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## SHORT REPORT

# True Aneurysm of the Superficial Temporal Artery

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*True aneurysms of the superficial temporal artery are rare in contrast to false aneurysms of the superficial temporal artery. We report a case of a true aneurysm that developed spontaneously in an HIV patient. The patient was treated with surgical excision of the aneurysm with an uneventful recovery. Histology revealed a true aneurysm. Clinical presentation and treatment as well as a review of the literature are presented.*

*Keywords:* Superficial temporal artery; Aneurysm.

### Introduction

While false aneurysms of the superficial temporal artery are well described, true aneurysms of the superficial temporal artery are rare. We report a case of a true aneurysm that developed spontaneously in an HIV patient. The patient was treated with surgical excision of the aneurysm with an uneventful recovery. Histology revealed a true aneurysm. Clinical presentation and treatment as well as a review of the literature are presented.

### Case Report

The patient is a 46-year-old male with a long standing history of untreated HIV. He had a T helper count of 213 (norm 480–1700 cells/mm<sup>3</sup>) and %T helper of 24 (norm 33–65%). He presented with a 6-week complaint of a growing mass anterior to his right ear. The patient denied any history of trauma to the region. On physical exam a large, pulsatile mass was palpated in the right temporal region. No findings suggestive of connective tissue disorders or syphilis were found. His erythrocyte sedimentation rate was mildly elevated. His serum VDRL was positive, although VDRL from

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the CSF was negative. Magnetic resonance angiography (MRA) (Figs. 1 and 2) showed findings compatible with a superficial temporal artery aneurysm. Ultrasound-guided compression was attempted. After compression for approximately 15 min, the aneurysm remained patent. The patient was taken to the operating room, where he underwent proximal and distal ligation of the superficial temporal artery and excision of the aneurysm. His recovery was uneventful.

Pathology showed a 1.7×2.3×2.4 cm<sup>3</sup> enlarged right temporal artery with a uniformly thick fibrotic wall that lacks an elastica (Elastic Van Gieson stain) compatible with a true aneurysm (Fig. 3). No signs of cystic medial necrosis or inflammation were seen. Although specific stains for spirochetes were not performed, no plasmocytic infiltration was seen in the arterial wall that would suggest syphilis as a causative factor.

The patient underwent MRA scanning of his chest, abdomen, pelvis and extremities. No additional aneurysms were found.

### Discussion

False aneurysms of the superficial temporal artery are well known. They are a well-known complication of blunt and penetrating trauma to the temporal region, typically presenting 2–6 weeks after the injury.<sup>1</sup> They



Fig. 1. MRA, axial T1 weighted image with contrast shows axial cut of right temporal artery aneurysm.

have also been described after surgical procedures such as craniotomies and after the use of head holders for neurosurgical procedures. A false aneurysm implies a break in the arterial wall, with a subsequent

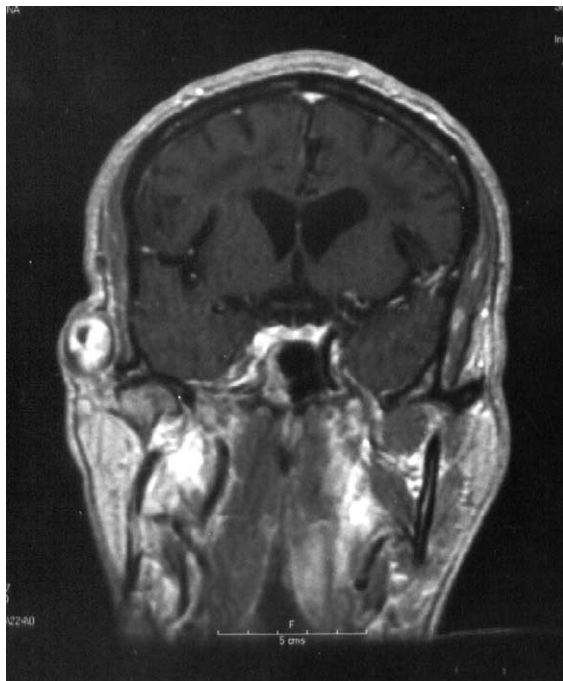


Fig. 2. MRA, T1 weighted image with contrast shows coronal cut of right temporal artery aneurysm.

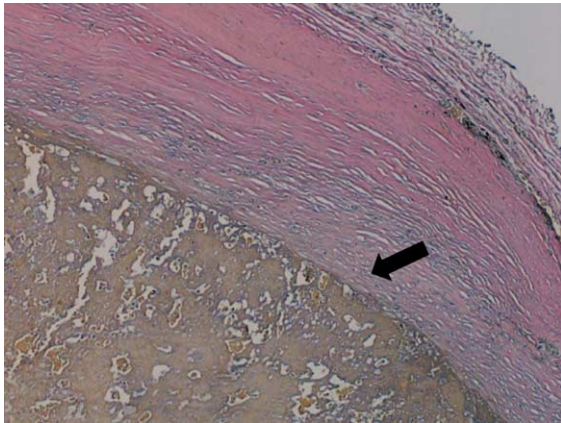
hematoma formation around the vessel wall. A true aneurysm is a localized dilatation of the artery that involves all three layers of the vessel. Histologically proven true aneurysms of the superficial temporal artery are rarely reported in the literature. Most studies have not reported the final histology, therefore, the incidence of true superficial temporal artery aneurysms is difficult to determine.

Martin<sup>2</sup> was the first to document a histologically confirmed true superficial temporal artery aneurysm. Since then, only 13 cases have been described. They have been described as isolated or associated with multiple intracranial cerebral aneurysms.<sup>3</sup>

The etiology of true superficial temporal artery aneurysm is unclear. Uchida<sup>4</sup> described a 2 cm true superficial temporal artery aneurysm that appeared to be atherosclerotic in origin. Other causes have been congenital or degenerative. Superficial temporal artery aneurysms associated with syphilis, polyarteritis nodosa or connective tissue disorders have not been reported. To our knowledge, no superficial temporal artery aneurysms associated with infectious etiologies or in HIV patients have been reported. Aneurysms in HIV patients are uncommon. To date, 24 cases of cerebral aneurysms have been reported in HIV-infected children.<sup>5</sup> Although the mechanisms by which HIV leads to these cerebral aneurysms remain undefined, it is possible that the HIV virus itself may have an effect on the intima of the vessels, resulting in arterial damage. An association with other opportunistic infections has been proposed as a possible cause of these aneurysms in HIV infected children. Reports of aneurysms in adult HIV patients have been described. Nair<sup>6</sup> described 10 HIV-positive patients who developed 20 extracranial arterial aneurysms. All histopathological examinations displayed inflammation of the vasa vasora. He concluded that the association between HIV and aneurysms might be coincidental, caused possibly by direct viral action or by bacterial infection resulting from immunosuppression. In our patient, no definitive histopathological findings were found that could confirm the association with HIV as an etiology.

Differential diagnoses include arteriovenous fistula, vascular tumors and aneurysms of adjacent arteries. Diagnosis is made by history and physical exam in which one may palpate a mass over the superficial temporal artery. The mass may be pulsatile and tender with a bruit. It can be nonpulsatile if the aneurysm has thrombosed. In the past, diagnosis was confirmed by cerebral angiography and ultrasound, however, CT angiography or MRA appear to be equally good.

The natural history of true superficial temporal artery aneurysms is unclear. While false aneurysms



**Fig. 3.** Thick fibrotic wall of aneurysm that lacks an elastica ( $\times 40$ , EVG stain). Fibrotic tissue replaces elastin and muscle in media layer (arrow).

have been described to enlarge,<sup>7</sup> thrombose or rupture if left untreated, the natural history of true superficial temporal artery aneurysms is unknown.

Surgical resection is recommended for cosmetic reasons or nonspecific complaints, such as pain, throbbing, and to prevent rupture. Surgical treatment is curative and includes proximal and distal ligation of the artery and excision of the aneurysm. No case of recurrence has been described. Conservative treatment, such as superselective embolization of the

proximal superficial temporal artery has been described for small aneurysms and arteriovenous fistulas. Compression of the artery has been described, however, is often unsuccessful, as in this case.

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