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A Successful Treatment of Thromboembolic Ischemia in Persistent Sciatic Artery Through Surgical and Endovascular Intervention

Persistant Siyatik Arterde Tromboembolik İskeminin Cerrahi ve Endovasküler Girişim ile Başarılı Tedavisi

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ABSTRACT

A 50-year-old man, presented with sudden onset of right leg coldness, numbness and pain for 1.5 months. It was found that the right superficial femoral artery was thrombosed, which ended at the mid-thigh level and a continued as the popliteal artery in magnetic resonance angiography. Persistence of the sciatic artery is extremely rare vascular anomaly. It is prone to undergo early atherosclerotic changes, occlusive embolism, and aneurysm formation. In this article we report a patient with acute artery occlusion developed in popliteal and crural arteries in a patient with persistent sciatic artery which was successfully treated through surgical and endovascular intervention.

Key Words: *Arteries; ischemia; surgery; endovascular procedures; therapeutics.*

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ÖZET

Elli yaşında erkek hasta, 1.5 aydır sağ bacakta ani başlayan soğukluk, hissizlik ve ağrı şikayetiyle başvurdu. Manyetik rezonans anjijyografide sağ süperfisyel femoral arterin orta uyluk seviyesinde sonlanarak popliteal arter olarak devam ettiği ve tromboze olduğu saptandı. Persistan siyatik arter çok nadir görülen vasküler bir anomalidir. Erken aterosklerotik değişiklikler, emboli ve anevrizma oluşumunda yatkınlığa neden olur. Biz bu çalışmada, popliteal ve krural arterlerinde akut arteriyel oklüzyon gelişen persistan siyatik arterli bir hastada, cerrahi ve endovasküler girişim ile başarılı bir şekilde tedavisini sunduk.

Anahtar Kelimeler: *Arter; iskemi; cerrahi; endovasküler yöntemler; terapötik.*

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INTRODUCTION

Persistence of the sciatic artery (PSA) is extremely rare. It was first described on anatomic dissection by Green in 1832[1]. The reported incidence, according to a large angiography series, suggests that this is a rare anomaly with an occurrence of about 0.025% to 0.04%[2]. The sciatic artery is the major blood supply for the lower limb bulb and is later replaced by the iliofemoral artery as the limb develops. Its failure to regress and therefore becoming the dominant inflow to the lower extremity is known as persistent sciatic artery. This anomaly is usually asymptomatic until the fourth decade of life when degenerative changes and/or thrombosis and embolism may occur as secondary complications.

CASE REPORT

A 50-year-old man, presented with sudden onset of right leg, coldness, numbness and pain for 1.5 months. Physical examination revealed a cool and cyanotic right foot. Moreover, a strong right and left femoral pulse were present and left popliteal and distal pulses were palpable, but the right popliteal, posterior tibial and dorsal artery pulses were all non-existent. There was no loss of motor function but loss of sensation was present. The cardiovascular and respiratory systems were normal except for left ventricular hypertrophy in echocardiography. Preoperative laboratory findings revealed no pathologic finding. The image suggested that the obstruction was located in the distal portion of the right superficial femoral artery and popliteal artery and distally in magnetic resonance angiography. Arteriography was performed to confirm the diagnosis. The right femoral artery was entered with ultrasound guidance; however, deep femoral artery was non-existent. The magnetic resonance was then re-evaluated. It was found that right superficial femoral arteries ended at the midthigh level and persistent sciatic artery continued as popliteal artery (Figure 1). Emergency surgery was performed and first popliteal artery and then anterior-posterior tibial, peroneal artery were explored below the right-knee. The diameter of the popliteal artery was twice as wide as that of the normal size. Urgent embolectomy was performed. A considerable amount of fresh red and organized thrombus was removed. The distal pulses were detectable with portable hand Doppler USG postoperatively. The foot became warmer and afterwards sensation improved. The patient was discharged from hospital and continued to take aspirin and warfarin. A control magnetic resonance was taken in the postoperative third month (Figure 2). Magnetic resonance angiography demonstrated that a totally occluded tibioperoneal trunk and distal occlusion. Additional intervention was not considered since there was no complaint from the patient, no evidence of acute ischemia as well as

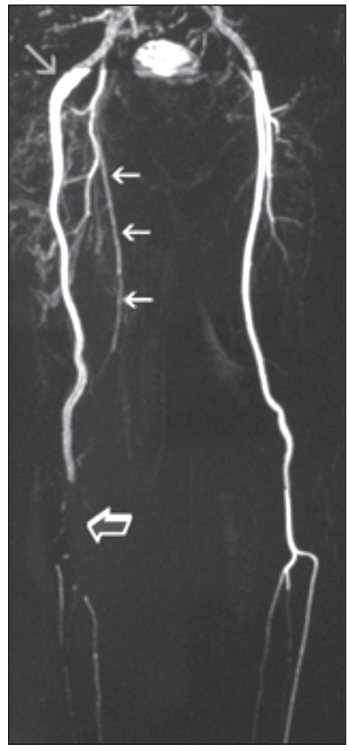

Figure 1. Persistent sciatic artery.

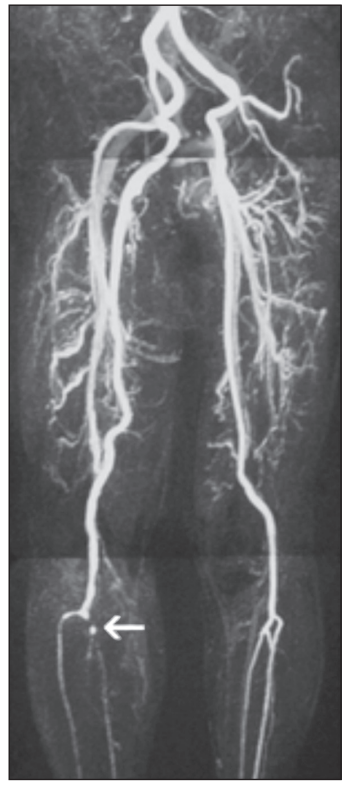

Figure 2. Control magnetic resonance angiography is shown that a totally occluded tibioperoneal trunk and distally.

no good distal runoff which could render a new surgical attempt unsuccessful from the beginning.

Five months later, the patient returned with recurrent right lower limb ischemia. In angiography, thromboembolism was detected in the popliteal, crural and sciatic arteries. Re-embolectomy was performed. Despite the rewarming of the foot following the surgery, the distal pulses could not be palpated in physical examination. Therefore endovascular intervention was attempted. Balloon angioplasty and stent implantation were additionally performed. Thus distal artery flow could be achieved. The patient was discharged from hospital and continued to take aspirin and warfarin. During the follow-up period a left femoral artery pseudoaneursym was detected in puncture side in the seventh postoperative month. It was again treated with endovascular treatment (injection of thrombin). A third embolectomy was needed after ischemia developed in postoperative eleventh month. The pulsations of the left dorsalis pedis artery and posterior tibialis artery were palpable by hand Doppler postoperatively. Unfortunately a deep venous thrombosis developed in right lower extremity in the follow-up. Cilasitazol and compression stockings were given and the patient was discharged from hospital. Regarding surgical and endovascular interventions and the existing vascular anomaly, the patient was followed with medical treatment. The patient is doing well for 37 months since the first operation without limb loss.

DISCUSSION

Persistence of the sciatic artery is an extremely rare pathology. It can be seen at any age between 15-85 years. There seems to be no gender preference. Persistent sciatic artery can be divided into complete and incomplete types. In the complete form of this syndrome, the large embryonic sciatic vessel communicates directly with the popliteal artery. In the incomplete type, it usually communicates with the popliteal artery through small collaterals and the superficial femoral artery provides the major blood supply to the lower extremities. In our case, there was a complete type persistent sciatic artery.

Persistence of the sciatic artery is prone to undergo early atherosclerotic changes, occlusive embolism, and aneurysm formation. The most common cause of symptomatic complaints associated with persistent sciatic artery is aneurysm formation or thromboembolic complications. Besides, due to the compression effect of the aneurysm, a painful pulsating buttock mass can be seen causing sciatic neuropathy due to sciatic nerve compression[3,4]. Arteriography remains the primer diagnostic method.

Surgery is indicated for rupture, aneurysms, ischemic complication in persistent sciatic artery. Aneurysm formation is the most frequent complication of a persistent sciatic artery. The incidence of aneurysm formation approaches 46.1-47%[5,6]. The treatment depends on the type of persistent sciatic artery and clinical presentation. In the complete type of persistent sciatic artery aneurysm, surgical treatment include proximal ligation, excision with interposition grafting, and proximal and distal ligation with femoropopliteal bypass grafting. Surgical bypass may yield more durable results, but during the past decade the introduction and evolution of endovascular procedures have significantly increased treatment options.

In literature, lower limb ischemia incidence of persistent sciatic artery was reported as 1.63%[2]. Critical limb ischemia (CLI) represents the most severe clinical manifestation of peripheral arterial disease. Therapeutic goals in treating patients with CLI include reducing cardiovascular risk factors, relieving ischemic pain, heating ulcers, preventing major amputation, improving quality of life and increasing survival. Surgical bypass is the established standard for CLI. But, elderly patients are not good candidates for surgical therapy because of comorbid factors. Hybrid reconstructions are increasingly used for multilevel revascularization procedures in high-risk patients to achieve complete revascularization with a less extensive operative procedure, shorter duration of operation, and decreased risk of peri-operative complications. Also, amputation occurred in nearly 10% of these patients with persistent sciatic artery as they often present with acute ischemia or occlusion of multiple crural vessels due to chronic microemboli[7]. In this study, after surgery, successful endovascular treatment was performed for patient due to poor distal runoff.

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