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Case Report

Traumatic superficial temporal artery pseudoaneurysm: Successful management using endovascular embolization ☆☆☆

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ABSTRACT

Superficial temporal artery pseudoaneurysms are uncommon but can be potentially life-threatening. Considering their rarity, the present article outlines the clinical presentation, radiological findings, intervention, and outcome of traumatic pseudoaneurysm of the superficial temporal artery. An 83-year-old female sustained a traumatic injury to the temple, resulting in right-sided swelling of the forehead. Brain computed tomography and cerebral angiogram revealed a right-sided homogeneously-enhancing pseudoaneurysm in the frontal region. Successful occlusion of the lesion was achieved utilizing endovascular embolization. Three months after discharge, the patient reported no complaints or recurrence. Subsequent management included reassurance and observation with periodic clinical assessments. The unusual presentation of superficial temporal artery pseudoaneurysms requires clinicians to have thorough knowledge on the clinical presentation, proper steps in diagnosis, and the ap-

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proach of choice in management. Endovascular embolization of superficial temporal artery pseudoaneurysms remains a valid approach to achieve successful occlusion of the lesion.

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Introduction

Traumatic pseudoaneurysm of the superficial temporal artery is a rare condition. It usually presents as a painless pulsatile mass in the temporal region, often following a blunt head trauma [1]. A review of the literature revealed a few reported cases that were managed with endovascular therapy. Considering the rarity of traumatic pseudoaneurysm of the superficial temporal artery, the present article outlines the clinical presentation, radiological findings, intervention, and outcome of traumatic pseudoaneurysm of the superficial temporal artery in an 83-year-old female, as well as reviews the pertinent literature on this condition.

Case description

Clinical data

An 83-year-old female is known to have hypertension, diabetes, dyslipidemia, hypothyroidism, and rheumatoid arthritis. The patient was in her usual state of health until 1 month prior to her presentation when she sustained a traumatic injury to the temple, resulting in right-sided swelling of the forehead. The patient was taken to a local hospital at which a one-by-two cm aneurysmal sac, connected to superficial temporal artery, was confirmed by Doppler ultrasound. At that time, no further management was offered, and the patient was discharged. Afterwards, the patient presented to our emergency department with a progressive swelling in the forehead. The patient reported no history of headache, vomiting, seizure, or loss of consciousness.

Upon arrival to the emergency department, her physical examination revealed that she was vitally stable and alert with a Glasgow Coma Scale of 15/15. The pupils were 3 mm bilaterally reactive to light with no gaze preference. There was a smooth pulsatile mass in the right frontal area of the forehead. The remainder of the physical examination was unremarkable. Considering the persistence of the vascular lesion, the patient was admitted to the hospital for further radiological assessment and management.

Neuroradiological imaging

Brain computed tomography and cerebral angiogram revealed a homogeneously-enhancing subcutaneous oval mass in the right frontal region (Fig. 1). Based on the radiological findings, the diagnosis of superficial temporal artery pseudoaneurysm was rendered.

Intervention

The decision was made to perform endovascular embolization of the pseudoaneurysm. The consent was obtained after discussing the procedure and its potential complications such as stroke, blindness, bleeding, allergic reaction, renal impairment, and on rare occasions, death. Afterwards, the common carotid artery and the right external carotid artery were selected using a standard technique with multiple angiographic projections (Fig. 1C-E).

Outcome and follow-up

Post-embolization, the patient tolerated the procedure well with no complications. The patient was discharged with regular clinical follow-up at the Neurosurgery clinic. Three months following discharge, the patient reported no complaints or recurrence. The right frontal swelling disappeared. Subsequent management included reassurance and observation with periodic clinical assessments.

Discussion

Superficial temporal artery pseudoaneurysm is a rare phenomenon following trauma that can be encountered in the general population. A review of the literature revealed few cases managed with endovascular therapy. We herein report an additional case who underwent endovascular embolization at our institution.

Anatomically, the superficial temporal artery, together with other branches of the external carotid artery, supplies the face and scalp. It is one of the terminal branches of the external carotid artery arising in the parotid gland, behind the mandible, before crossing over the zygomatic arch of the temporal bone [2,3].

Superficial temporal artery pseudoaneurysms are uncommon but can be potentially life-threatening [1]. They develop secondary to blunt or penetrating injuries to the temporal region [4]. The time to presentation is influenced by the nature of the injury which can be as early as 2-6 hours [5,6] or 2-6 weeks after the injury [7]. The patient in the present case presented to our emergency department after she sustained blunt trauma to the right temple and noted forehead swelling.

Superficial temporal artery pseudoaneurysms commonly present with a fronto-temporal painless, pulsatile swelling that might expand and lead to headache [1]. The diagnosis is confirmed either with Duplex ultrasonography, computed tomographic angiography, or angiography [1]. Of note, the patient in the present case did not complain of pain. She reported uncomfortable sensation due to the progressive in-

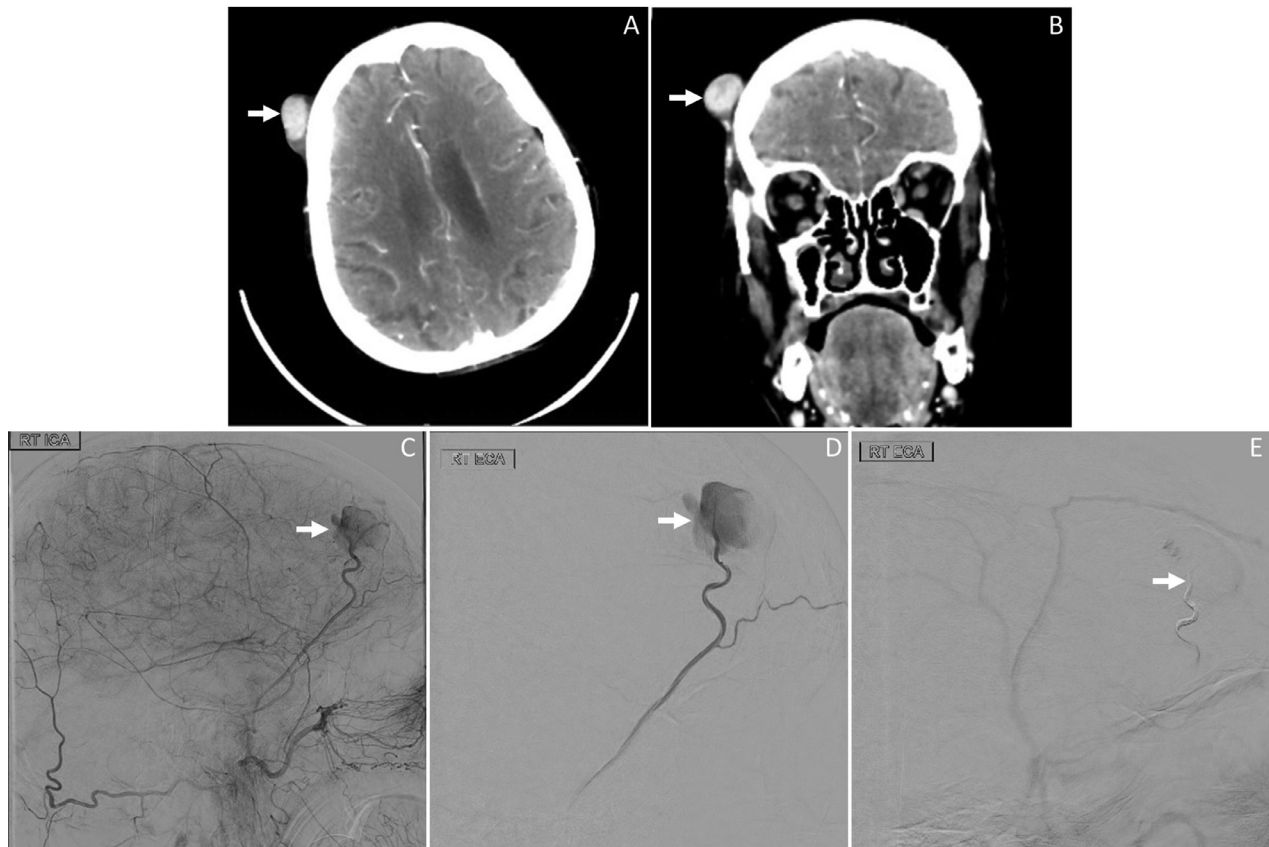


Fig. 1 – (A-B) Axial and coronal brain CT with contrast. (C-E) Lateral projection cerebral angiogram. (A-D) The images demonstrate a 3 x 4 cm right oval hypervascular subcutaneous mass in the frontal region (White arrows). The lesion is suggestive of pseudoaneurysm supplied by the frontal branch of the superficial temporal artery. (E) The feeder to the pseudoaneurysm was selected and occluded using glue.

crease of the right frontal swelling. The diagnosis was suspected after clinical examination of the patient. Doppler ultrasound was initially performed to assess the aneurysmal sac, followed by computed tomography for confirmation, and cerebral angiography for proper assessment of arterial feeders.

Superficial temporal artery pseudoaneurysms can be complicated by rupture, thromboembolism, or skin necrosis if not diagnosed and treated promptly [1]. The treatment options include open surgical ligation, with or without resection, endovascular embolization with coils, or percutaneous ultrasound-guided thrombin injection [4]. In the present case, Glue was utilized to ensure adequate embolization of the lesion. The patient tolerated the procedure well with no complications during and post-embolization.

Unlike true aneurysms, which involve all three layers of the vessel wall, pseudoaneurysms develop secondarily to extravasation of blood in the disrupted vascular wall [8]. In turn, this leads to the recanalization of liquified blood in the vessel [8]. As a result, the sac continues to enlarge due to arterial pressure [8]. This is evident by a mass-like lesion, representing a pseudoaneurysm, that conveys pulsations, bruits, and thrills [8]. Consequently, the time to presentation until the development of the pseudoaneurysm is often variable, that is, hours to weeks [8].

Conclusion

Superficial temporal artery pseudoaneurysm commonly presents with a painless pulsatile mass in the temporal region, often following a blunt head trauma. The unusual presentation requires clinicians to have thorough knowledge on the clinical presentation, proper steps in diagnosis, and the most effective approach in management. Endovascular embolization of superficial temporal artery pseudoaneurysms remains a valid approach to achieve successful occlusion of the lesion.

Patient consent

Informed consent was obtained for publication of the case report and accompanying images.

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