

Case Report

Pseudoaneurysm of brachial artery: A rare cause of median nerve compression

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ABSTRACT

Background: The authors present an unusual clinical case of high median nerve compression caused by an iatrogenic pseudoaneurysm of the brachial artery after an angiography with a follow up of 9 months.

Methods: A 73-year-old male was seen with progressive numbness, loss of opponency and diminution of strength of finger flexion in the left hand after an angiography with direct puncture of the left humeral artery. Physical examination revealed a hard consistency internal distal arm swelling with the size of a walnut, non-pulsatile and with a Tinel sign on percussion. Upper extremity arterial Doppler ultrasonography and magnetic resonance imaging didn't point to a pseudoaneurysm. Given the persistence and progressive worsening of symptoms, the patient was operated at 4 months after the beginning of symptoms through an anterior approach of the left elbow. The tumefaction corresponded to a brachial artery pseudoaneurysm completely thrombosed causing severe compression of the median nerve. Microsurgical neurolysis of the median nerve was performed and the pseudoaneurysm was removed.

Results: At 9 months of follow-up the patient had total recovery of flexion of the thumb and forefinger and recovery of opposition with slight hypoesthesia on the volar surface of the radial fingers of the hand.

Conclusions: This case represents a rare form of high median nerve compression after angiography. The increased use of endovascular procedures may cause a higher frequency of these neurological injuries, and if confirmed, the patient should be operated as soon as possible to avoid serious neurological sequelae.

Introduction

Complications after arterial puncture are extremely low, despite the frequency with which this procedure is performed nowadays for different endovascular procedures. The complication of false aneurysm is even rarer. There are occasional reports of brachial plexus and median nerve damage complicating the axillary and brachial artery approach, although no follow up data have been provided [3]. The authors present an unusual clinical case of high median nerve compression caused by an iatrogenic pseudoaneurysm of the brachial artery after an angiography with a follow up of 9 months.

Case report

A 73-year-old retired doctor with past medical history of *peripheral artery disease and an aortobifemoral by-pass* was subjected to an

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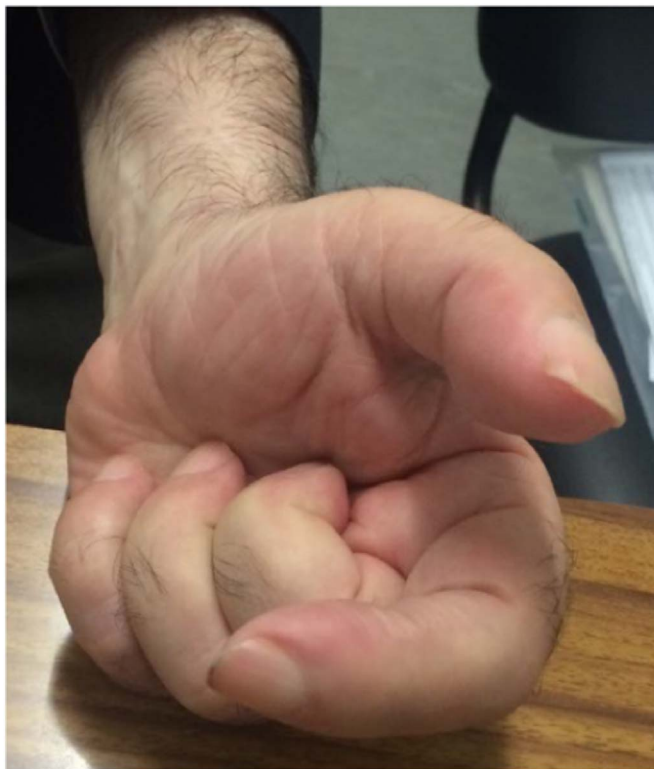


Fig. 1. Absence of active flexion of interphalangeal joints of thumb and forefinger.

angiography performed by direct puncture of the left humeral artery. Following angiography the patient developed numbness and progressive loss of strength of finger flexion, showing 3 months after angiography, absence of active flexion of the interphalangeal joint of thumb and forefinger and loss of opposition (Fig. 1). There was also hypoesthesia on the territory of the left median nerve. Physical examination revealed a hard consistency internal distal left arm swelling with the size of a walnut, non-pulsatile and with a Tinel sign on percussion.

The MRI of the injury showed a cystic swelling of the median nerve sheath with severe lesion of the left median nerve. The Doppler ultrasound exam excluded the diagnosis of pseudoaneurysm due to lack of flow in the lesion. The electromyography showed a severe axonotmesis lesion of the left median nerve above the emergency of the branch to the pronator teres muscle.

Given the persistence and progressive worsening of symptoms, 4 months after the beginning of symptoms the patient was operated through an anterior approach of the left elbow. The tumefaction corresponded to a completely thrombosed brachial artery

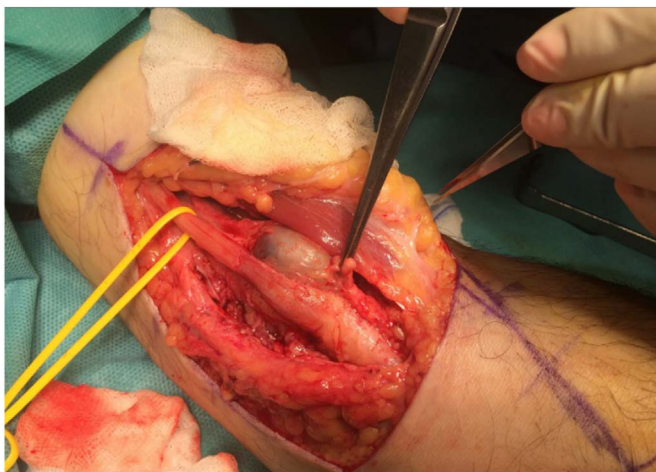


Fig. 2. Brachial pseudoaneurysm superior to the forceps and severe compression of left median nerve in the segment adjacent to the pseudoaneurysm. (Median nerve with yellow rubber). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)



Fig. 3. Total recovery of flexion of the thumb and forefinger and opposition.

pseudoaneurysm causing severe compression of the median nerve (Fig. 2). Microsurgical neurolysis of the median nerve was performed and the pseudoaneurysm was removed. Distal radial pulse was present at the end of the procedure.

At 9 months of follow-up the patient had surprisingly total recovery of flexion of the thumb and forefinger, recovery of opposition with slight hypoesthesia on the volar surface of the radial fingers of the hand. (Fig. 3).

Discussion

False aneurysm after arterial puncture is rare. It was thought to be due to faulty technique [6] or due to abnormal coagulation [3]. Such a complication is more commonly seen in drug addicts [5] and in patients on haemodialysis [1,4,7].

The compression of the median nerve in the arm is quite unusual and its rarity is sometimes overlooked in the differential diagnosis [2,8].

The increased use of endovascular interventional procedures may cause an increased frequency of these neurological injuries. Although the median nerve injury may result from a direct puncture, the compression is more usual by an expansive fistula or a false aneurysm secondary to injury to the vascular wall [9].

One of the main interests of this case is that the pseudoaneurysm was completely thrombosed with no flow in it and this led to a missed Doppler ultrasound diagnosis. The MRI pointed to a tumefaction of the nerve itself because of no contrast uptake which made a supposedly straightforward diagnosis in a puzzling one. Computed Tomography Angiography (CTA) is an effective diagnostic modality but in this case it wouldn't probably help with the diagnosis because of the absence of flow and the presence of a solid thrombosed lesion. Thus, although imaging tests were not in favor of pseudoaneurysm, the clinical suspicion of the authors was confirmed intraoperatively.

The presence of a neurological injury of the median nerve associated with an angiographic procedure in the upper limb should raise the clinical suspicion of pseudoaneurysm as a reason for the neurological injury. If confirmed, the patient should be operated as soon as possible by a hand surgeon to avoid serious neurological sequelae with consequent hand dysfunction.

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We certificate that the procedures and the experiments done, respect the ethical standards in the Helsinki Declaration of 1975, as revised in "2005".

Informed consent was obtained from all individual participants included in the Case Report.

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