

Case Report

A Rare Case of Spontaneous True Aneurysm of the Occipital Artery

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A 51-year-old man presented with a pulsatile scalp mass over the right occipital region, which had increased in size over the previous 1 month. He had no previous history of head trauma. Three-dimensional computed tomography (3D-CT) angiography of the brain revealed a 3.0 × 1.5 cm occipital artery aneurysm arising from the occipital artery. The occipital artery aneurysm was removed following the ligation of the proximal and distal portion of the occipital artery aneurysm. The histological diagnosis was true aneurysm. To the best of our knowledge, this is the first reported case in the literature.

KEY WORDS : True aneurysm · Occipital artery · Three-dimensional computed tomography angiography.

INTRODUCTION

Aneurysms of the occipital artery are rare lesions, and are usually described as a consequence of infection or autoimmune disease, but are most commonly sequelae of blunt, penetrating, or surgical trauma, and the majority are pseudoaneurysms³⁾. Only 5 cases of traumatic aneurysm of the occipital artery have been reported since the first in 1644¹⁰⁾. We report a very rare case of a spontaneously developed true aneurysm of the occipital artery, which was effectively treated via surgical excision.

CASE REPORT

A 51-year-old male presented with a pulsatile, painless mass in the left occipital area. The mass increased gradually in size. The patient had no history of head trauma. Upon physical examination, the pulsatile, painless mass of the left occipital area was fusiform in shape and approximately 3.0 × 1.5 cm in diameter. Neurological examination was

normal. Three-dimensional computed tomography (3D-CT) angiography confirmed a diagnosis of aneurysm of the occipital artery (Fig. 1A). The patient underwent surgical excision under general anesthesia. After exposure of the distal occipital artery, the aneurysm was carefully dissected from the surrounding tissue (Fig. 2). The proximal and distal portion of the artery were ligated. Finally, the lesion was resected without complications. The gross specimen consisted of tan-colored tissue, measuring 3.0 × 1.5 × 0.8 cm. Histological examination showed that the aneurysm consisted of intima, media, and adventitia that were focally thin and dilated (Fig. 3). The histological diagnosis was true aneurysm. The patient was discharged to his home on



Fig. 1. Three-dimensional computed tomography (3D-CT) angiography showing preoperative image and postoperative image. A : Preoperative 3D-CT angiography showing an aneurysmal dilatation visible at the occipital artery (arrow). B : Postoperative 3D-CT angiography showing the disappeared occipital artery aneurysm.

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post-operative day 3, after an uneventful course. 3D-CT angiography obtained 4 months postoperatively showed no recurrence of lesion (Fig. 1B).

DISCUSSION

Aneurysms of the distal branches of the external carotid artery are rare events and are generally described as sequelae of blunt, penetrating, or iatrogenic trauma³. Traumatic aneurysms usually develop 2 to 6 weeks after blunt head trauma. The occipital artery has been conceptualized as having three segments, from proximal to distal: the digastric, sub-occipital, and sub-galeal segments, respectively¹. In the region of the superior nuchal line, the sub-occipital segment of the artery crosses the sagittal plane, which intersects the midpoint of the lambdoid suture on that side². In this segment, the artery becomes vulnerable to blunt trauma due to its exposed position overlying the occipital bone. There have been only five previous reports of traumatic aneurysm of the occipital artery, and all of these reports identified it as a pseudoaneurysm. True aneurysm of the occipital artery is vanishingly rare. Artherosclerotic change and hemodynamic stress to the arterial wall might be essential to its development. Congenital vulnerabilities of the arterial wall, such as defects of the elastic membrane, may also contribute to the development of a true aneurysm⁶. A true aneurysm involves all three vessel layers—the intima, media, and adventitia—and represents a localized or diffuse dilation of the vessel wall.

The diagnosis for this disorder can be readily made from a complete history and physical examination. A thorough history and physical examination will generally prove adequate for the recognition of an occipital artery aneurysm or pseudoaneurysm. Differential diagnosis of the occipital scalp mass should include lipoma, hematoma, epidermoid inclusion cyst, abscess, aneurysm, arteriovenous fistula, meningocele, and lymphoid hyperplasia⁴. Diagnostic methods other than physical examination may be necessary, but are usually not essential for a correct diagnosis. Duplex ultrasound, a noninvasive diagnostic test, shows fusiform dilation and turbulent intraluminal arterial flow¹¹. Angiography is the gold standard for defining these lesions and differentiating them from arteriovenous malformations, which can also present as pulsatile subcutaneous masses^{5,13}. Angiography also offers the option of immediate treatment via embolization of the pseudoaneurysm sac or the associated artery. Recently, 3D-CT angiography is the most definitive non-invasive technique for the diagnosis of these lesions. It provides important information on the vessel of origin, exact luminal morphology, and relationship to adja-



Fig. 2. Intraoperative digital photograph showing aneurysm of the main trunk of the occipital artery.



Fig. 3. Histopathologic examination showing a true aneurysm which includes all three vessel layers: the intima, media, and adventitia (A: hematoxylin and eosin, $\times 40$), and represents a localized or diffuse dilation of the vessel wall (B: hematoxylin and eosin, $\times 100$).

cent osseous and soft tissue structures for therapeutic decision-making¹⁴.

Indications in the treatment of occipital artery aneurysms include the reduction of the risk of hemorrhage, pain relief, and in most cases, the alleviation of cosmetic disfigurement³. The anatomic relationship of the occipital artery and the occipital nerve has been cited as the cause of neurovascular compression syndromes, resulting in occipital neuralgia¹². Treatment options in recent years have included the simple resection of the pseudoaneurysm, proximal ligation of the

parent artery, trapping of the pseudoaneurysm, and percutaneous ultrasound-guided thrombolysis of the lesion, as well as endovascular arterial embolization and coil occlusion^{8,9}. As the occipital artery is subcutaneous in most of the locations affected by aneurysms, direct surgical ligation or excision of the aneurysm has been most frequently reported⁸. As the occipital artery courses over the superior nuchal ridge, it crosses over and contacts the greater occipital nerve in the nuchal subcutaneous layer⁷. It is important that the contact between the aneurysm and the greater occipital nerve be located at surgery, thereby reducing the potential risk of nerve damage associated with injury in this anatomic region¹¹. If left untreated, the lesion can expand, progress, and become painful. Therefore, correct diagnosis and proper treatment is necessary to reduce morbidity from occipital artery aneurysms.

CONCLUSION

The majority of occipital artery aneurysms are pseudoaneurysms. But, we report a very rare case of a spontaneously developed true aneurysm of the occipital artery. It presents as a painless swelling, sometimes associated with headache, or other vague symptoms. Neurologic complications are very rare. The diagnosis is made by physical examination, 3D-CT angiography. Treatment of the aneurysm is surgical resection.

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