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Case Report
Traumatic Supratrochlear Artery Pseudoaneurysm With Spontaneous Resolution

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ABSTRACT

Background: Traumatic pseudoaneurysm of the supratrochlear artery is a rare lesion. It manifests, as a painless mass, in the frontal region following trauma. The unusual incidence and confusing presentation require the clinicians to thoroughly understand its presentation and diagnosis. Diagnosis is typically made on history and physical examination, but it can be confirmed by duplex ultrasound. Definitive treatment is surgical resection of the aneurysm after proximal and distal ligation of the vessel. However, in some cases, follow-up is recommended because there is a possibility of spontaneous relapse.

Case Presentation: We present a case of traumatic pseudoaneurysm of the supratrochlear artery, which developed a few weeks after blunt trauma to the forehead. The radiologist reported a pseudoaneurysm originating with a narrow stalk of the supratrochlear artery. In the patient's follow-up after three months, the patient's mass became very small, and in the follow-up after five months, the mass completely disappeared.

Conclusion: Pulsatile and or soft-tissue masses that are continuous with an artery with a history of trauma should be considered pseudoaneurysm. Color Doppler sonography is a convenient and noninvasive modality in diagnosis. If the pseudoaneurysm of the supratrochlear artery is small and contains thrombosis, waiting and seeing might be an effective option.

Keywords: Aneurysm, Arteries, Surgery, Trauma

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Highlights

- A traumatic pseudoaneurysm of the supratrochlear artery is a rare lesion, and its standard treatment is surgery.
- There is a possibility of spontaneous regression in some cases of pseudoaneurysm.

Introduction

The supratrochlear artery (or frontal artery) is one of the terminal branches of the ophthalmic artery. It branches from the ophthalmic artery near the trochlea of the superior oblique muscle in orbit. The supratrochlear artery anastomoses with the ipsilateral supraorbital artery and contralateral supratrochlear artery. The supratrochlear artery is the final branch of the internal carotid artery, so it is an example of anastomosis of an internal carotid artery with an external carotid artery. The supratrochlear artery supplies blood to the skin of the medial aspect of the forehead and scalp, as well as the underlying pericranium and frontalis muscles [1]. Because of its relatively superficial location, it is particularly vulnerable to head trauma [1]. Traumatic pseudoaneurysm of the supratrochlear artery has not been reported so far. However, traumatic pseudoaneurysm of the superficial temporal artery has been reported following blunt or penetrating trauma, and about 400 cases have been documented in the literature [2].

Case Presentation

A 5-year-old boy was reported to the otolaryngology-head and neck surgery (ENT-HNS) Department of Amir Al-Momenin Hospital affiliated with Guilan University of Medical Sciences, Iran, with a chief complaint of swelling above the right side of his eyebrow for 3 weeks ago. There was a history of blunt trauma with the projectile object and the gradual increase in the size of swelling to the present size. On physical examination, a well-defined crusted and spherical-shaped, nontender mass of about 15×10 mm was seen over the right side of the eyebrow region near the glabella (Figure 1). It was easily compressible on digital pressure. The patient underwent aspiration of a lesion with suspicion of organized hematoma or abscess due to a retained foreign body. Needle aspiration was performed, and 1 mL of blood was obtained. With the suspicion of pseudoaneurysm, sonography was performed, which revealed a pseudoaneurysm measuring 14.5×12.6 mm arising from a branch of the supratrochlear artery, and there was a circular isoechoic thrombosis in the inner wall, filling almost 50% of the lumen. However, in duplex ultrasound, the middle part of the aneurysm has arterial flow (Figure 2). Considering the risk of bleeding, as in the case of temporal artery pseudoaneurysm, surgery was offered to the patient to remove the pseudoaneurysm. However, the patient's parents did not accept the surgery due to their issues. In the patient's follow-up after three months, the patient's mass became very small, and in the follow-up after five months, the mass completely disappeared (Figure 3).

Discussion

Pseudoaneurysms are often associated with trauma due to total or partial arterial wall rupture. These are most frequently associated with blunt trauma, sports, and missile injuries but can be found in penetrating injuries [3]. Pseudoaneurysms of the supratrochlear artery are rare and present as painless, soft masses, and if they contain thrombosis, they may not have a clear pulse on palpation. This case demonstrates that blunt trauma can cause supratrochlear artery pseudoaneurysm. However, diagnostic modalities contain invasive and noninvasive tests. For most cases, duplex ultrasound is currently the imaging modality of choice since it can provide detailed information about the vascular anatomy without incurring the risks of invasive methods or radiation. CT scans with contrast, CT angiography, and digital subtraction angiography have been reported in the literature for its diagnosis [4]. Treatment is required for supratrochlear artery pseudoaneurysms, such as superficial temporal artery pseudoaneurysms, due to the risk of spontaneous rupture, pain, tenderness, bony erosion, and cosmetic disfiguration in the patient [5, 6]. The standard treatment is ligation of the afferent and efferent vessels followed by excision under local or general anesthesia [7]. Several other anecdotal treatments have been reported. In 1861, a medical student treated his superficial temporal artery aneurysm with daily compression while studying. of course, compression is a known effective treatment for femoral artery aneurysms [8, 9]. However, if the pseudoaneurysm is small, flow reduction by manual compression of the proximal portion of the aneurysmal sac and induced spontaneous thrombosis might be an effective and

Figure 1. A 5-year-old boy with significant history of blunt trauma and focal swelling above the right eyebrow

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minimally invasive treatment option [6]. Embolization is another choice for treating pseudoaneurysms, but in the case of supratrochlear artery pseudoaneurysms, it has the risk of blindness. This case has shown that observation helps treat supratrochlear pseudoaneurysm. Thus, it might be a good treatment option before surgical intervention. This treatment method may have some limitations. First, we had no experience with a lesion too large for the wait-and-see when it causes severe mass effects such as intractable headaches, bone erosion, and infectious condition. Second, the thrombosed mass scar does not disappear for a long time, and cosmetic problems may occur.

Conclusion

Pulsatile and soft masses continuous with an artery path with a history of trauma should be considered pseudoaneurysms. Color Doppler sonography is a convenient and noninvasive modality for diagnosing this lesion and making decisions regarding post-treatment follow-up. Surgical excision is generally the standard treatment. However, if the pseudoaneurysm of the supratrochlear artery is small and contains thrombosis, wait and see might be an effective and noninvasive treatment option.

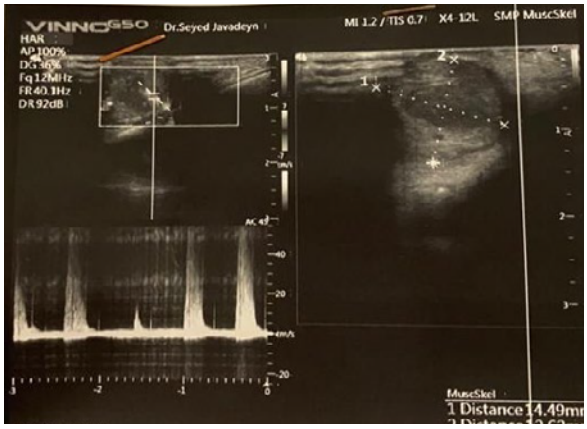

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Figure 2. Pseudoaneurysm measuring 14.5×12.6 mm seen under the skin, originating with a narrow stalk of the supratrochlear artery in sonography

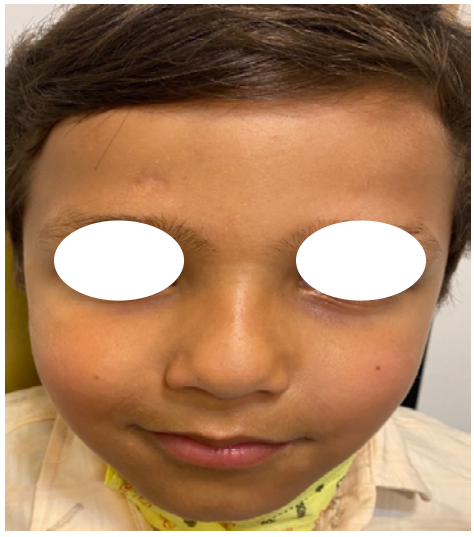

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Figure 3. Complete disappearance of the mass in the follow-up after 5 months

Ethical Considerations

Compliance with ethical guidelines

All study procedures were in compliance with the ethical guidelines of the Declaration of Helsinki 2013.

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Authors contributions

Conceptualization, supervision, investigation, writing the original draft, and funding acquisition: Maliheh Akbarpour; Data gathering, investigation, and resources: Sahar Yousefnejad.

Conflict of interest

The authors declared no conflict of interest.

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