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Synovial Hemangioma: An Overlooked Cause of Chronic Knee Pain in Children

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Learning Point of the Article:

Synovial hemangioma is an important but often overlooked cause of atraumatic chronic knee pain and recurrent swelling in children. A high index of suspicion, coupled with MRI, is crucial for diagnosis. Open en bloc excision is recommended to prevent recurrence and ensure favorable clinical results.

Abstract

Introduction: Synovial hemangioma of the knee is a benign vascular malformation that is often misdiagnosed due to its non-specific symptoms.

Case Report: We present a case involving a 7-year-old male child with chronic knee pain and swelling in the left knee, which remained undiagnosed for over 3 years. Magnetic resonance imaging revealed a synovial vascular malformation. Surgical excision of the lesion and partial synovectomy were performed, and histopathological analysis confirmed the diagnosis of synovial hemangioma. After 18 months of follow-up, there were no signs of recurrence or recurrent joint effusion.

Conclusion: Synovial hemangioma of the knee, although uncommon, should be considered as a differential diagnosis in cases of chronic knee pain and swelling. En-bloc excision is the treatment of choice to prevent recurrence, yielding good clinical outcomes.

Keywords: Synovial hemangioma, chronic knee pain, pediatric knee swelling, synovial vascular malformation, atraumatic knee pain.

Introduction

Synovial hemangioma is a very rare benign vascular malformation of joint cavities [1-4]. It can be multifocal or localized in the same joint cavities. It is a rare cause of knee pain and swelling. It is usually seen in young adults or children [5-8.]. Due to non-specific presentation, it is often misdiagnosed. The radiological, histopathological finding helps diagnosing of the lesion [9]. After obtaining both informed and written consent from the guardian of patient, we report a rare case of synovial hemangioma and its management to create awareness about a rare synovial hemangioma arising from a joint which is although rare should always be considered as a differential diagnosis.

Case Report

A 7-year-old child presented with a history of pain and swelling in the antero-medial aspect of his left knee joint for more than 3 years. He had previously received treatment only in the form of simple analgesics. The patient had a history of atraumatic recurrent effusion in his left knee. Multiple consultations with orthopedic surgeons over this 3-year period yielded no diagnosis. On examination, a soft, non-tender, palpable 2 cm × 2 cm mass was present on the antero-medial aspect of his left knee (Fig. 1). In full flexion, the mass appeared more pronounced. It was compressible and filled back when the pressure was released. The patient had a near normal range of motion and no signs of instability. There was no limb length discrepancy or cutaneous lesions. There was no involvement of any other joints, no

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Author's Photo Gallery


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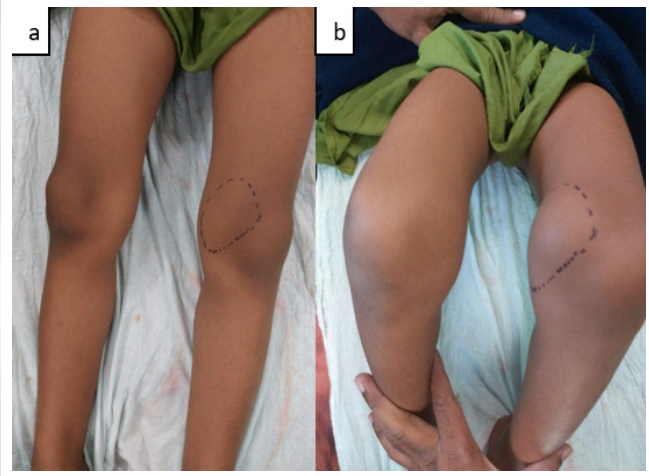

Figure 1: (a and b) Clinical photographs swelling of anteromedial side of left knee in pediatric age.

constitutional symptoms, and no chronic medical conditions. Immunization and developmental milestones were normal. Laboratory tests, including a complete coagulation profile, were within normal range. His medical, developmental, and family histories were unremarkable. Plain radiographs and contrast magnetic resonance imaging (MRI) scans were obtained (Fig. 2). The plain radiographs showed no abnormalities, but the MRI was suggestive of a vascular synovial tumor. The differentials considered were synovial haemangioma and synovial sarcoma.

An open excision of the lesion was performed along with partial synovectomy around the medial patellofemoral compartment (Fig. 3a and b). Some surrounding tissue showing bluish discoloration was cauterized to prevent post-operative hemorrhage. The excised tissue specimen measured 4 × 3 × 0.5 cm and was sent for histopathological examination (Fig. 3c). Histological examination confirmed a synovial hemangioma of the cavernous type (Fig. 3d). The post-operative period was uneventful. Physiotherapy of the left knee joint was started, and at 18 months follow-up, the range of motion of the left knee joint was within normal limits with no history of recurrent effusion in the left knee.

Discussion

About 0.07% of all soft-tissue tumors were synovial hemangioma and of all resected hemangiomas 0.78% were synovial hemangioma [10]. It can occur in an any joint but knee joint is the most common site [11,12]. It occurs most frequently in young adults and children, with male predominance. The patient usually presents with a history of knee joint pain with atraumatic recurrent bloody effusions [13, 14]. There is often a long gap between the onset of symptoms and in diagnosis due to its non-specific symptoms. Literature even reports a delay of up to 20 and 40 years in diagnosis [14-16]. In our case, also there was history of atraumatic recurrent spontaneous effusion of the knee joint for more than 3 years in a 7-year-old male child with normal coagulation parameters and other blood investigations. It gives a clue for the possibility of a synovial hemangioma. Plain X-ray radiograph is often normal and of poor diagnostic value. It may show soft-tissue density, suggesting joint effusion or a mass. It may contain amorphous calcifications or phleboliths and this is pathognomonic. In <5% cases, they show osteoporosis, periosteal reaction, cortical destruction, early maturation of the epiphyses, and a discrepancy in leg length or even arthropathy simulating hemophilia [17]. MRI with contrast become the main diagnostic method for the diagnosis and treatment planning of synovial lesions [18,19]. The differential diagnosis includes mainly pigmented villonodular synovitis, synovial sarcoma and other arthropathies (hemophilic arthropathy, synovial osteochondromatosis rheumatoid arthritis, and juvenile chronic arthritis) are usually

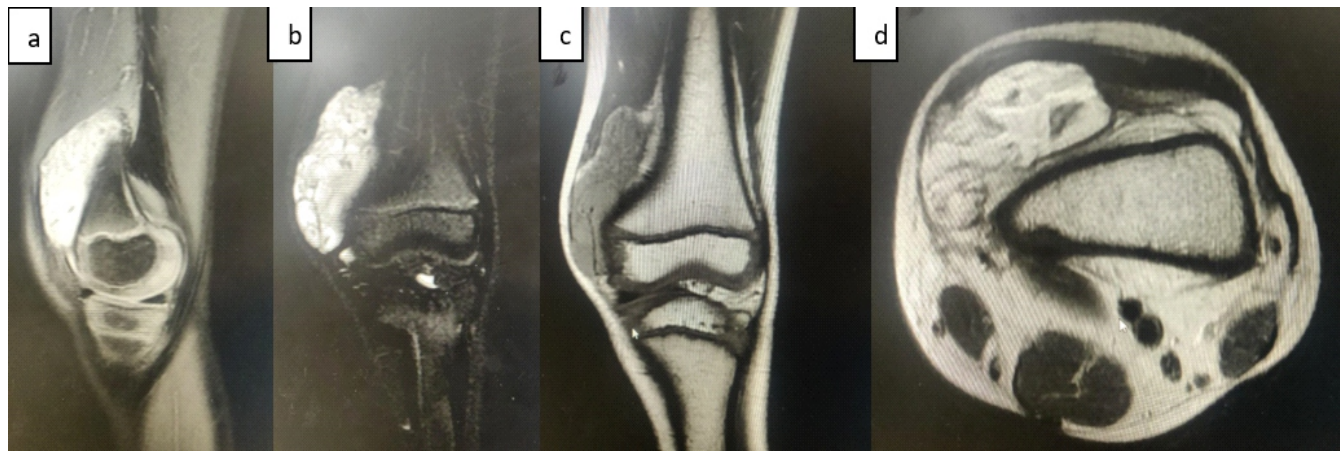

Figure 2: (a-d) Magnetic resonance imaging scan showing a large multi lobulated hyperintense lesion with blood fluid, a hypointense lobulated lesion at anteromedial deep inter and intra-muscular compartment at distal femur (T1) suggestive of a vascular synovial tumor.

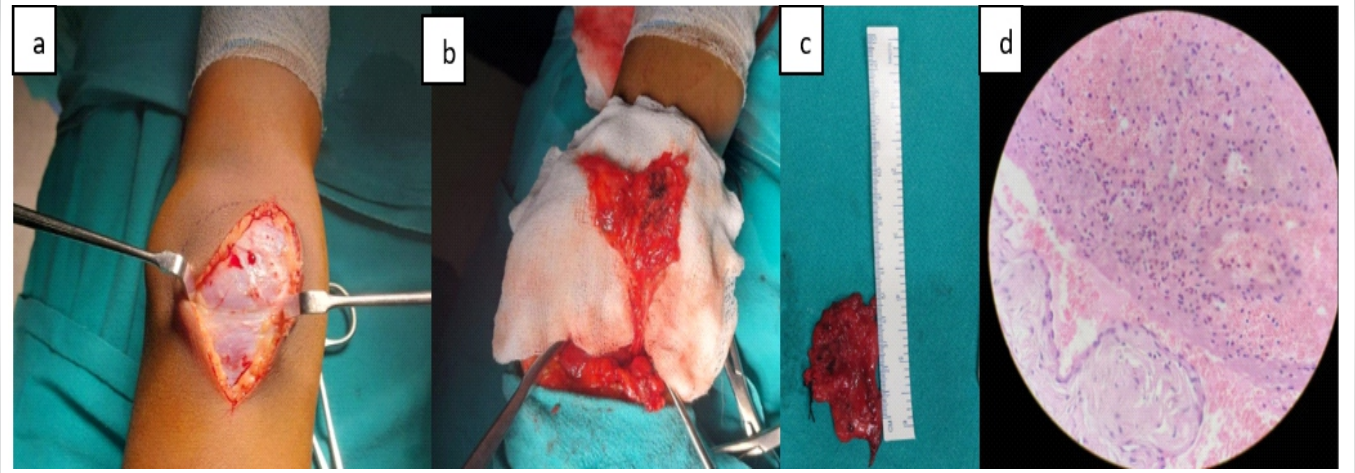

Figure 3: (a-c) Intraoperative images showing surgical approach size of lesion, the excised tissue specimen measured 4 × 3 × 0.5 cm, [d] histopathological findings confirmed a synovial hemangioma of the cavernous type.

differentiated clinically and after MRI interpretation.

Treatment options have varied and depend on the size and extent of lesion, its resectability, and the demands of the patients [20, 21]. They range from sclerosing agents, Nd: YAG laser or holmium ablation, embolization, cauterization, freezing, radiotherapy [22-24], and arthroscopic or open synovectomy [25, 26]. Arthroscopic excision is possible for pedunculated or focal lesions of small size. The literature stated that inadequate excision poses a recurrence rate of 20–60% [27-30]. In our case, we performed open synovectomy to prevent recurrence and a better functional outcome. No recurrence was reported in our case in the past 18 months of follow-up.

Conclusion

Synovial hemangioma of the knee joint is a rare condition that can cause undiagnosed chronic knee pain and swelling. Maintaining a high index of suspicion is crucial for diagnosing this rare vascular malformation. MRI is the investigation of choice, and early excision should be performed to prevent arthropathy and ensure optimal patient outcomes.

Clinical Message

Synovial hemangioma is an uncommon benign vascular malformation of joint cavities, often presenting with knee pain and swelling, particularly in children and young adults. Accurate diagnosis typically involves MRI, and definitive management includes surgical excision. Early recognition and intervention are crucial to prevent long-term joint damage and optimize patient outcomes.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given the consent for his/ her images and other clinical information to be reported in the journal. The patient understands that his/ her names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Conflict of interest: Nil **Source of support:** None

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