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Vanishing Tumor of the Temporalis Muscle: Repeated Hemorrhage in an Intramuscular Venous Hemangioma

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Summary: We present a rare case of venous hemangioma in the temporalis muscle that repeatedly and spontaneously enlarged and disappeared over several months. MR imaging depicted multiple fluid-fluid levels in the tumor alongside characteristic findings of hemangioma, indicating that the peculiar course was due to hemorrhage and blood resorption within the tumor.

Index terms: Hemangioma; Muscles, neoplasms; Children, neoplasms

Hemangiomas arising in the skeletal muscle account for only about 0.8% of all vascular tumors in soft tissue (1, 2). Those in the head and neck region represent less than 20% of intramuscular hemangiomas and predominantly affect the masseter and trapezius muscles. Therefore, the presence of a hemangioma in the temporalis muscle is extremely rare. We found nine cases described (3–9). Overt hemorrhage in hemangiomas of the soft tissue is rare, although minute hemorrhage is often encountered during histologic examination of these tumors. We report a case of intramuscular venous hemangioma of the temporalis muscle that followed a peculiar clinical course as a "vanishing tumor" owing to repeated intratumoral hemorrhage.

Case Report

A 12-year-old girl had a spontaneously appearing mass in the right temporal region that was accompanied by slight throbbing pain. At 8 years of age, she had had a mass measuring 3 cm in the same region. At that time, the size fluctuated and the mass finally disappeared 1 or 2 months later. The same kind of mass had also developed at the age of 10 years, which followed the same course. There was no history of head trauma. The current mass measured 3 × 4 cm; it was an elastic, soft, painless tumor located in the temporal fossa above the zygomatic arch. No bruit or thrill was noted. Neurologic examination and laboratory findings were unremarkable. A plain computed tomographic (CT) scan showed a cystic mass in the temporalis muscle containing a fluid-fluid level (upper-low and lower-high density; Fig 1) and no calcification. After administration of contrast material, linear areas of enhancement were noted. On a T1-weighted magnetic resonance (MR) image, the mass appeared as an isointense lesion containing linear areas of high signal intensity. Numerous septalike structures were seen after administration of contrast material (Fig 1B and C). A T2-weighted MR image showed multiple fluid-fluid levels; an isointense lower layer and a hyperintense upper fluid, especially in the upper portion of the mass (Fig 1D), and a large single fluid-fluid level in the lower portion were noted. Right external carotid angiography revealed an expansive avascular lesion.

At surgery, a multicystic tumor was seen surrounded by scar tissue and containing old blood and clots. Histopathologic examination revealed markedly dilated abnormal veins, whose wall was thick and organized by collagenous fibers in the atrophic muscle tissue. Some of the veins were obstructed or contained organized thrombi. The mass was diagnosed as venous hemangioma.

Discussion

The peculiar course of the present case, in which the tumor repeatedly and spontaneously appeared and regressed, was thought to be caused by hemorrhage. MR imaging and surgery showed resolving hematoma within the tumor, and the time course over which the tumor disappeared (1 to 2 months) was consistent with the time required for a hematoma to be absorbed by soft tissue. Intramuscular hemangiomas are usually noticed as a slowly growing mass or as pain during movement of the affected muscle in young patients (1–3, 8, 10). In reports of soft-tissue hemangiomas, hemorrhage in the tumors has been described as fluid-

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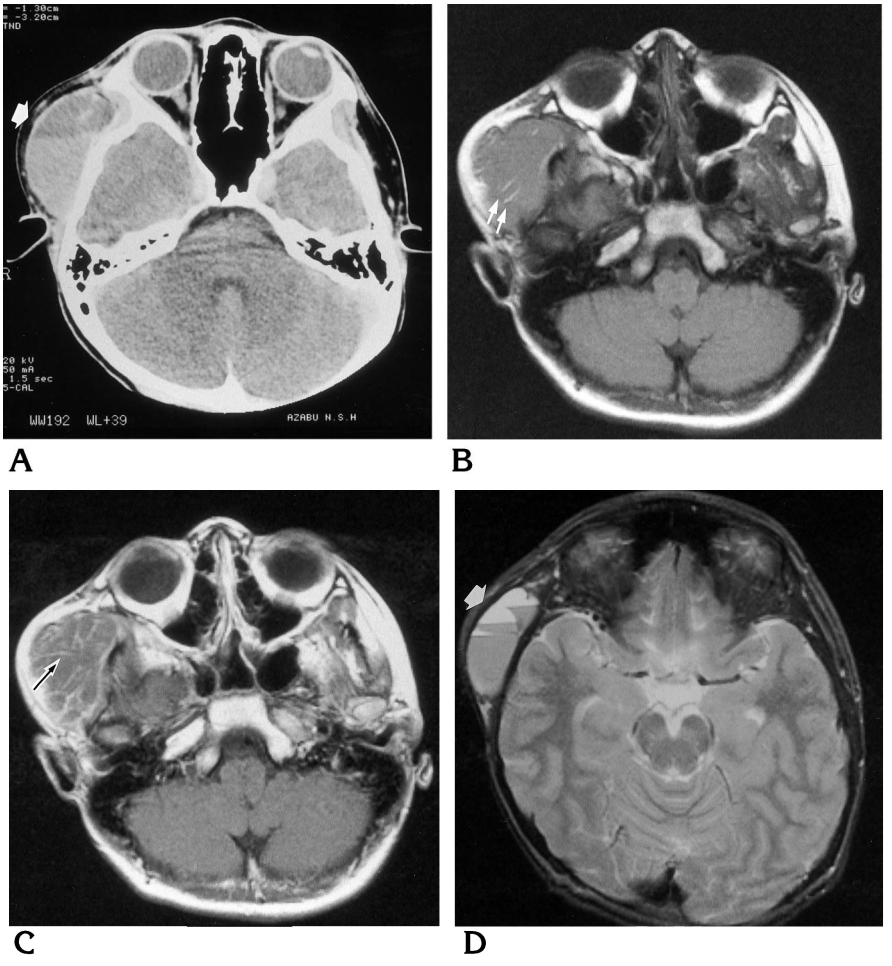

Fig 1. A 12-year-old girl with a mass in the right temporal region.

A, CT scan shows a mass with a fluid-fluid level (*arrow*) in the right temporalis muscle.

B, T1-weighted MR image (500/20, [repetition time/echo time]) shows an isointense mass containing linear high-signal areas (*arrows*).

C, Contrast-enhanced T1-weighted MR image (500/20) shows multiple septalike structures (*arrow*).

D, T2-weighted MR image (3000/80) shows multiple fluid-fluid levels (*arrow*).

fluid levels on CT or MR studies (11, 12). Although it is not uncommon to find a minute hemorrhage and/or hemosiderin deposit in hemangiomas at histopathologic examination (13), overt hemorrhage clinically recognizable in intramuscular hemangiomas is considered rare. The explanation may be that hemorrhage can be missed even by the patients themselves especially when the tumor is deep-seated in a large muscle. In cases of intracerebral hemangiomas, the natural course has been relatively well studied; rates of hemorrhage in a cavernous hemangioma and venous hemangioma were reported to be 0.10% to 0.70% a year (14, 15) and 0.22% a year (16), respectively. Thus, in contrast to tumors in the brain, in which small hemorrhages can cause serious symptoms, in intramuscular hemangiomas, the major symptom is likely to be an expansive mass.

The fluid-fluid levels noted in the present case are not specific to intramuscular hemangiomas; however, MR imaging showed some of the characteristic findings of intramuscular hemangiomas. Characteristically, intramuscular hemangiomas appear to be isointense on T1-weighted images with high signal areas caused by fatty replacement and low signal areas representing flow voids (9, 17–20). The present intramuscular hemangioma was also isointense, containing thin linear high-signal areas; however, it was not clear that these high-signal areas were due to fatty replacement. A serpiginous flow pattern, which is seen in cavernous hemangiomas or at times in venous hemangiomas on T2-weighted MR images, was not seen. Instead, our case showed fluid-fluid levels on T2-weighted images. Taken together with findings of an avascular mass at angiography, it was possible to diagnose the present tumor as a low-flow vascular tumor before surgery. Because intramuscular hemangiomas are quite rare, over 90% of cases are misdiagnosed before surgery (17). Also, in certain cases, intramuscular hemangiomas might be difficult to differentiate from malignant tumors. The MR findings described here are clues for diagnosing intramuscular hemangiomas.

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