CASE REPORT

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Scalp Arteriovenous Malformation: A Rare Case

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ABSTRACT Peripheral arteriovenous malformations (AVMs) are rare vascular pathologies. We report a case of scalp AVM presenting with a palpable mass in the left temporal region and tinnitus. Thirty-year-old female patient had no previous complaints or trauma history in her anamnesis. Physical examination revealed a 3x1 cm pulsatile mass in the left superficial temporal artery tracing. Findings consistent with AVM were detected in the Doppler ultrasonography. After informed consent was obtained, the mass was surgically excised under local anesthesia and discharged the same day. Arteriovenous malformations can develop in 2 ways. Congenital AVMs are more common and develop as a result of defects in the angiogenesis process. The acquired type is less common and usually develops secondary to trauma. The clinical presentation is usually asymptomatic. Symptomatic cases with progressive growth need to be treated. Treatment may involve embolization or ligation of the feeding artery or surgical excision.

Keywords: Arteriovenous malformation; scalp

Arteriovenous malformations (AVMs) are a type of vascular anomaly resulting from developmental defects in arterial and venous structures but do not involve endothelial cell hyperplasia. It is rare and affects less than 1 percent of the general population, but it can cause significant life-long morbidity in the affected individual.[1] Arteriovenous malformations are made of dysmorphic arteries and veins, as well as vessels with morphologic features intermediate between a vein and an artery. The dysmorphic arteries show disruption of the internal elastic. Due to the high blood pressure, the venous channels many times develop a fibrotic wall, devoid of elastic fibers. Due to the high flow, thrombotic phenomena are not a feature of AVMs.[2]

AVMs can occur in any organ, but most commonly affects the head and neck. Intracranial AVMs are much more common than extracranial AVMs.[3] Extremity AVMs, which are equally distributed between the upper and lower extremities, are the second most common.[4] AVMs have also been reported in the abdomen and viscera of the trunk. In this article, a case of scalp AVM presenting with a palpable mass in the left temporal region and tinnitus was presented.

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A 30-year-old female patient had no previous complaints or trauma history in her anamnesis. Physical examination revealed a 3x1 cm pulsatile mass in the left temporal region, located in the superficial temporal artery tracing starting approximately 1 cm superior to the tragus and extending to the temporal region (Figure 1A). Doppler ultrasonography (DUSG) revealed findings compatible with AVM. The patient was informed about her disease, the in-

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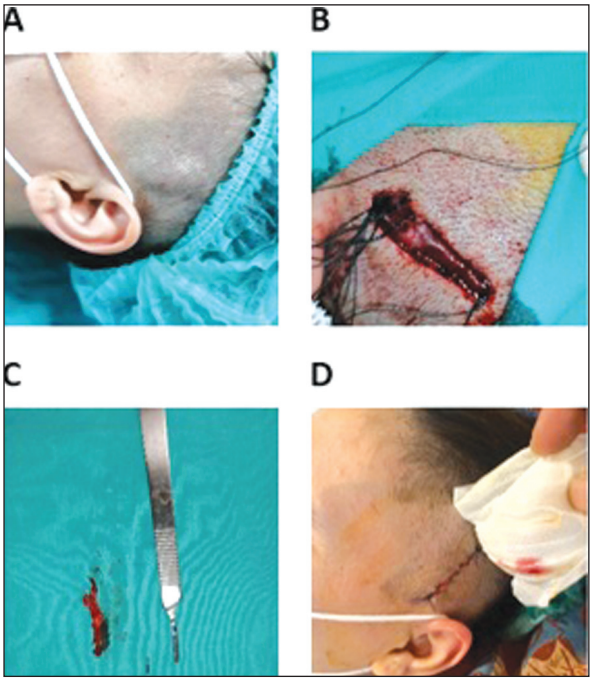

FIGURE 1: A: View of the scalp mass, B: Operative view, C: Excision of the mass, D: Postoperative scapular view.

formed consent was obtained, and the operation was recommended. After obtaining her consent, she was operated under local anesthesia. A skin incision was made over the mass, approximately 2 cm superior to the tragus. After carefully excising the capsule of the arteriovenous malformation, the feeding arteries were ligated (Figure 1B). The mass was completely excised to prevent the risk of recurrence (Figure 1C). After bleeding control, the skin was closed primarily in the anatomical plane (Figure 1D). The patient, was discharged on the same day without any problems during follow-up. Histopathological examination confirmed the lesion was an AVM. No complications or recurrences was observed in the 3-month follow-up.

DISCUSSION

AVM of the scalp is a rare anomaly. The most common sites of involvement are frontal, temporal and parietal regions. The origin of the main feeder artery is in the subcutaneous tissue of the scalp. The origin of these main feeders is mostly from the external carotid, occipital, and supraorbital arteries.[5] In our case, the AVM originated from the superficial temporal artery.

Scalp AVMs can be spontaneous or traumatic. Approximately 10-20% of scalp AVMs develop after blunt or penetrating trauma.[6] The duration of post-traumatic AVM development may be different and may occur months or years later. The course of the superficial temporal artery is relatively long and close to the subcutaneous tissue. After crossing the zygomatic process in front of the tragus, it is protected only by the temporalis muscles during part of its course, between the outer edge of the skull and the subcutaneous tissues together with its vein. Therefore, the superficial temporal artery is involved in 75% of traumatic aneurysm cases.[7] There was no history of trauma in our case.

Peripheral arterial aneurysms and AVMs usually have an asymptomatic course, but they have a clinical spectrum ranging from cosmetic problems, compression findings, bleeding, infection and even heart failure depending on the localization and size. Our patient presented with headache and tinnitus. Trauma, pregnancy, or hormonal changes can worsen the symptoms. The gold standard method in diagnosis is conventional angiography, but DUSG can also be used because it is easily applicable and noninvasive.[8] Treatment options include ligation or embolization of the feeding arteries, surgical resection or a combination of these.[9] Surgical excision is the most common and effective method in the treatment of scalp AVM.[10] Therefore, we performed surgical treatment in our patient.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Abdullah Güner, Yüksel Dereli;* ***Design:*** *Abdullah Güner, Yüksel Dereli;* ***Control/Supervision:*** *Abdullah Güner,*

Yüksel Dereli; ***Data Collection and/or Processing:*** *Abdullah Güner, Yüksel Dereli;* ***Analysis and/or Interpretation:*** *Yüksel Dereli;* ***Literature Review:*** *Abdullah Güner;* ***Writing the Article:*** *Abdullah Güner;* ***Critical Review:*** *Yüksel Dereli;* ***References and Fundings:*** *Yüksel Dereli;* ***Materials:*** *Abdullah Güner.*

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