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Case Report

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A Case of Posttraumatic Pseudoaneurysm Developing After Head Trauma

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Abstract

Superficial temporal artery pseudoaneurysm is one of the very rare benign lesions of the head and neck region and most commonly occurs as a result of blunt trauma. There are various methods for diagnosis, but sometimes the diagnosis can be made even just by history and physical examination. A 41-year-old male patient presented with a painless, pulsatile mass in the right temporal region after blunt head trauma. The diagnosis of superficial temporal artery pseudoaneurysm was considered, and the diagnosis of pseudoaneurysm was confirmed by physical examination, superficial tissue ultrasound, and magnetic resonance imaging. Superficial temporal artery pseudoaneurysm can be easily diagnosed with an accurate history and physical examination alone. Diagnostic methods can be used in complicated cases.

Keywords: Trauma, Superficial Temporal Artery, Pseudoaneurysm, Benign Lesion of Head

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Introduction

In our case, we present a 41-year-old male patient who applied to our clinic with two masses on the right side of the forehead after trauma. Clinical examination of the mass, ultrasound, and MR imaging confirmed a pseudoaneurysm in the superficial temporal artery. We wanted to highlight this case to raise awareness that pseudoaneurysm is a rare but important differential diagnosis for masses in the head and neck region. It is important to keep the pseudoaneurysm in mind before performing drainage, biopsy, or any surgical intervention, especially in soft lesions.

Case

A 41-year-old male patient was admitted to our clinic because of swelling on his forehead that started 3 weeks ago. In the anamnesis taken, it was learned that a suture was placed on the wound that developed on his forehead after he fell while walking on the road and hit his head on the pavement stone one month ago. On the 14th day following this, 2 swellings developed around the suture. Therefore, the patient who used antibiotics containing amoxicillin and clavulanic acid applied to our clinic with no regression in the nodules. The patient, whose personal and family history was unremarkable, had no history of drug or supplement use. He had no symptoms other than tenderness to touch. In the physical examination, one is just above the incision line and the other is 1 cm lateral in the right frontal-temporal region; There were 2 soft nodules with a size of 4.5 and 4.8 mm, with a slight pulsation felt (Picture 1). Color Doppler

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ultrasonography performed on the patient for whom superficial tissue ultrasound was requested with the preliminary diagnosis of pseudoaneurysm and granulation tissue revealed arterial and venous coding and accompanying ying-yang appearance within the lesions (Picture 2-4). Since these findings were found to be significant in terms of vascular malformation and post-traumatic A-V fistulization, contrast-enhanced cranial magnetic resonance (MR) imaging was performed for an intracranial extension. The result was evaluated as posttraumatic pseudoaneurysm. The patient with acute pseudoaneurysm refused treatment and follow-up was recommended.

Picture 1: Two soft nodules on the right temporal area of the forehead

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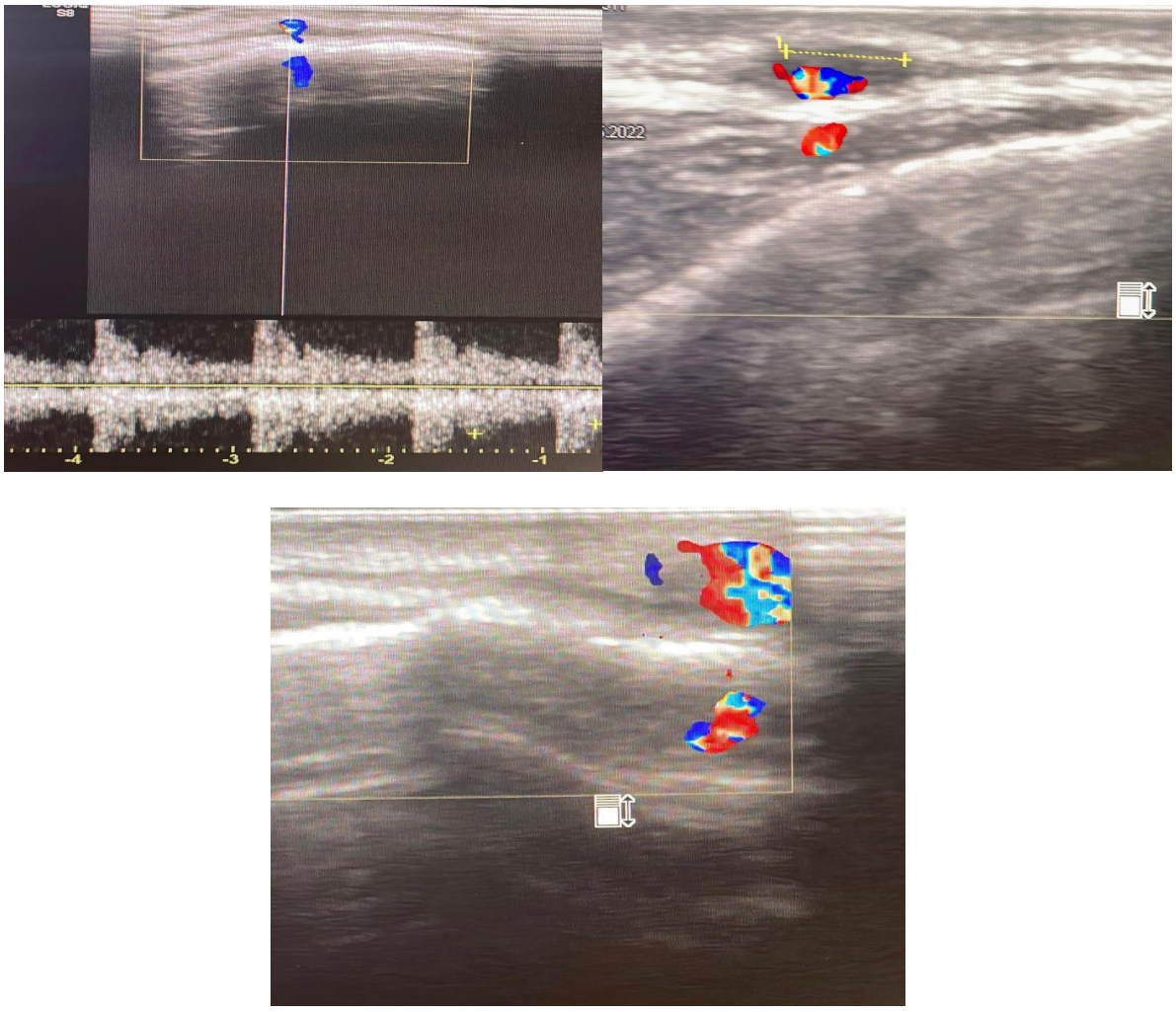

Picture 2-4: Posttraumatic AV fistulization of posttraumatic subcutaneous fatty plan of capillary, short stature 5mm in diameter, arterial and venous blood supply in Doppler ultrasonography, and not extending to neuroparenchyma in simultaneous MRI examination of posttraumatic scalp on posttraumatic scalp.

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Discussion

Pseudoaneurysm is synonymous with the terms pseudoaneurysm or pulsatile hematoma (1). The pathogenesis of traumatic pseudoaneurysm is well known. Briefly, trauma damages a blood vessel and causes the inner layer of the vessel wall to rupture. Blood pressure then causes blood to fill this space and create a volume. A fibrous pseudocapsule then develops, known as a pseudoaneurysm (1,2).

The etiologies of true aneurysm and pseudoaneurysm are different from each other. While true aneurysms are usually caused by degenerative factors, pseudoaneurysms are caused by trauma (1,2). Again, while a pseudoaneurysm occurs between the two outer walls of the artery, the true aneurysm covers all three walls of the artery. Causes of traumatic pseudoaneurysm include sports, traffic accidents, stab wounds, blunt injuries, temporamandibulary joint arthroplasty, hair transplantation, skin tumor excision, mandibular condyle fracture, or neurosurgical use of cranial halo fixation (1-4).

Suspicion is critical to the diagnosis of pseudoaneurysm; however, hematoma and pseudoaneurysms of the superficial temporal artery do not differ visually. The most characteristic feature of a superficial temporal artery pseudoaneurysm is the presence of a pulsatile mass (1,2,4-6). Especially if the mass is punctured with a needle for aspiration, its size does not decrease even after aspiration. Also, active arterial bleeding occurs at the puncture site. These observations suggest that a mass with no detectable active arterial bleeding at the

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puncture site is a hematoma, not a pseudoaneurysm. In our case, the puncture was not performed due to the presence of a pulsatile mass and it was directed directly to superficial ultrasound.

When a pseudoaneurysm is suspected, diagnostic tests such as Doppler ultrasonography, CT angiography, magnetic resonance angiography or conventional angiography should be performed (7). Doppler ultrasonography is the first-line diagnostic method that reveals direct communication between the superficial temporal artery and the turbulent flow responsible for the ying-yang sign, the pathognomonic sign of the pseudoaneurysm (6-8). CT angiography can assess the patency and position of the major trunk and distal branches, including transverse facial, frontal, and parietal branches of the superficial temporal artery (9). Also, based on location, attenuation, and contrast, CT angiography can identify pseudoaneurysms of the superficial temporal artery. In our case, Doppler ultrasonography and MR angiography were performed. A diagnosis of pseudoaneurysm was made by ying-yang finding in Doppler ultrasonography, and findings in favor of pseudoaneurysm without intracranial extension were observed in MR angiography.

The goal of pseudoaneurysm treatment is to prevent rupture or bleeding, relieve pain, and achieve satisfactory cosmetic results. The most successful standard treatment is surgical ligation and resection, which includes ligation of the afferent and efferent vessels and removal of the pseudoaneurysm (4). Ultrasound-guided thrombin injection and endovascular coil embolization are alternative treatment options (4,6,10,11). Small pseudoaneurysms can be treated conservatively by compression, but this approach is not recommended (5). Kim et al. proposed a treatment protocol for pseudoaneurysm of the superficial temporal artery.

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Emergency surgery should be performed in patients with acute pseudoaneurysm and hemodynamic instability. If surgical removal is difficult, endovascular treatment can be performed. However, in cases where a small pseudoaneurysm is hemodynamically stable, conservative treatment such as compression can be used. Subacute and chronic pseudoaneurysms can be treated with surgery or endovascular intervention, depending on the patient's cosmetic preferences (4). In our case, follow-up was recommended because the patient did not want treatment.

If left untreated, the pseudoaneurysm may rupture and cause life-threatening bleeding, although the incidence is low (12). Hemostasis can be extremely challenging, even with a surgical approach. Therefore, early diagnosis and appropriate treatment are important.

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