Congenital True Aneurysm of the Right Superficial Temporal Artery

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ABSTRACT

Introduction: Superficial temporal artery aneurysms (STAAs) occur in 1% of arterial aneurysms; mostly (95%) are pseudoaneurysms following trauma; true aneurysms are rare (5%); forty-five cases are reported. Aim: To report a rare case of a congenital STAAA. Case Report: A 67-year-old patient recalled the existence of a true-histologically evidenced-an aneurysm of the right superficial temporal artery since his childhood denying any head injury; it was resected through a horizontal skin incisure. Brain arteries’ magnetic imaging was negative. Conclusion: Spontaneous or congenital STAAs have to be removed respecting forehead lines. Intracranial vasculature must be investigated.

Keywords: superficial temporal artery, aneurysm, true, congenital.

1. INTRODUCTION

Superficial temporal artery aneurysm (STAA) is an apparent, pulsatile, commonly painless, swelling under the skin, over the route of STA. Its excision is dictated to prevent bleeding, or for cosmetic reasons, as in this case.

2. AIM

To report a rare case of a STAA along with a review of the literature are discussed.

3. CASE REPORT

A 67-year-old man recalls a painless, pulsatile swelling at the right forehead over the eyebrow, since his childhood, denying any head trauma; its size (4 cm in length and 2 cm in width) remained the same for many decades. No nerve dysfunction existed. Proximal STA compression resulted in pulse elimination and minimization of the arterial Doppler signal. The aneurysm was excised under general anesthesia, following a horizontal and curved at its lateral end, skin incision. Both artery’s ends were ligated using 3.0 silk suture. The temporal muscle was repaired with 4.0 polyglactin suture. Semi-mattress stitches (4.0 nylon) used for skin closure, were removed on the 4th postoperative day. The patient was discharged some hours following surgery with no postoperative local circulatory deficiency nor any nerve dysfunction (Figure 1).

Histology revealed that all three arterial wall layers were intact with partial atherosclerotic changes, defining the lesion as a true STAA (Figure 2). Brain magnetic resonance angiography (MRA) was negative (Figure 3).

4. DISCUSSION

Since the first STAA case reported by Bartholin in 1740, most STAAs are pseudoaneurysms (95%) usually occurring in young men and elder-
ly people, after accidental falls, due to the shallow STA route. While according to Delen, approximately 400 posttraumatic STA pseudoaneurysms are reported, only 34 true aneurysms are published. The etiology includes atherosclerosis, usually met in the elderly, occasionally with hemodynamic wall stress (1–3). Congenital arterial aneurysms, usually met in the elderly, occasionally 34 true aneurysms are published. The etiology includes atherosclerosis, usually met in the elderly, occasionally with hemodynamic wall stress (1–3). Congenital arterial aneurysms, usually met in the elderly, occasionally with hemodynamic wall stress (1–3).

Table 1. Reported cases of true superficial temporal artery aneurysms

| A/A | Author/Year | Age/Sex | Pain | Size Increase | Other aneurysms |
|-----|-------------|---------|------|---------------|----------------|
| 1   | Brown & Mehrner/1942 | 34/M | No | Yes | No |
| 2   | Martin & Shoemaker/1954 | 60/M | No | Yes | No |
| 3   | Yonetani et al/1955 | 63/W | No | Yes | No |
| 4   | Tamaki & Matsumoto/1960 | 57/M | Yes | Yes | No |
| 5   | Suzuki et al/1980 | 13/W | No | Yes | No |
| 6   | Buckspan & Rees/1986 | 70/M | No | Yes | No |
| 7   | Nishikawa et al/1988 | 14/M | No | Yes | No |
| 8   | Eßer et al/1988 | 22/M | No | Yes | No |
| 9   | Ikeda & Watanabe/1989 | 15/M | No | Yes | No |
|10   | Uchida & Sakuma/1999 | 34/M | No | Yes | No |
|11   | Endo et al/2000 | 85/M | No | Yes | No |
|12   | Porcellini et al/2001 | 24/W | No | No | No |
|13   | Ohita et al/2003 | 55/M | No | Yes | Intracranial |
|14   | Riaz/2004 | 65/M | No | Yes | No |
|15   | Riaz/2004 | 78/W | No | Yes | No |
|16   | Ysa et al/2008 | 59/W | Yes | Yes | No |
|17   | Kawabori et al/2009 | 78/W | No | Yes | No |
|18   | Piffaretti/2009 | 62/W | No | Yes | STA |
|19   | Piffaretti/2009 | 47/M | No | Yes | STA |
|20   | Karam et al/2010 | 34/W | No | Yes | No |
|21   | Sakamoto/2011 | 77/W | No | Yes | No |
|22   | Baxkurt et al/2011 | 62/M | No | Yes | No |
|23   | Naif et al/2011 | 84/W | No | Yes | No |
|24   | Moua et al/2011 | 72/W | No | Yes | No |
|25   | Moriyama et al/2011 | 67/W | No | Yes | No |
|26   | Park et al/2012 | 57/W | No | Yes | No |
|27   | Sloane et al/2013 | 32/M | No | Yes | No |
|28   | Kawai et al/2014 | 65/M | No | Yes | Intracranial |
|29   | Kawai et al/2014 | 76/W | No | Yes | No |
|30   | Kawai et al/2014 | 57/W | No | Yes | ECA, STA, OA |
|31   | Pejic et al/2014 | NR | No | Yes | No |
|32   | Kim/2014 | 44.7/W/66M | No | Yes | STA |
|33   | Zivkovic et al/2015 | 20/M | No | Yes | No |
|34   | Delen et al/2016 | 79/W | No | Yes | Intracranial |
|35   | Kotosis et al/2017 | 67/M | No | Yes | Intracranial |

**Table 1. Reported cases of true superficial temporal artery aneurysms**

(1,2,4,7,10–33). NR: No reference, W: Woman, M: Man, ECA: External carotid artery, STA: Superficial temporal artery, OA: Occipital artery was congenital due to his history - a fast flow malformation, according to Hamburg classification (3).

Superficial TAAs appear equally in both sexes; few are painful or accompany other extracranial or intracranial aneurysms (Table 1) (1, 2, 4, 5–20). Few are related to subarachnoid hemorrhage and intracranial aneurysms, to Ehlers-Danlos and Marfan syndromes, or multicystic kidney (1, 2). Intracranial vessel investigation is justified in patients with true TAAs (2).

Commonly, patients with TAAs present with a pulsatile painful or nonpainful mass at some point along the artery, throbbing headache or ear discomfort or with dizziness, bleeding, or rarely neurologic deficits, as facial nerve paralysis (1, 2, 4).

Differential diagnosis includes lipoma, hematoma, lymphadenopathy, supraorbital nerve neuroma, dural arteriovenous fistula, arteritis, cysts, neoplastic disease as facial nerve schwannoma, parotid gland tumor, meningioma, pericranial sinus and subcutaneous abscess (2, 4). Occasionally STA resembles a parotid mass involving the facial nerve, that may require superficial parotidectomy (1).

Diagnosis is confirmed by history, physical examination, Doppler study, and imaging such as ultrasonography; studies such as CTA, 3D-CTA and MRA may be used to identify the lesion and to investigate other intracranial lesions. Needle aspiration or core biopsy of the artery must be avoided (4, 11).

The risk of sudden rupture and bleeding of a STA is a concern; though no similar case has been published as the forehead skin is thick and firm; most STAAs are removed before rupture due to their early detection; aesthetic improvement, pain or discomfort are reasons for treatment. Although no criteria/guidelines are established, surgery is the gold standard, with a skin incision that respects the skin lines as in this presented case; the parallel to frontal lines incision followed by cranial and caudal arterial resulted in scar elimination. Excision, and feeders’ ligation is recommended; no vessel reconstruction is necessary. Super selective catheter embolization with glue or thrombin injection has been used where the depth of the artery or its contiguity to the facial nerve was congenital due to his history - a fast flow malformation, according to Hamburg classification (3).
and the parotid gland complicate surgery; however, there is the risk of embolism and the less cosmetic result due to the remnant thrombosed aneurysm (4, 7, 11).

5. CONCLUSION

Congenital STAAs have to be resected, as all removable congenital malformations. Spontaneous or post traumatic STAAs have also to be removed to avoid complications or discomfort. Skin incisions have to respect forehead/temporal skin lines. Intracranial vasculature must be investigated.

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