Knee hemangioma - Diagnostic dilemma: A case report

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ABSTRACT

A hemangioma is a benign tumor of the endothelial cells that line the blood vessels. It is characterized by an increased number of normal or abnormal vessels filled with blood. Usually, it presents as a painful or painless swelling in extremities. Surgical excision is the treatment of choice for large excisable tumor. Here, we present the case of a young girl, referred to our department by orthopedician with a complaint of painful swelling below the right knee that was gradually increasing in size for the past 7 years. Initially, it was misdiagnosed as a hematoma. Hence, incision and drainage were tried but unsuccessful. Finally, computed tomography angiography showed that it was a vascular structure like the hemangioma. The aim of presenting this case is to create awareness and acknowledge the possibility of a hemangioma arising from a joint is usually rare, but it should be kept as a differential diagnosis.

Key words: *Arteriovenous malformation, Hemangioma, Soft tissue tumor, Vascular tumor*

Hemangiomas constitute 7–10% of all soft tissue tumors. Intramuscular hemangioma is a rare entity accounting for 0.8% of all hemangioma [1]. There is a general agreement that females are more commonly affected than males [2]. The younger age groups are most frequently affected with 85% of cases under the age of 30 years, among which 30% are seen in lower extremities with quadriceps being the most common muscle involved. Intramuscular hemangioma may present as a cause of persistent pain, swelling and presents as a perceived injury [3].

The term "hemangioma" is commonly misused to describe any vascular abnormality, including vascular malformation. Hemangioma is hamartoma or developmental anomalies in which natural cells (in contrast to neoplasms) are present in abnormal numbers. The vast majority of hemangioma are cavernous (50%), followed by capillary (25%) type. Cavernous hemangioma is larger, deeper and is composed of dilated, blood-filled spaces lined by flattened endothelium [1]. Skeletal muscle hemangioma is uncommon soft tissue tumors that are completely treatable. The knowledge of their natural history, clinical findings, and imaging appearances are of great importance for proper diagnosis. These lesions are often diagnosed late or misdiagnosed as abscess, lipoma, sarcoma, fibroma, muscle hernia, dermoid cyst, lymphatic glands, or even synovitis when presenting juxta-articular.

Diagnostic ultrasound is an appropriate initial imaging modality for suspected hemangioma, although magnetic resonance imaging (MRI) is the investigation of choice [4]. In the present scenario, hemangioma is the interest of a vascular surgeon because of their difficult location and diagnostic dilemma. Here, we present the case of a 14-year-old female with right-sided below knee hemangioma for which surgical excision was performed.

CASE REPORT

A 14-year-old girl presented with a complaint of painful swelling, size of 7 cm × 6 cm below the right knee. This swelling was gradually increasing in size since 7 years and slightly painful for the patient. The patient was uncomfortable with that swelling and went to a surgeon and an orthopedician for its removal. There was no association of constitutional symptoms, bleeding tendencies, or other joint involvement, and no history of trauma.

Clinical examination revealed an oval-shape, boggy-shaped swelling in the upper anterolateral aspect of the right leg just below the knee joint. The overlying skin was normal with no discoloration and the local rise in temperature. There was no distal neurovascular deficit or bruit. Limb length was equal to the contra-lateral limb. The swelling was slight compressible, non-pulsatile and was felt more prominent on standing. Knee and ankle movements were of full range and vitals were within normal range.

All routine investigations (blood parameters) were within normal limit. Ultrasound showed a heterogeneous lesion predominantly hypoechoic, of size 57 mm × 33 mm noted, suggestive of muscle tear with a hematoma. Angiography right knee showed serpentine tubular irregular vessels in the tissue below the knee, supplied by an anterior-tibial artery probably suggestive of hemangioma (Fig. 1).

The patient was operated under general anesthesia; hemangioma (Fig. 2a) was excised completely, and feeding vessels were ligated. The tumor did not involve synovium or joint, only inter/intra-muscular plane was involved (Fig. 2b). Histopathology report of the tissue was sent which showed skeletal muscle bundles interspersed with lobules of thick-walled blood vessels, few capillary-sized blood vessels filled with red blood cells, areas of calcification, and a peripheral rim of adipose tissue. These all findings were in favor of the diagnosis of cavernous hemangioma.

Post-operative and follow-up period was uneventful. Recurrence is common in vascular tumors if not excised completely, but in this case, a patient came after 6 months without any symptom and swelling at the previous site.

DISCUSSION

Hemangioma or vascular malformations are rare at the knee joint. Hemangioma and arterio-venous malformations (AVM) are very well described in the literature, but very few case reports are available related to hemangioma on joints or at the knee joint. Synovial hemangioma at the knee joint case is reported earlier, but in our case, no synovium or membrane of the knee joint was involved [5]. More than 90% of these lesions are misdiagnosed preoperatively, as clinicians fail to consider the diagnosis because intramuscular hemangioma is often deep-seated and extremely variable in size and consistency. Our patient was initially evaluated by the department of surgery and orthopedics as a hematoma or synovial cyst.

Clinically, hemangioma presents with swelling and pain. History of trauma is usually present in 17% of the patients, but in our patient, there was no history of trauma [2]. Scott in 1957 stated that only 8% of the hemangioma was correctly diagnosed preoperatively [2]. It was the only histopathology in our case to conclude that the excised tissue was cavernous hemangioma.

Chadha and Singh reported a similar case report of swelling around the knee in an adolescent patient, which was ultimately diagnosed and treated as intramuscular hemangioma of the quadriceps muscle. He concluded that intramuscular hemangioma is rare but pose quite a diagnostic challenge [1]. Hence, treating surgeon should be able to differentiate intramuscular hemangioma with other differentials.

The most common differential diagnosis of hemangioma is AVM. AVMs are the result of errors in morphogenesis and are divided into subtypes based on the constituent vessels: Capillary, venous, arterial, lymphatic, and combined forms. Hemangiomas, on the other hand, results from a derangement in angiogenesis with an exuberant proliferation of vascular rudiments [6]. Additional fundamental differences between hemangioma and AVMs include the timing of their clinical appearance, their growth patterns, biologic behavior or growth characteristics of their endothelial lining in cell culture, the stromal cellular and extracellular matrix compositions, and the response of the lesions to pharmacotherapeutic agents. Hemangiomas appear usually early in life, while AVMs become noticeable later in life, with few as late as during puberty or even later. Capillary and lymphatic malformations are usually evident at birth or within the 1st year of life, venous malformations any time between birth and early adulthood, and arterial malformations and AVMs often at puberty or during pregnancy because of the associated hormonal changes. Moreover, the swelling does not decrease in size after aspiration in case of hemangioma.

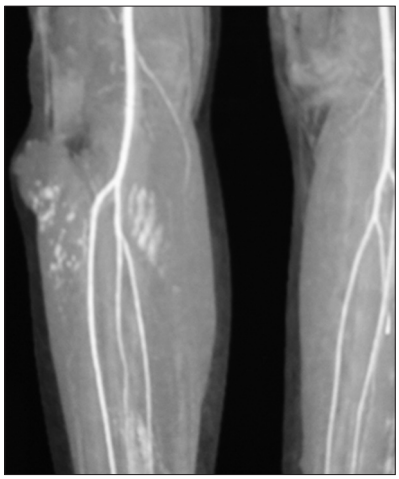

Figure 1: Computed tomography angiogram of lower limb showing feeding vessels

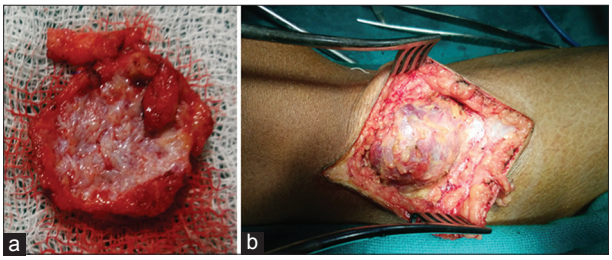

Figure 2: (a) Excised vascular tumor. (b) Intraoperative photograph

Complications of the hemangioma include functional impairment, skin necrosis of the overlying skin, bone erosion, entrapment of vessels and nerves, cardiac failure, thrombocytopenia, and consumptive coagulopathy (Kasabach-Merritt syndrome). Radiographs are generally inconclusive revealing only an abnormal soft tissue mass. Investigations such as ultrasound can diagnose the lesion but may not be able to delineate its extent. The MRI or computed tomography angiogram is preferred for identifying the exact location, extent, and size of the lesion for planning surgical excision, which is the most preferred treatment for these lesions. In our case, the histopathology confirmed that the tumor was hemangioma.

CONCLUSION

The aim of presenting this case is to emphasize that in cases with chronic or recurrent painful swelling in a muscle or adjacent to a joint with or without an episode of trauma especially in a young individual should alert the surgeon to this diagnosis.

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