

Catheter-Directed Thrombolysis in a Patient with Severe Atherosclerotic Stenosis Presenting with Acute Limb Ischemia: Case Report

Kronik Zeminde Akut Arter Tıkanıklığı ile Başvuran Hastada Kateter Aracılı Trombolitik Tedavi

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Geliş Tarihi/Received: 01.07.2014
Kabul Tarihi/Accepted: 08.09.2014

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ABSTRACT Acute leg ischemia is a clinical condition that can result in loss of the extremity or death. Depending on the clinical picture, patients with acute leg ischemia can be treated with emergent surgical revascularization or catheter-directed thrombolysis. This paper presents a case of acute leg ischemia treated with catheter-directed thrombolysis.

Keywords: Atherosclerosis; lower extremity; thrombosis

ÖZET Akut bacak iskemisi, ekstremité kaybı veya ölümlle sonuçlanabilen bir klinik durumdur. Akut bacak iskemisi ile başvuran hastalar duruma göre acil cerrahi revaskülarizasyon veya kateter aracılı tromboliz ile tedavi edilebilirler. Bu olgu sunumunda, kateter aracılı tromboliz uygulanan bir hasta sunulmuştur.

Anahtar Kelimeler: Ateroskleroz; alt ekstremité; tromboz

Damar Cer Derg 2016;25(3):149-52

Acute arterial occlusion comprises 7-37.5% of all vascular diseases. Embolism and thrombosis are two main causes of acute occlusion of peripheral arteries, and they usually occur in patients with severe atherosclerotic stenosis. Arterial flow can be restored through operative revascularization or pharmacological lysis of the thrombi.^{1,2}

The aim of this paper was to present a case of acute arterial occlusion treated with catheter-directed thrombolysis (CDT).

CASE REPORT

A 63-year-old male patient was admitted to our hospital with the complaints of pain and cold left foot which occurred while walking, and disappeared at rest. The patient was a smoker and had hypertension. On his physical examination, his lower limbs were cold, the pulse was palpable in the femoral region on the left side, but nonpalpable in popliteal and distal regions. He did not have motor deficits or wounds. He had a sinus cardiac rhythm. He had been using acetylsalicylic acid, pentoxifylline and clopi-

doi: 10.9739/uvcd.2014-41253

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dogrel for one month. On the arterial Doppler ultrasound examination, there was no flow in the anterior tibial artery, and posterior tibial artery at crural level.

Following physical examination, the patient was determined to be in Rutherford class 2a, and an angiography was performed. On angiography, the right superficial femoral and the popliteal arteries were observed to be patent, the anterior tibial artery was occluded, and the peroneal artery was weakly filled via the collaterals (Figure 1). With these findings, the patient was diagnosed with acute arterial occlusion on a chronic background, and CDT was planned for treatment. Informed consent was obtained from the patient. A cross-over 6 F 45 cm-long sheath (Terumo-Destination, Shibuya-ku, Tokyo, Japan) was placed in the right main femoral artery. The left main femoral artery was accessed through a retrograde route, and 5000 IU of heparin was intravenously administered. The angiograms showed that the left superficial femoral artery was patent, but the popliteal artery and the level of the crural trifurcation were occluded, and filling of the peroneal artery via the collaterals was weak. Using a 300 cm long and 0.018 inch guidewire (Control Wire Boston Scientific, Marlborough, MA, USA), and a 100 cm long diagnostic catheter (Vertebral, Radiofocus, Terumo, Shibuya-ku, Tokyo, Japan), the occluded anterior tibial artery was reached. The dorsal tibial artery was then reached by passing through the occluded segments.

Using a 3x100 mm- (Senri, Terumo, Shibuya-ku, Tokyo, Japan), a 4x100 mm (Senri, Terumo, Shibuya-ku, Tokyo, Japan), and a 5x120 mm-balloon for the left anterior tibial artery, popliteal artery, and the distal part of the superficial femoral artery, respectively, percutaneous transluminal angioplasty (PTA) was repeatedly performed in the distal part towards the proximal direction. For lysis of the residual thromboses detected on the control angiograms, an ultrasound (US)-accelerated thrombolytic infusion catheter (EKOS, Endowave Infusion Catheter System, Bothell, WA, USA) was placed in the left popliteal artery to ex-

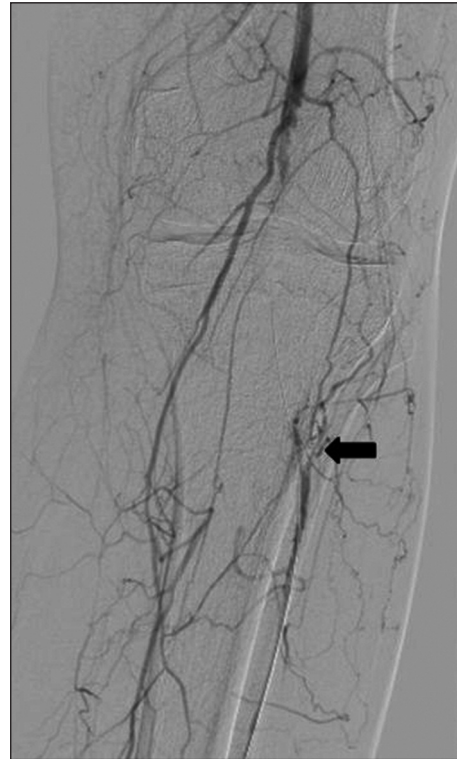


FIGURE 1: Digital subtraction angiography images obtained after balloon angioplasty shows absence of flow in left popliteal artery, but at anterior tibial artery origin has a weak collateral filling (arrow).

tend it to the anterior tibial artery. The entrance site in the right main femoral artery was closed with a vascular closure device (Angioseal, St-Jude Medical, St. Paul, Min, USA). In the first 8 hours, tissue plasminogen activator (t-PA) infusion was administered at a rate of 2 mg/hour, and it was administered at a dose of 1 mg/hour in the following 18 hours. The control angiograms showed complete patency of the anterior tibial artery (Figure 2). The follow-up after the intervention showed complete cure of the patient.

DISCUSSION

Acute limb ischemia (ALI) is a serious and life-threatening clinical condition. It occurs due to thrombosis in situ, bypass graft thrombosis, and embolic occlusion. CTD is the treatment of choice in patients with relatively mild acute limb ischemia (Rutherford categories I and IIa) if there are no contraindications to thrombolytic therapy.³ The priority should be surgical revascularization, and if necessary, concurrent hybrid interventions in the

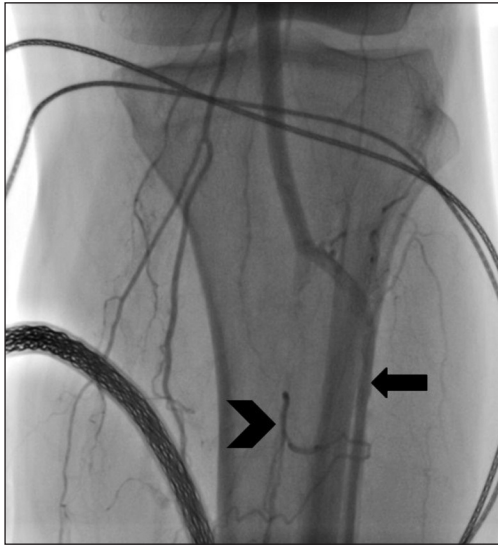


FIGURE 2: Patent left anterior tibial artery (arrow) and collateral filling of peroneal artery (arrowhead).

treatment of cases with Rutherford class 2b and class 3.⁴ The effective use of Fogarty catheter in these patients also contributes to planning hybrid procedures after thrombectomy, and to selection of patients for angiography. We also performed PTA on our patient after CDT.

CTD is an important treatment option for many patients with acute lower extremity ischemia due to arterial and/or graft thrombosis. A growing body of evidence demonstrates that thrombolytic therapy for acute limb ischemia reduces the need for amputation; however, bleeding complications are more likely with lytic therapy.⁵

Endovascular treatment of ALI is an effective and appropriate primary treatment strategy in patients with a viable acutely ischemic limb due to a recent arterial occlusion.⁶

Endovascular therapy with thrombolysis using t-PA remains an effective treatment option for patients presenting with mild or moderate lower extremity ALI, with equal benefit derived with CDT or percutaneous mechanical thrombectomy.⁷

A number of prospective studies which compared intra-arterial thrombolysis with surgical intervention recommended that thrombolytic therapy might be an appropriate initial treatment of ALI, in such conditions that the limb is not urgently or irreversibly threatened.²

Acute arterial occlusions are clinical disorders with a high morbidity and mortality. Early diagnosis, thrombolytic therapy and radiological interventions may save the extremity. The acute occlusions in a chronic illness can be differentiated with taking a careful history, a detailed physical examination, and through a meticulously evaluated angiography. The amputation rates can be decreased with CDT and hybrid therapy options.

CONCLUSION

CTD is a safe and promising treatment in patients with acute arterial occlusion. A residual arterial obstruction should be treated by angioplasty and stent implantation to avoid early re-thrombosis. Moreover, we suppose that therapy with CDT and hybrid approaches can prevent the complications due to use of Fogarty catheters.

Conflict of Interest

Authors declared no conflict of interest or financial support.

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