Intramuscular haemangioma of vastus lateralis presenting as stiffness of knee in an adolescent patient

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Abstract

Introduction
Intramuscular haemangioma may present in later stages of life as a cause of persistent symptoms and is frequently misdiagnosed, leading to a diagnostic delay of many years. Non-specific presentation like knee stiffness is very rare and is not reported yet in the literature.

Case Report
We present a case of an atypical presentation of intramuscular haemangioma as stiffness of the knee in a 16-year-old boy with a diagnostic delay of 2 years.

Conclusion
Intramuscular haemangioma should be considered in the differential diagnosis of unexplained stiffness of the nearby joint and should be evaluated early to prevent diagnostic delay and achieve good results.

Introduction
Haemangiomas are common benign soft tissue tumours, comprising 7–10% of all soft tissue tumours¹. The most common¹ cutaneous haemangiomas are usually observed in childhood. Intramuscular haemangiomas make up 0.8% of all haemangiomas². Intramuscular haemangiomas may present in the later stages of life as a cause of persistent symptoms. Non-specific presentations are also common and may lead to a diagnostic delay of many years⁴. Magnetic resonance imaging (MRI) is the investigation method of choice. Intramuscular haemangioma should be considered in the differential diagnosis of unexplained pain and swelling in a muscle⁵.

Case Report
We present a case of an atypical presentation of intramuscular haemangioma of the vastus lateralis as knee stiffness. Various treatment methods were available in the past. Angiography can help find some feeder vessels, and embolisation can also be done in the same session. In the absence of specific vessels to embolise, complete surgical excision is the treatment of choice.

A 16-year-old boy presented with stiffness of the left knee. It was most noticeable when he climbs upstairs and runs. The symptoms had been present for about 2 years. The patient complained of occasional pain around knee while running or sporting activities. There was tender swelling on the outer aspect of the distal third of the thigh. The swelling was prominent on forceful contraction of quadriceps. The range of motion of knee was only 0–90°. There was no history of major trauma, instability, or locking. His other medical history was unremarkable. MRI showed areas of altered intensity, which were hyperintense on T1w and T2w sequences with inhomogeneous enhancement on post contrast studies on the lateral aspect of the thigh (vastus lateralis) (Figures 1 and 2).

The patient was referred to a vascular surgeon, who opined that the lesion was too big to excise. Then, surgical excision of the lesion was planned. Intraoperatively, there was a big lesion involving the vastus lateralis. Grossly, the distended vessels were observed to be crossing the lesion. It was bluish in colour and about 4 × 3 cm in size (Figure 3). The lesion was completely excised. Haemostasis was achieved and fluffy cotton and bandage dressing was done. Postoperative period was uneventful and knee range of motion exercises was started. After 3 months of follow-up, the knee was found to be free with the range of motion from 0 to 110°.

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Figure 1: Coronal MRI showing lesion in distal lateral aspect of the thigh (vastus lateralis). MRI: magnetic resonance imaging.

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of 11 cases of intramuscular haemangioma. Watson et al. found that 16% of all haemangiomas had more than one site.

Clinically, intramuscular haemangiomas usually present with pain (55%) and swelling, contrary to the present case, with symptoms usually lasting 1–5 years (range 0–70 years). Haemangiomas may have a purpuric discolouration overlying (from cutaneous extension) the lesion. Superficial dilated veins may also be seen with cutaneous extension. A mass is found in 98% of cases. The mass may be pulsatile or have a bruit. Contraction of the muscle may increase the size of the lesion, as in the present case. The mass is usually moveable transversely, but not in the line of the fibres. A history of trauma is uncommon (17%), with tenderness and functional impairment in about 25% of affected individuals. Over 90% are misdiagnosed before surgery during 1957s; advances in investigative techniques might have altered this figure. Complications may include a mass (direct pressure) effect, cardiac failure from arteriovenous shunting and a consumptive coagulopathy (Kasabach–Merritt syndrome).

Calcified phleboliths may be seen on radiographs in 25% of cases. MRI has superseded other investigations, especially before surgery, as it is non-invasive, can delineate the extent of the lesion, and can differentiate haemangioma from an invasive malignant process. Angiography is helpful in delineating if there is a vascular feeder that can be embolised. A group of patients investigated with computed tomography revealed that 9 out of 12 lesions were more extensive when explored at surgery.

Various treatment methods were available in the past, which included radiotherapy, open surgical resection, arthroscopic excision, arthroscopic ablation with a holmium, YAG laser, embolisation, and the use of sclerosing agents, cautery and freezing.

Discussion

Haemangiomas of bone constitute 1% of all primary bone tumours. Soft tissue types are even less common and often arise in the skin and subcutaneous tissue. Muscle and synovial linings are less frequent sites of origin. Naturally, these haemangiomas grow in size slowly. Their growth may be accelerated with a growth spurt as in case of the patient mentioned above or trauma. They can spontaneously regress. Malignant transformation of these is rare. They are usually detected early. Despite intramuscular lesions being concealed, 94% present before the age of 30 years. Intramuscular haemangiomas are more common in the lower limbs (42%–45%). The thigh is the most common intramuscular site (17%–19%) as explained in the case above. Wild et al. found the quadriceps to be affected in 5 out of 11 cases of intramuscular haemangioma. Watson et al. found that 16% of all haemangiomas had more than one site.

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Figure 2: Axial MRI scan of the thigh showing lesion in vastus lateralis.

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In 1974, a review on intramuscular haemangioma conducted by McNeill and Ray\textsuperscript{15} revealed following:

- Better outcome if lesion is localised
- Good results with complete excision
- Partial excision resulting in continued symptoms
- Limited success if treated non-operatively
- Amputation is a last resort
- Partial excision is associated with an 18\% recurrence rate\textsuperscript{16} because of the infiltrative growth pattern

**Conclusion**

Intramuscular haemangioma around the knee should be kept in mind in case of unexplained stiffness of the knee joint. MRI should be done if suspected to prevent diagnostic delay and should be treated by wide local excision if possible to achieve good results.

**Abbreviation list**

MRI, magnetic resonance imaging.

**Consent**

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

**References**


**Figure 3:** Intraoperative findings of the lesion.