

Idiopathic radial artery aneurysm: case report

Aneurisma idiopático de artéria radial: relato de caso

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Abstract

Radial artery aneurysms are extremely rare. Post-traumatic pseudoaneurysms are the vast majority. True radial artery aneurysms can be idiopathic, congenital, poststenotic, or associated with some pathologies, such as vasculitis and conjunctive tissue diseases. We report a case of an idiopathic aneurysm of the radial artery in a three-year-old child who was submitted to surgical resection after a complete diagnostic approach.

Keywords: aneurysm; radial artery; child.

Resumo

Os aneurismas da artéria radial são extremamente raros. Em sua maioria, consistem de pseudoaneurismas pós-traumáticos. Os aneurismas da artéria radial verdadeiros podem ser idiopáticos, congênitos, pós-estenóticos ou associados a patologias, tais como vasculites e doenças do tecido conjuntivo. Foi relatado um caso de aneurisma idiopático de artéria radial em uma criança de três anos, que, após completa investigação diagnóstica complementar, foi submetida à ressecção cirúrgica.

Palavras-chave: aneurisma; artéria radial; criança.

Introduction

The upper limbs are considered less vulnerable to arterial diseases, especially those of aneurysmatic nature. Due to their low incidence, such aneurysms are diagnostic and therapeutic challenges. In this area, the arteries most frequently affected by the aneurysmatic process are, in decreasing order: subclavian, brachial, ulnar and radial arteries^{1,2}.

Radial artery aneurysms are mostly pseudoaneurysms associated with iatrogenic conditions resulting from invasive procedures for endovascular diagnosis and/or therapy, invasive monitoring of mean arterial pressure and repeated punctures in the intensive care unit or in drug users. Blunt traumas are another cause of radial artery pseudoaneurysms, especially those related to fracture with vascular injury, as well as penetrating traumas caused by cold weapon³.

In contrast, the main cause of true aneurysms in arteries of the upper limbs, below the axillary artery and specifically the radial artery, is repeated blunt trauma, which is followed by idiopathic causes, atherosclerosis,

metabolic and congenital diseases or associated with disorders such as neurofibromatosis and vasculitis such as Buerger's disease, Kawasaki's disease, Bechet's disease and polyarteritis nodosa⁴. Aneurysmatic formations have also been reported, associated with arteriovenous fistulas created for hemodialysis, poststenotic dilatations, one case related to hemophilia A and one case related to severe anemia⁴⁻⁹.

The purpose of this study is to present the case report of a three-year-old child with true idiopathic radial aneurysm.

Case description

A healthy three-year-old male patient, no history of comorbidities. According to the mother, pre-natal period without occurrences, normal delivery, proper vaccination and no history of admissions, traumas or surgical interventions.

Study carried out at the Vascular Surgery Service of Hospital Regional Dr. João Penido from Fundação Hospitalar do Estado de Minas Gerais (FHEMIG) – Juiz de Fora (MG), Brazil.

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Around two months ago, a pulsatile nodular injury was observed, in middle third, anterior face of the right forearm. The arterial echo Doppler exam was performed in the right upper limb, and radial artery aneurysm was identified (Figure 1).

The patient was sent to the Vascular Surgery Service of Hospital Regional Dr. João Penido, Fundação Hospitalar do Estado de Minas Gerais (FHEMIG), in the city of Juiz de Fora, Minas Gerais, in May 2009. The patient complained of pain on palpation and reported mild intermittent swelling in the right hand and did not present any ischemic sign, neurological alteration or local or systemic infectious sign. In addition, the patient did not have history of trauma or invasive procedure in the right upper limb. The Allen's test result was bilaterally negative.

The diagnosis of vasculitis or metabolic diseases was ruled out, based on clinical and laboratorial exams. The patient was sent to imaging propedeutics, and the following exams were performed: abdominal ultrasound, lower extremity ultrasound, transthoracic echocardiogram, multislice helical angiotomography of upper limbs, aortic arch and great vessels, from thoracic and abdominal aorta to femoral vessels. No other aneurysmatic lesions were identified besides the focal dilatation of proximal right radial artery, with the largest diameter of 1.1 cm and 1.5 cm length. The aneurysm started around 2.0 cm from the origin of radial artery, which had 0.33 cm proximal diameter, distal to the dilatation (Figures 2a and 2b).

The patient was then submitted to aneurysm resection. The selected procedure was radial artery ligation, due to a satisfactory reflux from the distal stump, reduced arterial caliber and the resected segment length (around 3 cm). The surgical specimen was sent for anatomopathological and culture exam. The histological exam showed arterial vessel wall with all layers and negative culture for infectious agents (Figures 3 and 4).

The procedure included a 30-day follow-up and the patient presented good post-operative progress, with no ischemic or neurological deficit.

Discussion

The true radial artery aneurysm is a diagnostic and therapeutic challenge. The diagnosis is defined through complaint and physical examination. The main manifestation is local pain, followed by symptoms and signs of distal ischemia, secondary to episodes of thrombosis or distal microembolization. Symptoms resulting from the compression process are also described, such as hand swelling and neurological symptoms, such as paresthesias^{5,9}. Rupture is not described in any published series. Aneurysms can be asymptomatic and are presented only as a pulsatile mass, with fremitus and blow in the physical exam. The differential diagnosis includes synovial cyst, ganglions, lipomas and neuromas. In a case of radial artery aneurysm, complete anamnesis and rigorous physical

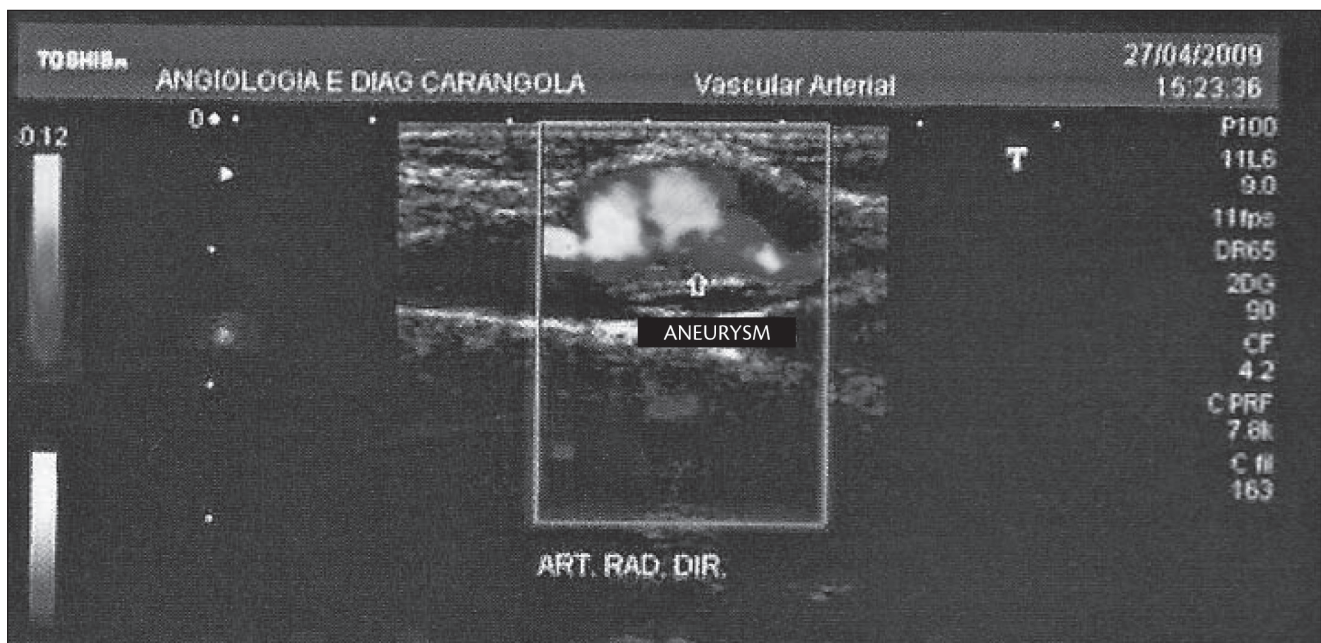


Figure 1. Echo Doppler exam showing the radial artery aneurysm.

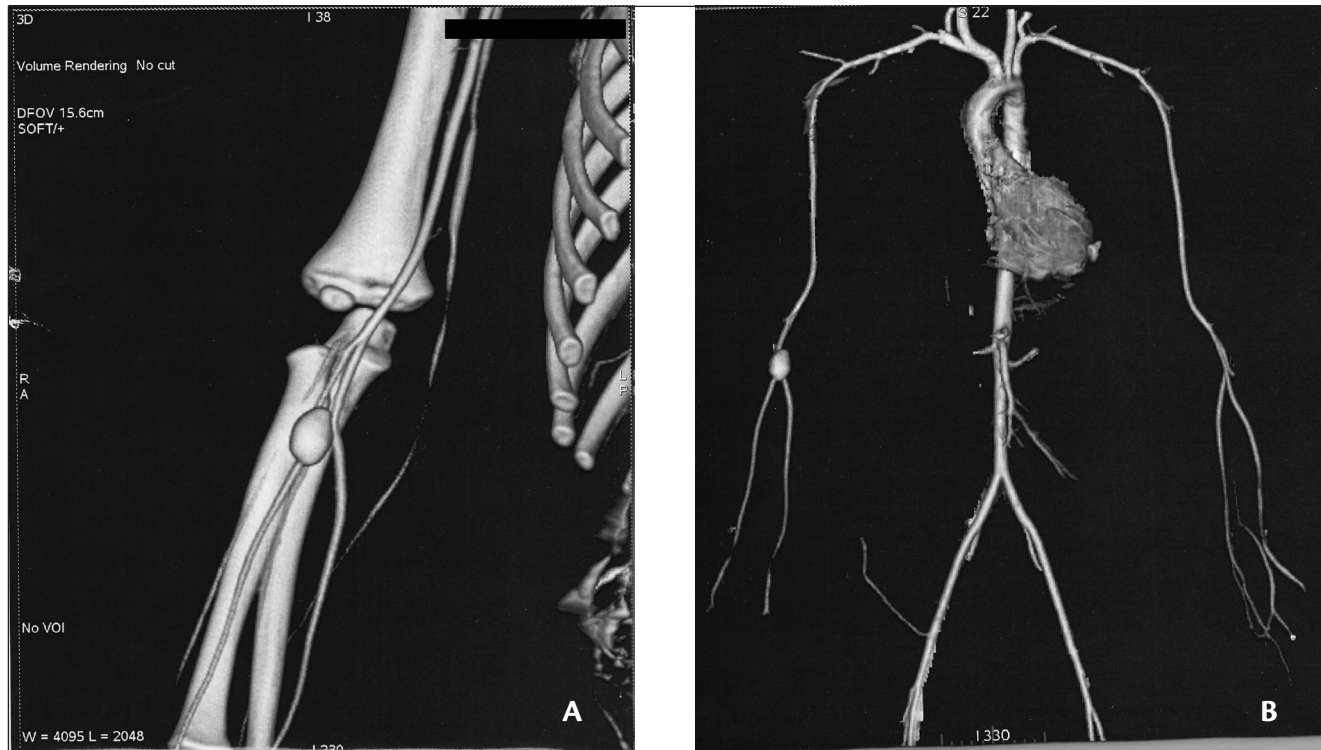


Figure 2. (a) Multislice helical pan-computed angiogram. (b) Helical angiogram showing the right radial artery aneurysm.

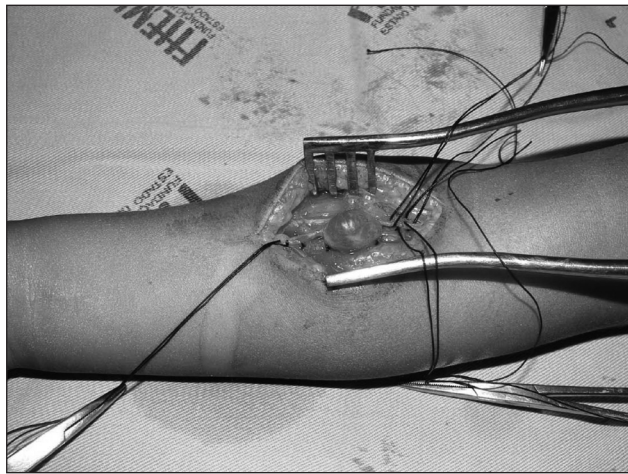


Figure 3. Dissection and repair of true radial artery aneurysm.



Figure 4. Resected true radial artery aneurysm.

examination are essential. After traumatic or iatrogenic events are ruled out, the rare causes of true aneurysms should be investigated. For such purpose, laboratorial and imaging exams should be performed, as well as investigations for collagenosis, vasculitis and metabolic diseases, before considering the lesion is congenital or idiopathic. Imaging propedeutics includes echo Doppler exam, abdominal ultrasound, echocardiogram, angiogram, angioresonance and arteriography^{3,4,10}.

The echo Doppler exam is used not only for the diagnosis, but also to assess the hand circulation, always combined with the Allen's test. The echocardiogram can be useful while assessing children to rule out coronary artery aneurysms, such as in Kawasaki's disease cases. Today, angiogram has replaced the golden standard arteriogram in the diagnosis of other associated lesions and surgical planning, providing a better evaluation of the aneurysm, the proximal and distal bed to the lesion. Children with peripheral

aneurysm should be submitted to pan-computed angiography before any treatment is started¹⁰.

The treatment of radial artery aneurysms is still controversial; it is dependent on the etiology, location, presence of thrombi, associated symptoms and mainly the circulation status collaterally and distally to the lesion. The surgical options range from proximal and distal ligation of the vessel combined with the aneurysmatic sac resection to revascularization procedures, with termino-terminal primary anastomosis or bypass with venous graft¹⁰⁻¹². There is no definition regarding the clinical follow-up without any surgical treatment; therefore, due to the risk of thrombotic and microembolic complications that can lead to distal ischemia, the surgical correction of aneurysm is always indicated.

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Writing the article: LEMG
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