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A Buerger's patient with brachial artery aneurysm

Brakial arter anevrizması gözlenen bir Buerger hastası

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A Buerger's patient with brachial artery aneurysm

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ABTSTRACT
Thromboangiitis obliterans (TAO) is a vasculopathy that presents with non-atherosclerotic segmental involvement in small and medium-sized arteries, usually in the upper and lower extremities. Brachial Artery Aneurysm (BAA) is not one of the classic findings of TAO and has no example in the literature. In this report, we described a TAO patient who underwent an aneurysmectomy due to a BAA.

KEYWORDS
Arteritis, brachial artery aneurysm, smoking, thromboangiitis obliterans

ÖZ
Buerger hastalığı (tromboanjitis obliterans); genellikle üst ve alt ekstremitelerde, küçük ve orta büyüklükteki arterlerde aterosklerotik olmayan segmental tutulumla seyreden bir vaskülopatidir. Brakial arter anevrizması, Buerger hastalığının klasik bulgularından biri değildir ve literatürde Buerger ve brakial arter anevrizması koinsidansının bir örneği yoktur. Bu raporda, brakial arter anevrizması nedeniyle anevrizmektomi geçiren bir Buerger hastasını sunduk.

ANAHTAR KELİMELER
Arterit, Buerger hastalığı, brakial arter anevriması, sigara

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Buerger's disease is a chronic, inflammatory, and thrombotic vascular disease associated with tobacco use (1). This disease affects the small and medium-sized arteries of the upper and lower extremities causing non-atherosclerotic segmental occlusion and is frequently seen in men aged 20-40 years (2). It is common in Turkey and its frequency is increasing in women (3). The characteristic pathophysiological changes of Buerger's disease are the deterioration of microvascular regulation due to multiple arterial obstructions at the onset of the disease and then the development of critical ischemia in the extremities. Ischemic symptoms and trophic lesions usually occur in the distal regions of the extremities (4). Recurrent and migratory superficial thrombophlebitis of the extremities (phlebitis saltans/migran thrombophlebitis) may be seen as an early finding in 16-65% of patients (5). The annual incidence of Buerger's disease is estimated to be 5-12 per 100,000 people worldwide. In addition, approximately 7,000 cases of Buerger's disease were reported between 2014 and 2017:(6). Brachial artery aneurysm is extremely rare in Buerger's disease and only one case with radial artery aneurysm has been reported in the literature (7). This case report, describes a patient with a Buerger's disease with a brachial artery aneurysm. Pathological examination of the aneurysmatic brachial artery excised from the right arm revealed thromboangiitis obliterans.

Case Report

A 49-year-old male patient presented with swelling and pain in his right arm. In 2021, he was diagnosed with Buerger's disease due to rest pain in the left lower extremity, digital ulcers, a history of smoking, and occlusive lesions below the knee. Therefore, peripheral percutaneous transluminal angioplasty (atherectomy and balloon dilatation of the left popliteal artery) and thoracic sympathectomy operations were performed. In addition, he underwent a cystectomy due to a pulmonary hydatid cyst and a varicocelectomy due to a varicocele. He was using acetylsalicylic acid and cilostazol. On physical examination, a pulsatile mass extending from the antecubital region to the proximal radial artery tract was palpated in the right arm (Figure1).

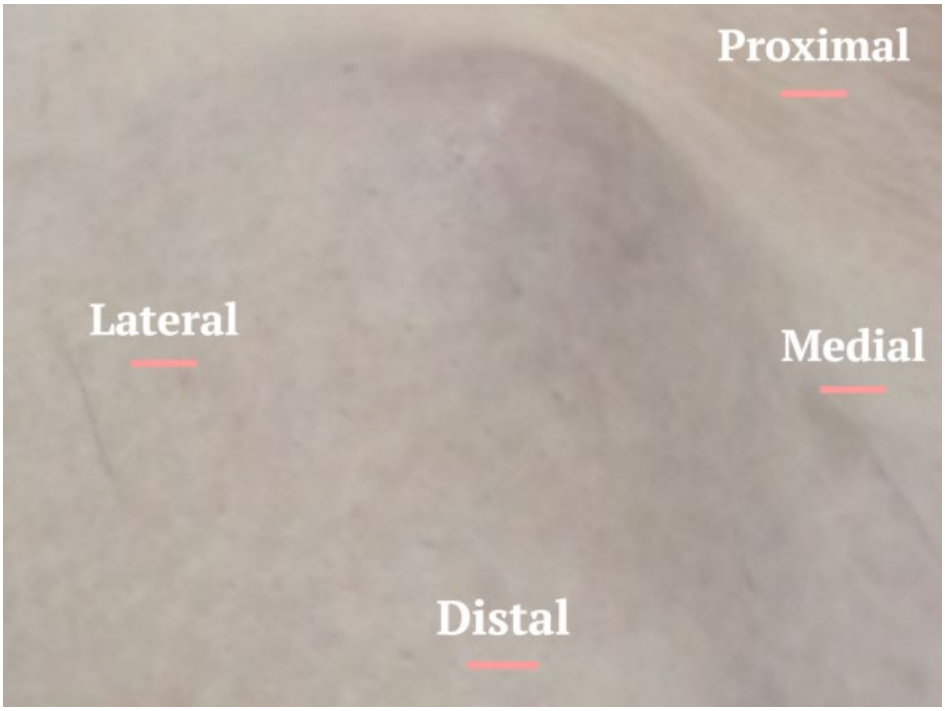

Figure 1. Inspection of the antecubital region

Forearm flexion was limited and painful. Radial and ulnar pulses were absent. Arterial and venous Doppler ultrasonography of the upper extremity revealed aneurysmatic enlargement and a mural thrombus reaching 15x25 mm in diameter in a segment of approximately 4 cm at the level of the brachial artery-radial artery junction in the right antecubital

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region. Edema and thickening of the soft tissues were observed around the aneurysm (Figure2). Low-amplitude flow was seen in the right radial ulnar arteries.

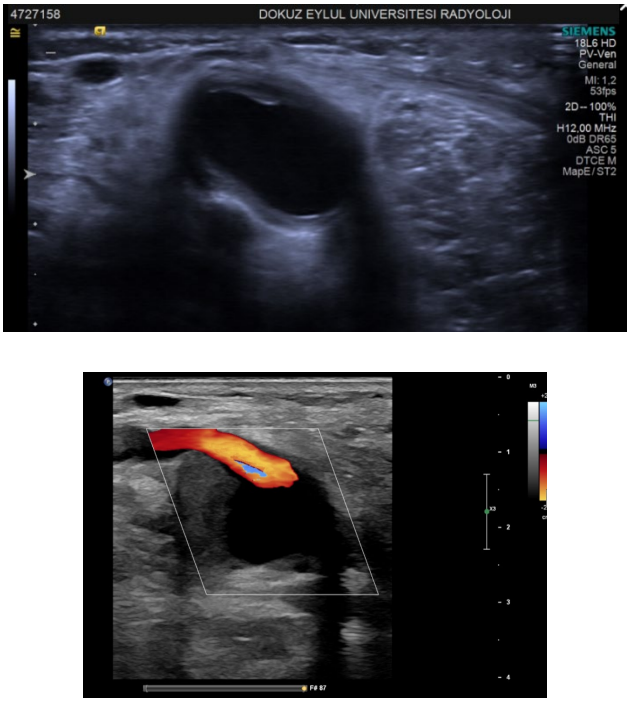

Figure 2. Aneurysmatic enlargement reaching a diameter of 15x25 mm in a segment of approximately 4 cm at the level of the brachial artery-radial artery junction in the right antecubital region

Operation

An elective brachial aneurysmectomy was planned. General anaesthesia was given in the operation room. The brachial and radial artery aneurysms were marked by ultrasonography. The brachial artery and cephalic vein were accessed through a right antecubital incision. The branches of the cephalic vein were ligated and prepared as grafts. The aneurysm was explored and measured to be 5x2x1.5 cm at the brachioradial junction. The ulnar artery was explored. A dose of 100 units/kg of heparin was administered. After clamping the distal and proximal segments, aneurysmectomy was performed. The excised aneurysmal artery was prepared for pathological examination. Strong antegrade flow was observed from the brachial artery and weak retrograde flow from the radial artery. The ulnar artery was completely occluded. Embolectomy of the ulnar was attended with a 3 F Fogarty catheter but was unsuccessful. The ulnar artery was ligated. The cephalic vein, prepared as a graft, was placed between the brachial artery and the radial arteriesy. Brachial artery, interposed graft, and radial artery flows were evaluated perioperatively by ultrasonography. There were no flow problems. A hemovac drain was placed, and the skin was closed with matrees sutures.

Pathology

There were no postoperative complications. The patient was discharged on the second day. Macroscopic pathological examination revealed a lumen structure with a diameter of 1.3 cm at the widest part of the gray-white tissue. Occlusive gray content was seen in this lumen structure. Microscopic examination revealed granulomatous inflammation with giant cells in the thrombus formation and tunica intima. It was considered as compatible with Buerger' disease. After three months, the patient had no symptoms or ischemic signs at follow-up. disease. After three months, the patient had no symptoms or ischemic signs at follow-up

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Discussion

Buerger's disease is a vasculopathy that presents with non-atherosclerotic segmental involvement of small and medium-sized arteries, usually in the upper and lower extremities (8). Von Winiwarter first described the disease in 1879, but it was Leo Buerger who published a detailed description of the pathological findings in amputated limbs and gave the disease its name in 1908 (9). The pathological feature of this disease is the presence of an inflammatory thrombus in the affected arteries and veins. It may present with symptoms such as coldness, paraesthesia, skin colour changes, intermittent claudication, rest pain, ulcers, gangrene and migratory superficial thrombophlebitis. Magnetic resonance angiography, contrast three-dimensional computed tomography (3D-CT) and conventional angiography may be used for vascular imaging (10). Medical treatment includes smoking cessation, lifestyle changes, antiplatelet drugs, prostaglandin inhibitors and pain control (11). Surgical treatment may include vascular bypass surgery or endovascular methods for revascularization. Sympathectomy may be considered in patients for whom revascularization is not possible. Since Leo Buerger's 1908 article, progress in understanding the cause, pathophysiology, and optimal treatment of thromboangiitis obliterans has been limited (12). Therefore, case reports such as ours can guide further research.

Our report describes a brachial artery aneurysm in a patient with Buerger's disease that we successfully treated surgically. Brachial artery aneurysms usually occur due to arteriovenous fistula, post-trauma, or idiopathic causes (13). In this case, the observation of Buerger's disease-specific findings in the pathological examination of the aneurysmectomy material is a rare etiopathogenesis for brachial artery aneurysm. Furthermore, brachial artery aneurysm may contain pathological findings specific for Buerger's disease, and this may be considered an atypical clinical presentation.

Conclusion

Non-atherosclerotic occlusive lesions in Buerger's disease expected to cause ischemic findings. However, brachial artery aneurysms is very rare in patients with Buerger's disease. It is also rare for an aneurysm to be symptomatic prior to ischaemic findings in the limb affected by Buerger's disease. The active smoking observed in this case may be a common factor in the etiology of brachial artery aneurysm and Buerger's disease.

References

1. Akar AR, Inan M. Buerger's Disease. In: Sidawy AN, Perler BA, editors. Rutherford's Vascular Surgery and Endovascular Therapy. Philadelphia: Elsevier, 2019. p. 1809-26.
2. Olin JW. Thromboangiitis obliterans (Buerger's disease). N Engl J Med. 2000 Sep 21; 343(12):864-9. doi: 10.1056/NEJM200009213431207. PMID: 10995867.
3. Shionoya S, Ban I, Nakata Y, Matsubara J, Shinjo K. Diagnosis, pathology, and treatment of Buerger's disease. Surgery. 1974 May; 75(5):695-700. PMID: 4824428.
4. Piazza G, Creager MA. Thromboangiitis obliterans. Circulation. 2010 Apr 27; 121(16):1858-61. doi: 10.1161/CIRCULATIONAHA.110.942383. PMID: 20421527; PMCID: PMC2880529.
5. Fazeli B, Modaghegh H, Ravrai H, Kazemzadeh G. Thrombophlebitis migrans as a footprint of Buerger's disease: a prospective-descriptive study in north-east of Iran. Clin Rheumatol. 2008 Jan; 27(1):55-7. doi: 10.1007/s10067-007-0652-8. Epub 2007 Jun 7. PMID: 17554578.
6. Isobe M, Amano K, Arimura Y, Ishizu A, Ito S, Kaname S, Kobayashi S, Komagata Y, Komuro I, Komori K, Takahashi K, Tanemoto K, Hasegawa H, Harigai M, Fujimoto S, Miyazaki T, Miyata T, Yamada H, Yoshida A, Wada T, Inoue Y, Uchida HA, Ota H, Okazaki T, Onimaru M, Kawakami T, Kinouchi R, Kurata A, Kosuge H, Sada KE, Shigematsu K, Suematsu E, Sueyoshi E, Sugihara T, Sugiyama H, Takeno M, Tamura N, Tsutsumino M, Dobashi H, Nakaoka Y, Nagasaka K, Maejima Y, Yoshifuji H, Watanabe Y, Ozaki S, Kimura T, Shigematsu H, Yamauchi-Takihara K, Murohara T, Momomura SI; JCS Joint Working Group. JCS 2017 Guideline on Management of Vasculitis Syndrome - Digest Version. Circ J. 2020 Jan 24; 84(2):299-359. doi: 10.1253/circj. CJ-19-0773. Epub 2020 Jan 18. PMID: 31956163.
7. Giler S, Zelikovski A, Goren G, Urca I. Aneurysm of the radial artery in a patient with Buerger's disease. Vasa. 1979; 8(2):147-9. PMID: 463287.
8. Cacione DG, Baptista-Silva JC, Macedo CR. Pharmacological treatment for Buerger's disease. Cochrane Database Syst Rev. 2016 Feb 1; 2:CD011033. doi: 10.1002/14651858.CD011033.pub2. Update in: Cochrane Database Syst Rev. 2016 Mar 11;

3:CD011033. doi: 10.1002/14651858.CD011033.pub3. PMID: 26828199.

9. BUERGER L. Thrombo-angitis obliterans; a study of the vascular lesions leading to presenile spontaneous gangrene. Am J Med. 1952 Nov; 13(5):526-32. doi: 10.1016/0002-9343(52)90015-6. PMID: 12996526.
10. Sakaguchi S, Mishima Y. Report of Angiographic Findings. Buerger Disease. Ministry of Health and Welfare Specific Diseases Systematic Study Group on Vascular Lesions Subcommittee Report 1976. 1977: 1–38
11. Mills JL Sr. Buerger's disease in the 21st century: diagnosis, clinical features, and therapy. Semin Vasc Surg. 2003 Sep; 16(3):179-89. doi: 10.1016/s0895-7967(03)00023-1. PMID: 12975757.
12. Olin JW. Thromboangiitis Obliterans: 110 Years Old and Little Progress Made. J Am Heart Assoc. 2018 Dec 4; 7(23):e011214. doi: 10.1161/JAHA.118.011214. PMID: 30571606; PMCID: PMC6405560.
13. Hammad Alam SM, Moin S, Gilani R, Jawad N, Abbas K, Ellahi A. True brachial artery aneurysm: A systematic review. J Pak Med Assoc. 2024 Feb; 74(2):341-365. doi: 10.47391/JPMA.9042. PMID: 38419237.