

Treatment of an atherosclerotic aneurysm of the superficial temporal artery: case report

Tratamento do aneurisma aterosclerótico da artéria temporal superficial: relato de caso

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Abstract

According to the literature, aneurysms of the superficial temporal artery are uncommon. The vast majority are secondary to trauma or surgery in the temporal region and 95% of cases progress to pseudoaneurysms. However, true or spontaneous aneurysms are extremely rare, accounting for 8% of cases of superficial temporal artery aneurysms, and are usually caused by atherosclerosis. Spontaneous temporal aneurysms can coexist with other vascular lesions, including intracranial aneurysms. Our report deals with a patient with an aneurysm of the left superficial temporal artery, of atherosclerotic origin, for whom surgical excision was performed under general anesthesia.

Keywords: aneurysm; atherosclerosis; surgery.

Resumo

Aneurismas da artéria temporal superficial são incomuns segundo a literatura. A grande maioria é secundária a traumatismos ou cirurgia na região temporal, sendo que 95% dos casos evoluem para pseudoaneurismas. Entretanto, os aneurismas verdadeiros ou espontâneos são extremamente raros e representam 8% dos casos de aneurismas da artéria temporal superficial, sendo estes, geralmente, de origem aterosclerótica. Aneurismas temporais espontâneos podem coexistir com outras lesões vasculares, incluindo aneurismas intracranianos. Nosso relato trata de um paciente com aneurisma de artéria temporal superficial esquerda, de origem aterosclerótica, no qual foi realizada a excisão cirúrgica, sob anestesia geral.

Palavras-chave: aneurisma; aterosclerose; cirurgia.

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INTRODUCTION

Aneurysms of the superficial temporal artery (ASTA) are an uncommon condition that rarely appears in the literature.¹ The great majority are secondary to traumatism to the temporal region, and in 95% of cases they develop into pseudoaneurysms.^{2,3} However, true spontaneous aneurysms are extremely rare,² account for 8% of cases of ASTA and generally have atherosclerotic etiology.⁴ True ASTA can be associated with the presence of other arterial aneurysms, Marfan Syndrome and giant-cell arteritis.¹ In addition to the esthetic effects, ASTA can cause local manifestations and serious algia.⁴

This article describes the case of an atherosclerotic aneurysm of the superficial temporal artery, its clinical presentation and diagnosis, and provides a brief review of the literature.

CASE DESCRIPTION

A 69-year-old, white, male patient presented complaining of a small nodule in the front left temporal region, with spontaneous onset and no prior history of trauma or surgery at the site. Physical examination detected a small pulsatile nodule of cystic appearance, that was painless and measured approximately 1 cm in diameter, in the front left temporal area (Figure 1). The pulse subsided on compression of the superficial temporal artery at the zygomatic arch. Auscultation at the site did not detect murmur. Doppler ultrasonography of the temporal region confirmed a diagnosis of saccular aneurysm of the temporal artery. The patient underwent surgical excision of the aneurysm (Figure 2) under general anesthesia and the surgical specimen was sent for anatomopathological analysis, which diagnosed atherosclerosis of the artery wall (Figure 3). The aneurysm did not contain thrombi and had a smooth surface. Late postoperative follow-up found the patient free from complaints and the surgical wound had a good appearance, free from signs of inflammation (Figure 4).

DISCUSSION

In 1742, Thomas Bartholin reported the first case of a pseudoaneurysm of the superficial temporal artery, secondary to a trauma to the temporal region,^{1,4} but it was not until 1955 that Martin and Shoemaker described the first case of a histologically confirmed atherosclerotic aneurysm.^{1,5} Up to 2013, just over 30 cases of true ASTA had been reported.⁴

True aneurysms are diagnosed by a histological examination showing that all of the layers of the

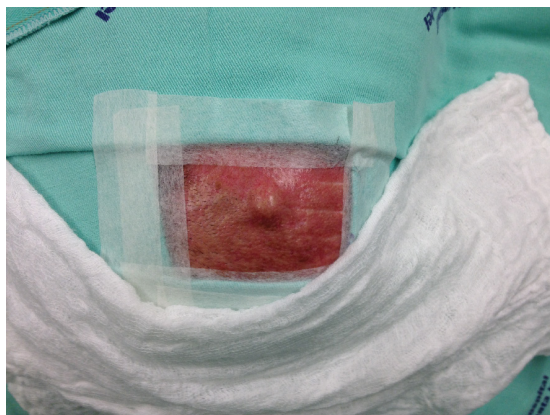


Figure 1. Pulsatile nodule caused by aneurysm of left superficial temporal artery.



Figure 2. Dissection of the aneurysm and ligation of proximal and distal branches of the artery.

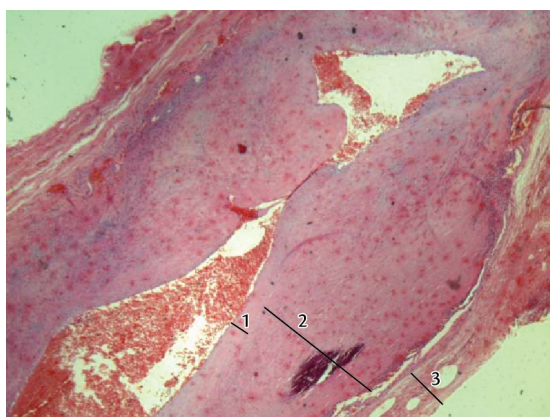


Figure 3. Pathology slide showing an arterial segment exhibiting varying degrees of wall thickening, with fibroplasia and foci of calcification within the tunica muscularis, compatible with an atherosclerotic process. The numbers 1, 2 and 3 indicate the intimal, medial and adventitial layers respectively.



Figure 4. Patient 17 days after surgery to excise the superficial temporal aneurysm.

artery wall are intact. These aneurysms are the result of a fragility of the vessel wall. This fragility may be associated with congenital factors or factors of an atherosclerotic nature.⁶ Pseudoaneurysms (or false aneurysms) are different from true aneurysms in that they exhibit a partial rupture of the artery wall, so the dilation does not include all of the artery wall layers.⁶

Approximately 80% of ASTAs occur in men, generally aged 20 to 40 years, and the majority are pseudoaneurysms with traumatic etiology.⁶ Although generally protected against trauma by surrounding soft tissues, branches of the superficial temporal artery are close to the surface of the skin in bony regions of the face, where they are more susceptible to traumas.^{2,7-9}

A small proportion of ASTAs occur spontaneously, and may be of congenital or atherosclerotic origin.⁸ These aneurysms may co-present with other vascular injuries, including intracranial aneurysms.⁹ It is known that intracranial aneurysms exhibit a predilection for patients with specific systemic diseases, such as Ehlers-Danlos Syndrome, Marfan Syndrome and multicystic kidney.⁴ However, these diseases have not been found in previous studies of spontaneous aneurysms of the temporal artery.⁴

Temporal artery aneurysms can normally be diagnosed on the basis of history and physical examination. Patients should be asked about any history of trauma or surgery in the region, whether recent or otherwise.^{7,10} The most common symptom on presentation is a pulsatile nodule in the temporal region or palpating head pain.⁷ Any mass is generally a single entity and pulsatile, exhibiting a reduction in pulse if the artery is compressed proximally.⁷ The majority of patients complain of one or several painless nodules distributed along the temporal artery, associated or not with pulsation, head pain,

discomfort in the auditory apparatus, dizziness and hemorrhage.² The nodule can compress adjacent arteries and nerves, leading to paralysis of cranial nerves, paresthesia and vascular involvement.² There may also be embolization of luminal thrombi into a primary vessel, but the likelihood of this reduces over time.²

The size of temporal artery aneurysms can vary from 0.5 cm to 5.7 cm, although they are more commonly between 1 cm and 1.5 cm.² On pathology, hypoplasia of the intima-media and adventitial complex may be observed and partial loss of differentiation of the internal elastic lamina is also possible.⁴

Aneurysms of the superficial temporal artery can easily be confused with sebaceous cysts, lipomas, lymphadenopathies, inflammatory lesions, tumors of facial nerves, arteriovenous fistulas, hematomas or abscesses.^{9,11} However, detailed history taking and careful palpation can considerably reduce the differential diagnosis options.² Diagnostic errors can lead to devastating consequences including massive hemorrhage after puncture for needle aspiration.³

The most important differential diagnosis is a pseudoaneurysm of the superficial temporal artery.¹ History of trauma in the temporal and/or pre-auricular region should arouse a suspicion of pseudoaneurysm.¹ Attenuation or cessation of pulsation on compression of the proximal superficial temporal artery is a significant sign, but is also possible in cases of arteriovenous malformation.² Doppler ultrasonography may reveal a turbulent flow waveform and show elevated peripheral vascular resistance, which would rule out the possibility of an arteriovenous fistula.²

The most precise noninvasive test for diagnosing ASTA is a duplex scan of the lesion, which will show a fusiform dilation consistent with the mass and turbulent intraluminal blood flow.⁷ Computed tomography with contrast and magnetic resonance angiography are useful in cases of suspected intracranial aneurysms. Arteriography should be reserved for the most difficult to diagnose cases and offers the possibility of endovascular treatment during the same intervention.^{3,4,6}

Although there is a possibility of spontaneous bleeding from the aneurysm due to loss of loose connective tissue, subcutaneous hematomas are rare.⁴ In view of this, justifications for treatment are esthetic problems, pain or discomfort.⁴ In 2014, Joshi and Klimczak¹² published the first report of a case of spontaneous rupture of an ASTA, confirming the importance of elective treatment.^{4,12}

The treatment options for aneurysms and pseudoaneurysms are similar and include repeated

ultrasound-guided compression of the lesions, conservative methods and surgical excision of the aneurysm with ligature or endovascular obliteration.^{7,11} However, the treatment of first choice is excision of the aneurysm and ligature of the afferent and efferent vessels.⁷ The primary objective of surgery is to reduce the risk of hemorrhage in the event of trauma, to alleviate pain reported by the patient and to improve esthetics.^{7,11}

The objective of ultrasound-guided compression is obliteration of the aneurysm, leading to formation of thrombi.¹¹ This technique can be used to treat small aneurysms, but it very often fails.¹¹

Endovascular techniques have shown promise in alternative cases and several different studies describe successful embolization with thrombin or coils.¹¹ Direct injection of thrombin is a simple method, but can lead to complications, such as allergic reaction, risk of recanalization, intravascular thrombosis, necrosis of the scalp and distal ischemia.¹¹

Despite the advances made in minimally invasive techniques, excisional surgery remains the gold standard treatment.¹¹ It is a simple, effective and curative procedure that requires local or general anesthesia and causes minimal scarring and there are no reports of relapses in the literature.¹¹ The principal risk of surgery is injury to facial nerves when aneurysms are located close to the parotid gland.¹¹

Although rare, ASTA should be considered among the diagnostic hypotheses for a mass located in the temporal region, even when not pulsatile, and clinical examination is sufficient to predict a diagnosis, which should be confirmed by ultrasound.

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