

Dissolution of Massive Intracoronary Thrombus by Medical Therapy: Case Report

Masif İntrakoroner Trombüsün Medikal Tedavi ile Eritilmesi

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ABSTRACT A previously healthy 76-year-old man came to the emergency service because of abrupt chest pain for last 30 min. ST segment elevations in anterior leads and chest pain were resolved with aspirin and clopidogrel orally and metoprolol, unfractionated heparin, nitroglycerin, and tirofiban intravenously. The first coronary angiogram revealed massive proximal Left Anterior Descending thrombus formation. We did not perform stenting or ballooning in order to evade the catastrophic results of abrupt vessel closure, distal embolization and no-reflow phenomenon during Percutaneous Coronary Intervention procedures at the lesions containing thrombus. Control coronary angiography that was performed 24-hours later revealed resolution of thrombus almost completely. In conclusion, if ST-segment elevation and pain resolve with starting the GP IIb/IIIa inhibitors in unstable patients with massive intracoronary thrombus; waiting the results of this therapy may be logical both to evade the catastrophic results of reperfusion strategies and high therapy costs of all mechanical.

Key Words: Coronary thrombosis; angioplasty, transluminal, percutaneous coronary

ÖZET Son 30 dakika içinde ani göğüs ağrısı başlamış daha önce sağlıklı 76 yaşında bir erkek hasta acile geldi. Anterolateral derivasyonlardaki ST segment elevasyonu ve göğüs ağrısı, oral olarak verilen aspirin ve klopidogrel, intravenöz verilen metoprolol, anfraksiyone heparin, nitroglicerinin ve tirofiban sonrası tamamen çözüldü. İlk koroner anjiyografide proksimal Sol Ön Koroner arterde masif trombüs tespit edildi. Bu tip lezyonlarda Perkütan Koroner Girişim sonrası gelişen ani koroner oklüzyon, distal embolizasyon ve no-reflow fenomeninden kaçınmak için stent veya balon girişimi yapılmadı. 24 saat sonra yapılan kontrol koroner anjiyografide trombüsün tamamen eridiği tespit edildi. Sonuç olarak, masif intrakoroner trombüsü olan anstabil hastalarda GP IIb/IIIa inhibitörlerine başlanması ile ST-segment elevasyonu düzelir ve ağrı geçerse; mekanik reperfüzyon stratejilerinin yüksek terapi maliyetleri ve katastrofik komplikasyonlardan kaçınmak için devam eden tedavinin sonucunu beklemek daha mantıklı olabilir.

Anahtar Kelimeler: Koroner tromboz; anjiyoplasti, translüminal, perkutan koroner

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Intracoronary thrombus formation is accepted as a difficult and frequently encountered problem in the cardiac catheterization laboratory. Treatment of coronary thrombus by percutaneous transluminal coronary angioplasty (PTCA) is associated with a high rate of early and late complications.¹ The most dreadful complications of intracoronary thrombus during coronary invasive procedures like balloon or stenting are abrupt vessel closure, distal embolization and no-reflow phenomenon.^{2,3} These com-

plications may usually start catastrophic events like cardiogenic shock and dangerous ventricular arrhythmias. A variety of strategies have been employed to prevent this phenomenon including intracoronary vasodilators and distal protection systems. Randomized trials have not revealed any superiority of distal protection devices despite the theoretical rationale to their use.⁴

CASE REPORT

A previously healthy 76-year-old man came to emergency service with a progressive chest tightness starting at rest for 30 min. The patient was ex-smoker. On admission, his blood pressure was 100/55 mmHg and heart rate was 87 bpm. His resting 12-lead electrocardiogram showed 3-4 mm ST-segment elevation in the anterior leads (Figure 1). The treatment was given aspirin (300 mg) and clopidogrel (600 mg) orally, metoprolol (5 mg), unfractionated heparin (5.000 IU), nitroglycerin intravenously to the patient. We also started tirofiban bolus (0.4 mcg/kg/min for 30 minutes) and then 24-hour tirofiban (0.1 mcg/kg/min) infusion. He was taken to the cardiac catheterization laboratory after the first tirofiban bolus for primary percutaneous transluminal coronary angioplasty. His electrocardiographic findings and chest pain resolved rapidly. Initial coronary angiography showed massive left anterior descending (LAD) thrombus formation occluding it near completely with thrombolysis in myocardial infarction (TIMI) grade 2 distal flow (Figure 2a). There were clues of atherosclerosis with normal flow in other coronary arteries. Due to the fact that there was massive thrombus material in LAD, we speculated that coronary balloon or stenting procedure may cause massive distal embolisation and no-reflow phenomenon. We decided the continuation of tirofiban therapy because of clinical and electrocardiographical relief of patient. Control coronary angiography was performed 24 hours later and it demonstrated that the filling defect had resolved almost completely with TIMI 3 flow (Figure 2b). Creatine kinase MB isoenzyme showed two-fold increase and rapid decrease in the first hospital day. The patient was followed at coronary care unite for 5 days with-



FIGURE 1: Admission Electrocardiogram (EKG) showing ST-segment elevations on anterior leads.

out chest pain or complication. Echocardiography revealed normokinesia in anterior and anteroseptal left ventricular segments. Laboratory examinations including Protein C and S, antiphospholipid antibody, immunoglobulin G and M levels were normal. C-reactive protein and fibrinogen levels were elevated. We decided the continuation of medical therapy and the patient was discharged from the hospital by aspirine, clopidogrel and metoprolol therapy. At the six-month follow-up, the patient was asymptomatic and control coronary angiography revealed complete dissolution of thrombus formation in proximal LAD (Figure 2c). The written informed consent was taken from the patient.

DISCUSSION

The prognosis of patients with acute coronary syndromes developing due to intracoronary thrombus has usually adverse outcomes.^{5,6} Although several anti-platelet agents, such as thienopyridine and glycoprotein IIb-IIIa receptor antagonist, have been providing a better outcome of the treatment of this kind of lesion, it is still an important technical issue to elucidate how to effectively treat thrombus-containing lesions in coronary intervention.^{7,8}

Conventional percutaneous coronary intervention (PCI) using balloons and stents alone may dislodge thrombotic material adherent to ruptured plaque but the procedure may cause dis-

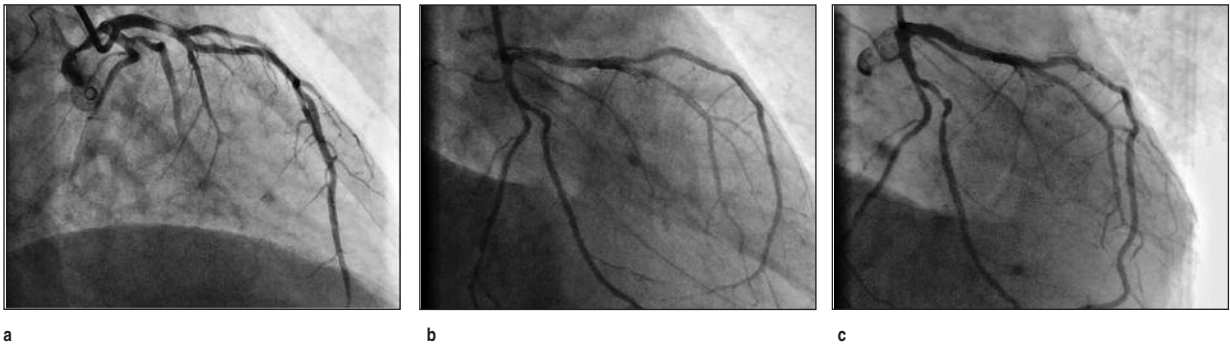


FIGURE 2a, b, c: Coronary angiography illustrating Left Anterior Descending Artery (LAD) with massive intracoronary thrombus and repeated angiographies showing progressive dissolution of thrombus.

tal embolization and microcirculatory impairment and this limits myocardial salvage. Reduced myocardial perfusion despite normal coronary flow is associated with a reduced long-term survival, and can be detected using a variety of methods, including angiographic perfusion grades, persistence in the ST-segment elevation, and noninvasive imaging modalities, such as sestamibi scintigraphy.^{9,10}

The adverse effect of embolization on the microcirculation during PCI of thrombus-rich lesions was highlighted by Ito et al.¹¹ They used contrast echocardiography to evaluate myocardial perfusion in acute myocardial infarction patients treated with primary angioplasty. Of the patients in whom epicardial TIMI grade 3 flow was restored, 16% had echocardiographic evidence of “no reflow”. All patients with TIMI grade 2 had “no reflow”. The use of GP IIb/IIIa antagonists reduced the periprocedural complication of PCI.¹² In the PRISM-PLUS study, patients with non-ST elevation acute coronary syndrome were randomized to treatment with tirofiban, heparin, or both.¹³ Sixty hours after treatment, thrombus was evident in more than 40% of patients, regardless of their therapeutic assignment. Further, PCI in the presence of thrombus significantly increased major adverse clinical events, regardless of the status of the GP IIb/IIIa blockade.

Angiographic resolution of intracoronary thrombus has been variable after intracoronary thrombolysis before angioplasty, but the results have largely been discouraging.^{14,15}

Coronary thrombectomy is a proven technique for removing thrombus and plaque from a coronary artery which is at least partially occluded due to deposits of plaque and thrombus on the inner wall of the artery. As shown in the VEGAS-(Vein Graft AngioJet) trial, adjunct thrombectomy was safer and more effective than an extended local infusion of urokinase for the treatment of angiographically evident thrombus in saphenous vein grafts and native coronary arteries.¹⁶ It was shown that despite effective thrombus removal, thrombectomy with primary PCI did not reduce infarct size or improve TIMI flow grade, TMP blush, ST-segment resolution, or 30-day MACE.¹⁷

We decided to the continuation of only medical therapy due to the fact that the rapid ST segment normalization and relief of pain with only medical therapy. If ST segment elevation did not resolve with this therapy, we could probably start one of the reperfusion strategies. In conclusion, the waiting the acute results of GP IIb/IIIa inhibitors may be logical both to evade the catastrophic results and high therapy costs of all mechanical reperfusion strategies in unstable patients with massive intracoronary thrombus.

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