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Case report

TRUE AXILLARY ARTERY ANEURYSM DUE TO REPETETIVE BLUNT FORCE TRAUMA

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Abstract

The incidence of vascular pathology due to repetitive blunt force trauma of the axillary pit by using axillary crutches has been described in the medical literature. We report a case of axillary artery aneurysm with brachial, radial and ulnar artery embolization in a 53-year-old man with a severe case of spastic quadriparesis subsequent to childhood poliomyelitis. The patient presented with aggravating pain in the past 2 weeks, due to subacute right arm ischemia. We performed bypass grafting from the axillary to brachial artery with exclusion of the aneurysm followed by distal thrombectomy. An axillary artery aneurysm is rare, but potentially lethal for the upper extremity; therefore, surgical treatment must be performed prior to the development of permanent sequalae.

Keywords: aneurysm, axillary artery, thrombosis, case report

Introduction

Axillary artery aneurysms may arise as pseudoaneurysms secondary to trauma or iatrogenic complications, or as degenerative lesions often secondary to the chronic use of crutches[2]. They may also arise as post-obstructive lesions in patients with thoracic outlet syndrome. Signs and symptoms vary with the cause of the aneurysm and may include mass effects with brachial plexus compression and thromboembolic events involving the hands and fingers. In this study, we present a case of a true axillary artery aneurysm in a 53-year-old quadriparetic patient due to chronic use of crutches, presenting with a subacute thromboembolic complication.

Case report

A 53-year-old patient with post-poliomyelitis quadriparesis was referred to our team by our colleague in the orthopedics department, to whom the patient had presented due to aggravating pain in the right arm in the past 2 weeks. The pain appeared slowly, at first only

after exertion and mostly in the triceps area, followed by onset of mild burning pain and paresthesia in the lateral aspect of his forearm and hand. His past medical history was negative regarding hypertension, diabetes mellitus, or heart disease. His family history was also negative. He was not a smoker and he was not taking any medications. The inspection and physical exam revealed severe form of spastic quadriparesis with 3/5 motor deficit for both legs and left arm and 4/5 for the right arm. There was no sensory deficit in the right arm. Palpatory radial and ulnar pulsations could not be detected. The right hand and fingers were slightly colder than the left, with no color changes. A duplex scan was performed in the patient, which revealed a partially thrombotic aneurysm in the distal right axillary artery with complete thrombotic occlusion in the proximal brachial artery. There was a weak doppler signal in the mid brachial artery delivered by a patent collateral muscle branch. The brachial bifurcation was found occluded with no signal in neither the radial or ulnar arteries. Doppler signal was detected in interosseus branch in the forearm. A severely deteriorated flow was presented in the palmar arches. The patient underwent a CT angiography of his right upper limb. A saccular aneurysm was present in the mid to distal axillary artery measuring 24 ∗ 35 mm. No defect in the arterial wall suggesting a pseudoaneurysm was found (Figure 1).

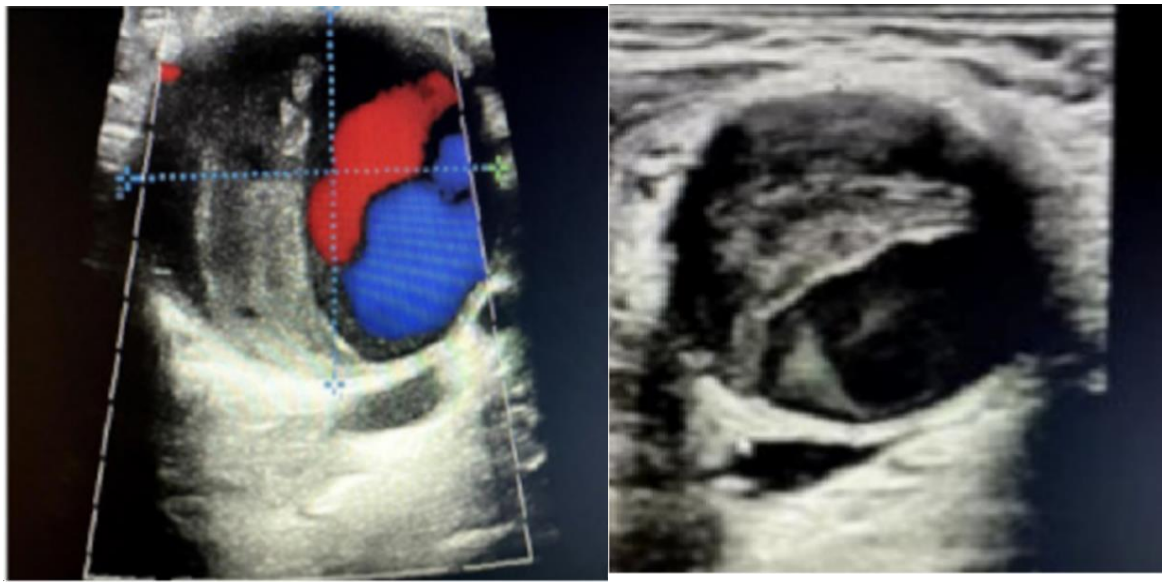

Fig. 1. Arterial duplex of aneurysmal axillary artery

The patient was scheduled for surgery. Under general anesthesia, a longitudinal incision was done along the aneurysm. Axillar and brachial artery control was obtained after exploration of the artery distal to the aneurysm. Then, with gentle traction the artery was meticulously dissected from the surrounding tissues toward proximal, and proximal control of the aneurysm was obtained from the proximal axillary artery. The aneurysm wall was uniform in thickness circumferentially and firmly attached to the chest wall in its posterior aspect. After anticoagulation, the artery was clamped proximal and distal to the aneurysm. The aneurysm was resected and the arterial defect was repaired with termino-terminal anastomosis with Dacron prothesis No 6. A second longitudinal incision was made in the distal upper arm and the distal brachial artery with its bifurcation was exposed. Small arteriotomy was made followed by distal thrombectomy using Fogarty catheters. Ulnar artery backflow was obtained, but there was no radial backflow. Third incision over the distal forearm was made and the radial artery was exposed and opened in its distal portion followed by proximal thrombectomy. With the restoration of the distal pulses and complete hemostasis, the incision was closed in anatomic layers. The patient left the hospital 2 days after the operation and the one-month follow-up was

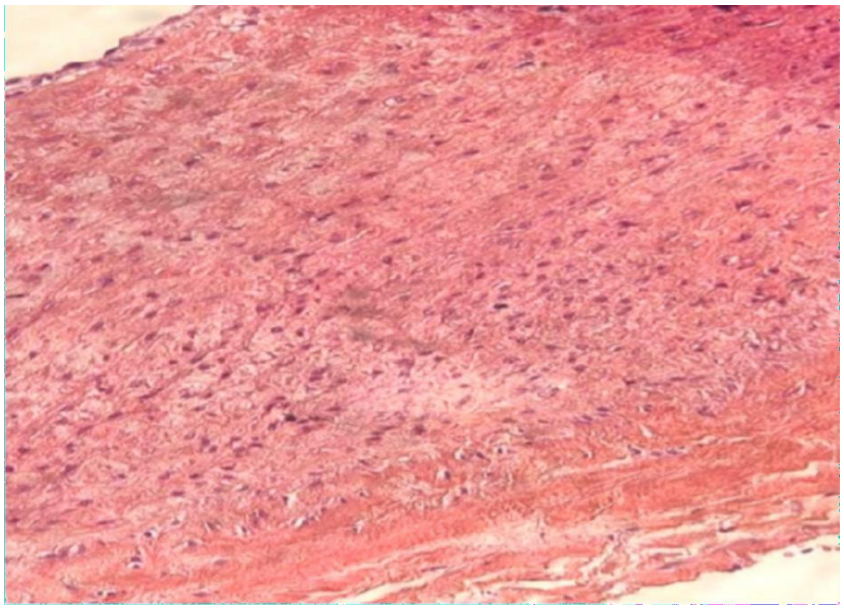

Fig. 2. Aneurysmal wall with complete degeneration of intima

eventless. Pathologic evaluation showed degeneration of the intima (Figure 2).

Discussion

Aneurysm is a segmental dilation of a vessel to a diameter greater than 1.5-fold of its adjacent normal artery. Infra-renal aorta is the most common artery involved in aneurysmal disease [3]. In peripheral vessels, the popliteal artery is the most prevalent site of aneurysm[4]. In general, aneurysms are rare in the upper extremities. However, cases of aneurysms have been reported in almost all arterial branches of the upper extremities[5-7] [5,[6],[7]. Axillary artery aneurysms may be true or false. True aneurysms have all layers of the arterial wall but false aneurysms are extra-luminal blood accumulations surrounded by clots, fibrin, or adjacent tissues and communicate to the involved vessel through a defect in the arterial wall [8,9]. In our study, a true aneurysm with 21 x 35 mm dimensions was detected in exploration. True axillary aneurysms are usually secondary to repetitive trauma to the artery in patients performing heavy activities with their arms. Few cases of congenital true aneurysms of the axillary artery have been reported[11]. False aneurysms (pseudoaneurysms) on the other hand are secondary to penetrating, blunt, or iatrogenic trauma[12]. Duplex ultrasonography can reliably diagnose and differentiate between true and false axillary artery aneurysms[13]. Nowadays, CT angiography can provide more information about arterial anatomy and is the imaging study of choice in the management of aneurysmal diseases[14,15]. Treatment of axillary artery aneurysms relies on excluding the aneurysm from circulation and eliminating its compression effect on adjacent tissues. For this purpose, open and endovascular interventions have been suggested. In open surgery, the involved segment of the artery is excised and replaced with an appropriate conduit which is reversed greater saphenous vein in most cases. In our patient, the greater saphenous vein was of too small caliber, probably due to the significant lower limb deformation and atrophy, subsequent to his poliomyelitis. Synthetic or biological grafts can also be used if needed[16], and in our case, we used a Dacron graft. In the endovascular approach, the aneurysm is excluded from circulation using a covered stent[17.18]. When the aneurysm is large and extensive distal thrombosis is present, open surgery is preferred over endovascular intervention because these symptoms may persist after the endovascular approach despite the complete exclusion of the aneurysm[16]. The postoperative pathology in our case confirmed the degeneration of the intima of the involved area and the diagnosis of true aneurysm. There were no complications during

the patient's subsequent follow-ups.

Conclusion

We presented a rare case of axillary arterial aneurysm that manifested with aggravating pain in the posterior aspect of the upper arm and mild burning pain and paresthesia in the lateral aspect of his forearm and hand. A saccular aneurysm was detected in duplex scanning and CT angiography that was 24 x 35 mm. Open surgery was performed and involved area excised and repaired with a Dacron prothesis. Follow-ups were eventless andaneurysm was confirmed by the pathology report. Arterial aneurysm is an out-of-mind diagnosis in paretic patients, where the musculoskeletal and neural injuries are the more prevalent pathologies. However, considering their potentially devastating complications, an aneurysm and thromboembolic incidents should always be considered as a probable cause for any limb pain.

Conflict of interest statement. None declared.

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