edildi ve sol ön inen arter (LAD) ile sağ koroner arter (RCA) normaldi.

Ayrı bir seansta CX'deki lezyonlara anjiyoplasti uygulandı. PTCA sonrası rezidü-darlık kalması nedeniyle stent takılmasına karar verildi. Ancak 3.0x18 mm stent ile proksimaldeki lezyon geçilemedi. Stentin geri çekilmesinden hemen sonra şiddetli göğüs ağrısı başladı. Anjiyografide sol ana koronerin (LMCA) trombüsle totale yakın tıkanıldığı görüldü. LMCA lezyonuna stent takılmasına karar verildi. İşlem sırasında muhtemelen guide-wire'in ilerletilmesine bağlı olarak LMCA'daki trombüsün tamamen ayrılarak CX'e yöneldiği görüldü. Hastanın göğüs ağrısı azaldı ve EKG'deki ST elvasyonları en az %80 oranında geriledi. CX'deki proksimal lezyona stent takıldı, distal lezyona anjiyoplasti uygulandı ve sonrasında TIMI III akım elde edildi. Hastanın takibinde semptomsuz olduğu, bir ay sonraki kontrol anjiyografisinde CX'deki stentin açık, LMCA, LAD ve RCA'nın normal olduğu görüldü.

Bu olgu sunumunda CX artere anjiyoplasti-stent uygulaması sonrası gelişen oldukça nadir görülen, sol ana koronerin iatrojenik, totale yakın trombotik tıkanması literatür bilgileri ışığında tartışıldı. (*Türk Kardiyol Dern Arş 2004; 32: 197-200*)

Anahtar kelimeler: Sol ana koroner arter, perkütan koroner girişim, tromboz

INTRODUCTION

During diagnostic angiographic procedures or percutaneous coronary interventions of the other coronary arteries, the overall risk of complication related to the left main coronary artery (LMCA) is low; however, if any complication occurs it tends to be life threatening and contributes to a large part of the total catheter related mortality ⁽¹⁾.

REPORT of CASE

A 54-year old male patient, who had typical chest pain lasting 20 minutes within the last 2 hours was admitted to the emergency department. He had been having unstable angina for a month. He was smoking one pack of cigarettes daily for the last 20 years, using amlodipin 10 mg daily for 8 years for hypertension. He also had hyperlipidemia and family history for coronary artery disease.

His blood pressure was 170/90 mmHg and pulse rate was 79 bpm on admission. There was nopathological findings in his physical examination. ECG showed normal sinus rhythm without any ST-T wave changes. He was hospitalized with the diagnosis of unstable angina pectoris and administered heparin, clopidogrel, tirofiban, aspirin, beta blocker and nitrate for 48 hours before coronary angiography.

Diagnostic angiography demonstrated two lesions; 90% in the proximal and a 60% in the distal part of the circumflex artery (CX). Other coronary arteries were completely normal (Fig-1). Left ventriculography revealed a mild hypokinesia of anterolateral segment and ejection fraction was found to be 60%. Coronary angioplasty was planned for the lesions in CX.

In another session, coronary balloon angioplasty was performed for the lesions. 8F guiding catheter and 0.014 inch guide wire were used during percutaneous coronary intervention. Proximal and distal lesions had 60% and 30% residual stenosis respectively after the procedure. Although stent implantation was decided, it was not possible to pass through the proximal lesion with the 3,0 x 18 mm stent. Immediately, after pulling back the stent the patient had severe chest pain and simultaneous 1-2 mm ST wave elevations in the leads V1 to V5 was observed. Angiography revealed a sub-total occlusion of LMCA

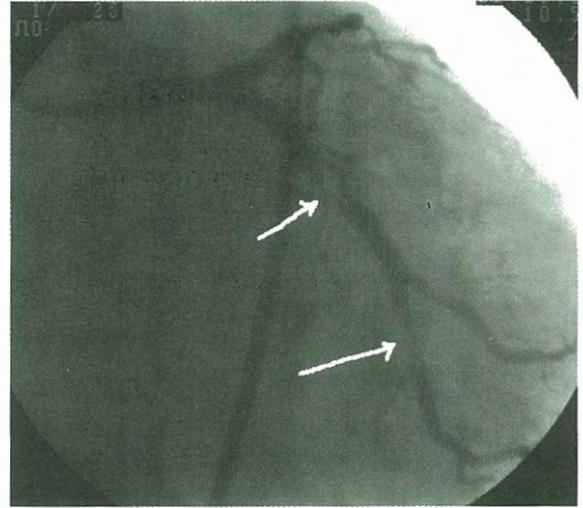


Figure 1. Coronary angiography showing lesions in the circumflex artery (CX). LMCA and LAD are normal

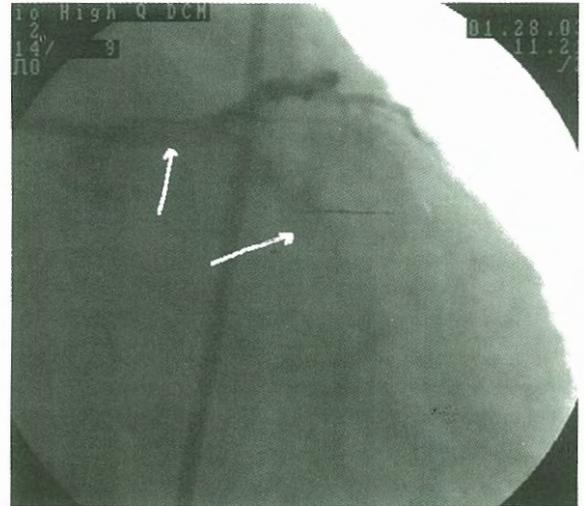


Figure 2. Sub-total occlusion of LMCA with thrombus after pulling back the stent due to unsuccessful implantation

with thrombus (Fig-2) in order to restore the flow a 3,5X15 mm stent implantation to the LMCA lesion was considered. During the procedure it was seen that as the stent was advanced in the left main, the guidewire turned back. As the guidewire was advanced again the thrombus moved distally into the circumflex, possibly by the movement of the guidewire, leaving the LMCA totally free of thrombus (Fig-3).

The patient experienced immediate relief of chest pain and at least 80% resolution occurred in the ST segment elevations. This time it was possible to stent the proximal lesion in CX artery and successful angioplasty was performed for distal lesion after-

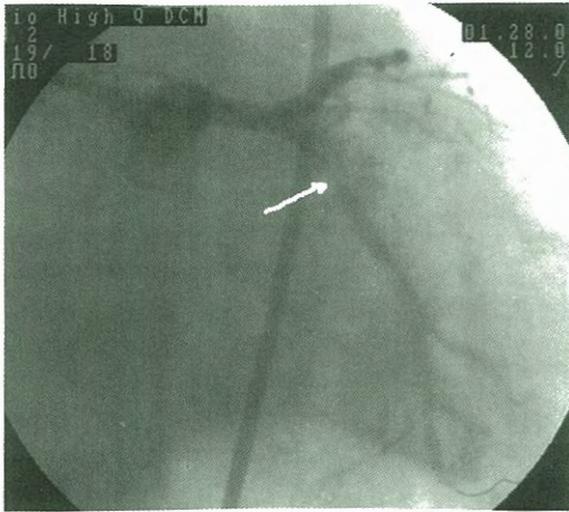


Figure 3. Thrombus moved towards the CX possibly by the movement of the guide wire, leaving the LMCA totally free of thrombus

wards, resulting a TIMI III flow. Intravascular ultrasonography was not performed because of technical insufficiency after percutaneous intervention. The patient was administered intravenous tirofiban (5µg/kg/min) for 48 hours after the procedure. The next day, there was a CK-MB enzyme elevation up to 3 times of normal levels. But the patient did not have any chest pain. He was discharged on aspirin, clopidogrel, beta blocker and statin treatment after a 7-day follow-up period.

The patient was completely symptom free in the follow-up period and control angiography 1 month later revealed a patent stent in CX besides normal LAD, LMCA and right coronary artery (Fig-4).

DISCUSSION

Percutaneous transluminal coronary angioplasty and stenting have become a well accepted technique for revascularization in a large variety of patients who present with symptomatic coronary artery disease. The applicability of interventional coronary procedures has been limited by three factors: (1) acute complications, (2) adverse lesion morphologic features including total occlusions and (3) restenosis (2).

Balloon angioplasty is frequently associated with some degree of dissection of the arterial

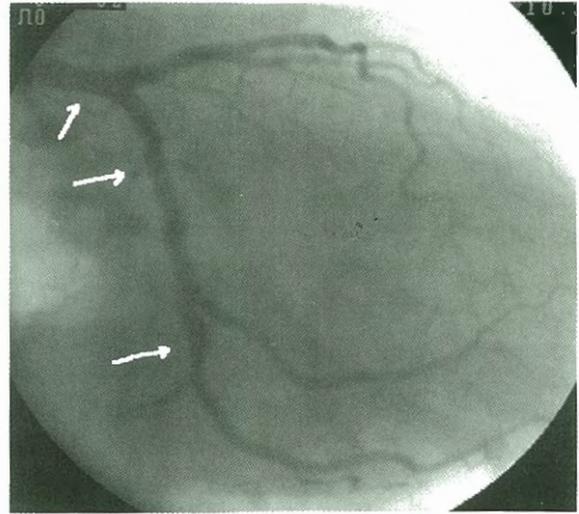


Figure 4. After one month; patent stent in CX besides normal LAD and LMCA.

wall, plaque hemorrhage, platelet deposition, and thrombus formation (3). Thrombus as a primary cause of abrupt closure after balloon angioplasty occurs most commonly in patients with unstable or post-infarction angina or in the setting of extensive dissection, severe residual stenosis, preexisting thrombus, or absence of anti-platelet therapy. In addition, the presence of thrombus in the culprit lesion is a very potent risk factor for abrupt closure (4-6).

The LMCA complications during coronary interventions involve acute LMCA occlusion, resulting in acute myocardial infarction, acute cardiac failure and cardiogenic shock (7). Treatment options for LMCA occlusion include intracoronary thrombolysis, primary percutaneous coronary angioplasty, coronary stenting, emergency coronary artery bypass grafting and intracoronary transcatheter aspiration (8-9).

Our study; reporting acute subtotal occlusion of LMCA after unsuccessful stent implantation following balloon angioplasty to another coronary artery (cx) is unique and to our knowledge is the first in the literature.

Possible explanations of this fearful complication are; intimal tear due to trauma by balloon catheter, stent or guide-wire and a possible pull-

ing-back of the initial thrombus inside the CX by the balloon catheter.

Finally, intra-coronary thrombi existence should be sought before every percutaneous coronary intervention and it must be remembered that thrombus generation after balloon angioplasty is a possible complication regardless of heparin or glycoprotein IIb-IIIa receptor blocker use (as in our case) and can cause acute closures during and after stent implantation. A more important finding is the capability of gentle to and fro movement with the stent to dislodge the thrombus from LMCA towards distal coronary branches, can be life-saving.

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