True Aneurysm of the Brachial Artery Due to Chronic Trauma in a Polio Patient: Case Report

Bir Polio Hastasında Kronik Travmaya Bağlı Gerçek Brakiyal Arter Anevrizması

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Geliş Tarihi/*Received:* 26.01.2013
Kabul Tarihi/*Accepted:* 19.06.2013

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ABSTRACT Arterial aneurysms of the upper extremity are rare. They are mostly false aneurysms. True brachial artery aneurysms are even rarer. They usually occur after trauma. Otherwise, they are associated with connective tissue disorders or infection or may be idiopathic. There have been few reports about true brachial artery aneurysms. Patients usually present with symptoms resulting from thrombosis of the aneurysm or distal embolization. Rupture of the aneurysm is a possible complication. These complications may lead to loss of the extremity. Our aim in the treatment of these patients is prevention of aneurysm-related complications. Timely vascular reconstruction is the treatment of choice. We report a case of brachial artery true aneurysm which developed in a patient with history of polio and depended on a crutch to support his walking.

Key Words: Surgery; aneurysm; poliomyelitis

ÖZET Brakial arter anevrizmaları nadir görülür. Bu anevrizmalar çoğunlukla yalancı anevrizmalardır. Gerçek brakiyal arter anevrizmaları daha da nadirdir. Genellikle travma sonrası ortaya çıkarlar. Aksi taktirde bağ dokusu hastalıkları ya da enfeksiyon ile ilişkili ortaya çıkabilir veya idiyopatik olabilirler. Gerçek brakiyal arter anevrizmaları ile ilgili az sayıda yayın vardır. Hastalar genellikle anevrizmanın trombozundan ya da distal embolizasyondan kaynaklanan belirtilerle başvururlar. Anevrizma rüptürü de olası bir komplikasyondur. Bu komplikasyonlar bir ekstremitenin kaybıyla sonuçlanabilir. Bu hastaların tedavisinde amacımız, anevrizmaya bağlı komplikasyonların önlenmesidir. Zamanında yapılacak vasküler rekonstrüksiyon seçilecek tedavidir. Burada polio öyküsü olan ve yürümesini desteklemek için koltuk değneği kullanan bir hastada gelişen gerçek brakiyal arter anevrizmasını olgusunu sunmaktayız.

Anahtar Kelimeler: Cerrahi; anevrizma; poliomyelit

Damar Cer Derg 2013;22(2):124-7

Upper extremity arterial aneurysms are rare. They are mostly false aneurysms. True brachial artery aneurysms are even rarer than false aneurysms.[1] They usually occur after trauma or may be idiopathic. We report a case of brachial artery true aneurysm which developed in a patient with history of polio and depended on a crutch to support his walking.

CASE REPORT

A 51-year-old male patient was admitted to the clinic with coldness, numbness and pain in the right forearm and hand which began five hours previously. His clinical history revealed paresthesia of the right hand which

doi: 10.9739/uvcd.2013-33684

began one month ago. His right leg was shorter and thinner due to a complication of childhood polio infection. He walked using a home-made crutch. He placed the crutch at a point over the mid-upper part of his right arm, held the crutch with his left hand to support his left leg (Figure 1).

Right brachial artery pulse was absent on physical examination. The axillary artery pulse was present and strong. There were no bruits, pulsatile masses or tenderness at the lateral region of the right neck which would otherwise make us think of thoracic outlet syndrome. His cardiovascular, respiratory and other system examinations were normal. No abnormalities were found in the electrocardiogram or laboratory tests.

The patient was operated anticipating acute embolism of the right upper extremity. The right brachial artery and its branches were exposed via an oblique incision after local anesthesia of the antecubital region obtained using prilocaine. Embolectomy was performed proximally and distally through an arteriotomy of the brachial artery. Abundant amount of fresh thrombus was extracted both proximally and distally including both distal branches. Flow and backflow were restored. The arteriotomy was closed using a 6-0 propylene suture. Distal pulses were strongly palpable after the operation.

Echocardiography was performed on postoperative first day to rule out intracardiac thrombus. There was no intracardiac thrombus. The patient was discharged with 150 mg of acetylsalicylic acid per day.

The patient was again admitted to our hospital with symptoms similar to his preoperative complaints 15 days postoperatively. This time, an urgent right upper extremity computerized tomographic angiogram was performed. A saccular right brachial artery aneurysm beginning just distal to the axillary artery was detected (Figure 2). He was operated again. The right arm was explored making a 5 cm incision on the medial side along the brachial artery line under local anesthesia with sedoanalgesic support. The brachial artery had lost its integrity. A 6 cm segment of the artery was aneurysmatic with a maximum diameter of 2.5 cm. After administration of 5,000 units of intravenous heparin, the proximal and distal ends of the aneurysm were clamped. The aneurysmal sac was opened. There was organized mural thrombus. The intima was irregular. The proximal flow was satisfactory. There was no thrombus proximal to the

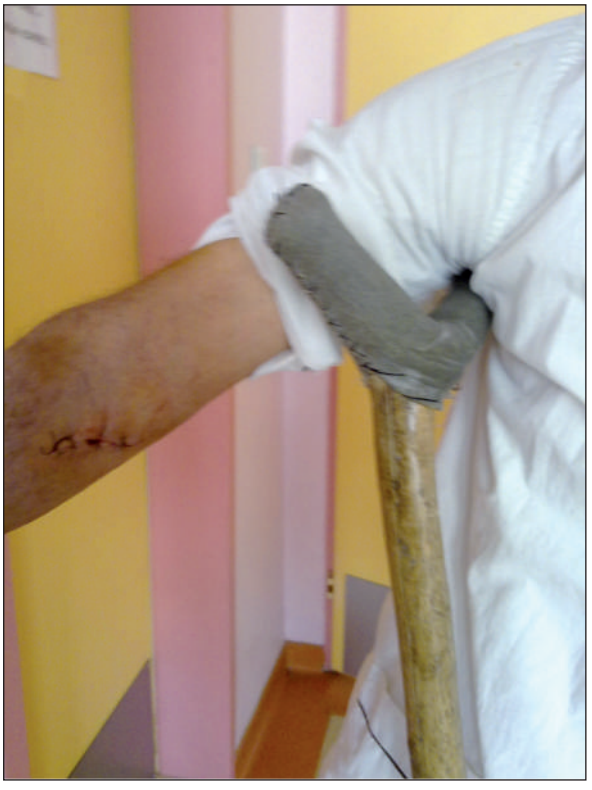

FIGURE 1: The patient is seen with the homemade crutch which caused repetitive trauma to the brachial artery.

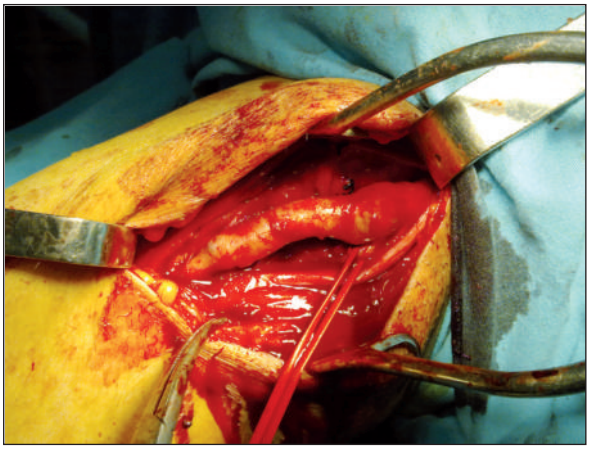

FIGURE 2: The surgical exposure of the aneurysmatic right brachial artery.

aneurysm. A 4F Fogarty embolectomy catheter was introduced to the distal segment. The catheter could be barely proceeded 5 cm distally. Upon suspicion of distal stricture, the previous bifurcation incision was reopened. An intimal flap of 1 cm length belonging to a dissected segment progressing onto the ulnar artery and organized thrombus were detected at the bifurcation of radial and ulnar arteries. Thrombectomy was performed to the radial and ulnar arteries. Backflow was satisfactory. The intimal dissection was repaired using propylene sutures. The distal incision, which was the site of the previous embolectomy, was closed using a saphenous patch in order to prevent a possible stenosis. The aneurysmal brachial artery segment was resected and a saphenous vein greft interposition was performed. Brachial, radial and ulnar pulses were strongly palpable after operation.

The patient was informed of the etiology of the aneurysm. He was told that the aneurysmal development in his right brachial artery and subsequent thromboses were due to his self-made crutch. He was instructed to buy a new orthopedic crutch. The patient was discharged on 150 mg acetylsalicylic acid and 30 mg of diltiazem t.i.d on postoperative second day. He was examined two months after the operation. His brachial, radial, and unlar pulses were palpable. There was no additional problem.

DISCUSSION

Upper extremity arterial aneurysms are uncommon lesions and most of them are false (pseudo) aneurysms.[1,2] True brachial artery aneurysm is a rarely observed entity which may, in time, cause ischemic complications in the forearm and hand with occasional venous and median nerve compression leading to edema and neurological complaints. Etiology mostly includes repetitive trauma and atherosclerosis, or the aneurysm is classified as idiopathic.[3,4] Sometimes etiology of a true brachial artery aneurysm may include congenital or metabolic disorders such as Kawasaki's syndrome, Buerger's disease, Kaposis's sarcoma, neurofibromatosis (von Recklinghausen's disease) and cystic adventitial disesase.[1,5,6] A Raynaud's disease patient who used crutches and had a brachial artery aneurysm has been reported.[7] Most of the literature related to true brachial artery aneurysms consist of case reports because they are seen sporadically.[8-10]

Our case had a short and slim left leg due to a complication of polio and needed a crutch to walk. The patient obtained balance by propping the home-made crutch against the upper middle part of his right arm. However, the repetitive chronic trauma and possible turbulance in arterial flow caused by this compression may have led to a disruption in the arterial wall in his right brachial artery. Although the mostly encountered cause of true brachial artery aneurysm is repetitive blunt trauma, iatrogenic causes may also be seen.[3,11] For example, repetitive arterial punctures may cause true aneurysms by disrupting the arterial wall[7] although they usually cause pseudoaneurysms.[12] Arteriovenous fistulae may also cause brachial arterial dilatation and aneurysm.[9] Periquet et al. reported a very unusual case in whom a distal entrapment type brachial artery aneurysm developed due to an anomaly of the insertion of the pronator teres muscle.[9]

True brachial artery aneurysms can easily be treated by surgical methods. They can be repaired by aneurysm resection. When the length of the aneurysm precludes end to end anastomosis between remaining healthy arterial ends, saphenous or other autologous vein greft interposition may be used. There are also reports of percutaneous endovascular treatment in poor surgical candidates.[11] This type of management is costlier.

Patients diagnosed with brachial artery aneurysm should undergo surgical treatment without delay because distal thromboembolism may cause loss of a digit and even an extremity. Rupture is also an impending possibility.[5]

In our patient, emergency embolectomy was carried out in the first place because the symptoms of the patient were interpreted as acute embolus. Because the underlying pathology was not diagnosed in the first hospitalization, the patient had to undergo a second operation. Therefore the possibil-

ity of brachial or axillary artery aneurysm should come to mind in patients presenting with upper extremity edema, median nerve symptoms or embolic complaints, if history of trauma or use of crutches is present. Timely diagnosis and early surgery are important. In this way, we can decrease complication risks and prevent possibility of repetitive emboli, rupture or loss of extremity and also prevent additional operations, as we had to perform in our case.

Conflict of Interest

Authors declared no conflict of interest or financial support.

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