False aneurysm of the superficial temporal artery following blunt trauma

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AA Waitzman, PC Neligan, JW Butany. False aneurysm of the superficial temporal artery following blunt trauma. Can J Plast Surg 1994;2(4):179-180. Aneurysms of the superficial temporal artery are uncommon. Motor vehicle accidents and assaults are the most frequent etiologies. There are, however, several cases reported following sports related trauma. The aneurysm is usually detected two to six weeks after injury. The diagnosis is made from clinical examination, aided in certain circumstances by radiological investigations. Treatment is primarily surgical, embolization being reserved for inaccessible aneurysms. A case is presented of a false aneurysm of the superficial temporal artery following a kickboxing injury. The diagnosis in this case was made clinically. Excision of the aneurysmal cavity after ligation of the afferent and efferent vessels was curative.

Key Words: Aneurysm, Sports, Temporal artery, Trauma

Faux anévrismes de l'artère temporale superficielle après traumatisme

RÉSUMÉ : Les anévrismes de l'artère temporale superficielle sont rares. Les accidents de la route et les agressions en sont les plus fréquentes étiologies. Il y a cependant différents cas rapportés lors de traumatismes liés au sport. L'anévrisme est habituellement décelé entre deux et six semaines suivant la blessure. Le diagnostic est posé à partir de l'examen clinique, à l'aide d'épreuves radiologiques dans certains cas. Le traitement est surtout chirurgical, l'embolisation étant réservée aux anévrismes inaccessibles. Un cas de faux anévrisme de l'artère temporale superficielle est présenté ici après une blessure subie lors d'un match de kickboxing. Le diagnostic dans ce cas a été posé sur des bases cliniques. L'excision de la cavité anévrismale après ligature des vaisseaux afférents et efférents s'est révélée efficace.

Aneurysms of the small muscular arteries are uncommon, and those of the superficial temporal artery are considered quite rare (1-3). There are only 10 reported cases following sports injuries. These involved impact from hockey pucks, squash balls, a baseball, and a fist (1,4,5). The first reported case of false aneurysm following kickboxing trauma is presented.

CASE REPORT

A 29-year-old man was seen at the plastic surgery clinic for a cystic mass in his left temporal region (Figure 1). He had regularly been participating in the sport of kickboxing, and related this mass to a specific incident six weeks before when he received a kick to the left temporal region. His medical history was otherwise unremarkable. On examination the mass was 1.5 cm in diameter, pulsatile and not tender. An associated bruit and thrill were present. A clinical diagnosis of traumatic false aneurysm of the superficial temporal artery was made and the patient was taken to the operating room one week later. Under local anaesthetic the aneurysm was exposed. The afferent and efferent vessels were ligated, and the

aneurysmal sac was then excised. The wound was then closed with interrupted nylon sutures. The pathology report confirmed the diagnosis of false aneurysm, measuring 1.2 cm in length and 0.7 cm in maximal diameter (Figure 2). There was no recurrence of the mass at follow up four months later.

DISCUSSION

Aneurysms of the superficial temporal artery may be true or false. True aneurysms of this vessel are of either congenital or atherosclerotic origin, and are extremely rare (2,6). There are no known reported cases of mycotic or syphilitic aneurysms of the superficial temporal artery (6). Trauma is the most common cause of false aneurysms of this artery (2). The vessel is vulnerable to injury because of its long superficial course through an exposed area (2,3). A false aneurysm may be secondary to penetrating or blunt trauma. The sequelae of these injuries are usually thrombosis or arteriovenous fistula from penetrating trauma, or thrombosis from blunt trauma (1,7). For formation of a false aneurysm there must be disruption of the arterial wall from either a partial severing, or a contusion followed by wall necrosis. If a thrombus fails to seal the defect, bleeding from this site into surrounding tissue occurs with hematoma formation. As the hematoma organizes there is a new wall formed from the perivascular fibrous tissue. This wall then tends to thin secondary to the arterial pressure and dilates, expanding the false aneurysm cavity

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Figure 1) A 1.5 cm cystic pulsatile mass in left temporal region

Figure 2) Histologic slide of part of the surgical specimen. The lumen is filled with organizing thrombus (T). The vessel wall (W) shows an inner layer of thickened intima, medial muscle which tapers off at both ends of the photomicrograph (arrow head), and ends in the connective tissue wall of the false aneurysm.

(2,5,6). Aneurysms of the superficial temporal artery represent only 0.5 to 2.5% of all operated aneurysms; in a large review by McCallum (1,2) only 37 of 8500 diagnosed aneurysms involved this vessel. The etiology of these lesions has changed over time. Decades ago the most common causes were duelling, war injuries and therapeutic blood-letting (3,4). In modern times the most common causes are thought to be motor vehicle accidents, assaults, sports and iatrogenic

following procedures such as temporomandibular joint arthroplasty and hair plug grafting (2,8).

False aneurysms of the superficial temporal artery usually develop two to six weeks following injury, but may occur at any time (3,7). The typical presentation is of a small cystic mass in the temporal area which is variably tender. The size may range from 5 mm to 4 cm. The mass is usually pulsatile and may have an associated thrill or bruit, although all of these may be absent if there is significant thrombosis (1,5,7). A continuous bruit suggests an arteriovenous fistula rather than an aneurysm (1,7). Some patients may complain of headache or localized pain (2,6). The differential diagnosis consists of arteriovenous fistula or malformation, epidermal inclusion cyst, hematoma, lipoma, abscess, tumour and aneurysm of the middle meningeal artery with bony erosion (9). The authors feel that a clinical diagnosis is usually sufficient. If the diagnosis is unclear, however, investigations such as ultrasound, computerized tomography or angiography may be indicated (3,6). Such investigation may also be warranted if associated pathology such as skull fracture, intracranial hematoma, arteriovenous fistula or intracranial communication are suspected (6).

The natural history of these lesions has three possible outcomes. There may be spontaneous resolution secondary to thrombosis, enlargement or rupture (7). Treatment should be undertaken for cosmesis, to relieve symptoms and prevent rupture (although this has never been reported) (6). Surgical management is preferred unless the aneurysm is very proximal and therefore not accessible. If this is the case embolization should be considered (6,7). Over the past two decades treatment has consisted of ligation and excision in 74% of cases, ligation only in 14% of cases, and embolization in less than 3% of cases. The remaining cases either refused treatment or the method was not specified (6,10,11). Surgery may be done under a local or general anaesthetic, and is highly effective. There were no mortalities or significant morbidities reported (6). Embolization is associated with a 1 to 3% incidence of complications, including local pain and inflammation, thrombosis, pulmonary emboli, aneurysmal rupture and embolization to the internal carotid artery (6,7,12). Recannulation of the vessels has been reported following embolization, although the actual failure rate of this modality is unknown (6,7).

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