

Case Report

Painful Giant Cell Tumor of the Suprapatellar Pouch of the Knee Joint: A Case Report

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Abstract *Introduction.* Giant cell tumor of the tendon sheath (GCT-TS) is a benign tumor which most commonly affects hand tendons but rarely affects the large joints. GCT-TS usually occurs in individuals between the ages of 30 and 50 years, with a predominance for females, and exhibits the tendency for local recurrence following surgical resection. Marginal excision is the standard treatment of GCT-TS. *Case presentation.* The case studied is a 51-year-old female with a one-year history of gradual onset of pain in the left knee. She denied any history of trauma. The pain was worse at night and during walking and she was on regular pain medication. She was referred as a case of osteoarthritis not responding to conservative treatment. The purpose of this report is to emphasize the possibility of other pathologies whenever the pain is not responding to usual conservative treatment even in the presence of radiological features. *Discussion.* GCT-TS in large joints may be more difficult to diagnose, as there are few and nonspecific symptoms. GCT-TS most frequently occurs in the digits of the hands and feet and is rarely seen in the larger joints. Although GCT-TS is a benign tumor, it has a high incidence of recurrence following resection (10–40%). *Conclusion.* Giant cell tumor of the suprapatellar region is unusual especially when accompanied by pain presentation in a patient who is diagnosed as another case of osteoarthritis. Careful surgical excision is effective in preventing recurrence despite relatively high recurrence rates.

Keywords knee joint; giant cell tumor; arthroscopic excision of osteoarthritis

1. Introduction

Giant cell tumor of the tendon sheath (GCT-TS), a localized nodular tenosynovitis also known as fibrous histiocytoma of the tendon sheath, is a benign tumor first described in 1915 by Beekman [1]. It most commonly affects tendons of the hand than any part of the body. Usually it occurs in individuals between the ages of 30 and 50 years, with a predominance for the female gender. The WHO describes two famous types of giant cell tumor: (1) the generalized form, so-called pigmented villonodular synovitis (PVNS), which commonly affects the lower extremity joints [2,3] and (2) the localized type, so-called the giant cell tumor of the tendon sheath (GCT-TS) [4], which commonly affects the digits and rarely the large joints. Marginal excision is the standard surgical treatment of GCT-TS. However, despite

its benign character, the reported rates of local recurrence following excision usually range between 10% and 20% [2] and rates up to 40% [5] have been reported.

This case report presents an unusual presentation of GCT-TS arising from the suprapatellar synovial pouch. The diagnostic steps provided by this case report may help orthopedic surgeons to establish a more correct diagnosis and offer better surgical management of such cases. Informed consent to publish the case has been obtained.

2. Case presentation

In December 2014, a 51-year-old female presented with a one-year history of gradual onset of pain in the left knee with no history of trauma; the pain was worse at night and during walking. She was on regular pain medication and was referred to our clinic as a case of osteoarthritis not responding to conservative treatment.

On examination, there was a tender mass, poorly palpable due to substantial amount of fatty subcutaneous tissue (BMI 39). It was about 8 cm in diameter and was localized to one finger breadth above the patella. The patient was obese (BMI 39). There were no significant clinical findings of the right knee; however, there was a moderate degree of effusion. The range of motion on the affected side was 0–100°. Antalgic pattern of gait was observed during gait assessment. Distal neurovascular examination was normal and the patient's past medical history was uneventful.

Plain radiographs showed normal tibiofemoral and patellofemoral anatomy with no bony lesions with the exception of very mild arthritic changes of the medial compartment (Figures 1(a) and 1(b)). Magnetic resonance imaging (MRI) revealed a well-localized mass that extended from just above the femoral condyle to the upper border of the suprapatellar pouch, and deep towards the synovial membrane with features of thickened synovium. It also exhibited a homogenous low signal intensity on T1-weighted and T2-weighted images and poor enhancement

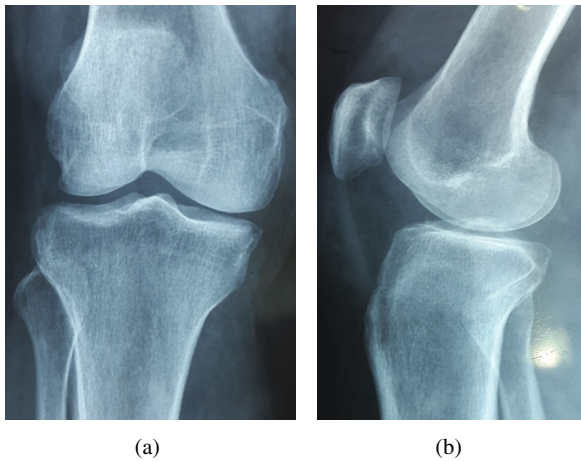


Figure 1: (a), (b) Plain radiographs of the affected knee.

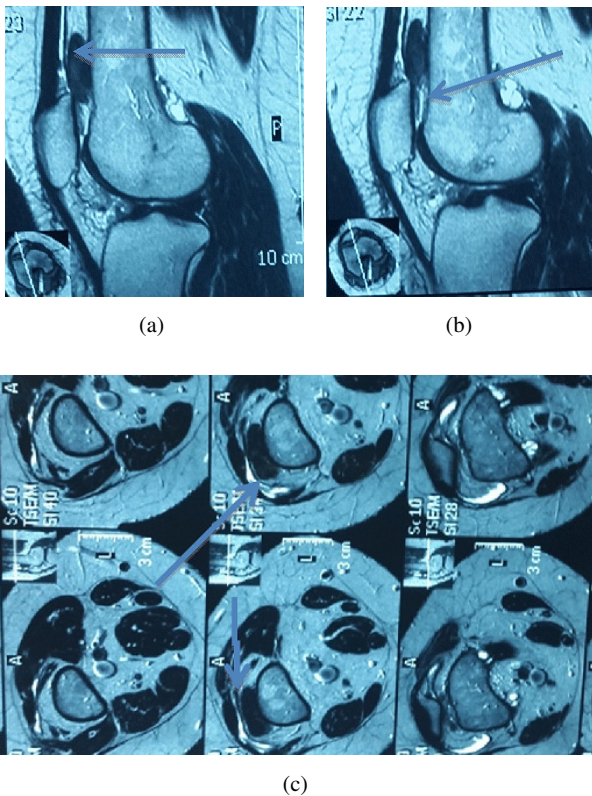


Figure 2: (a), (b) MRI of the right knee shows the multiple sagittal section on T1 with the arrow on the tumor. (c) Coronal sections of T2 showing the tumor in multiple slides with arrows on the tumor.

(Figures 2(a), 2(b), and 2(c)). The cross-sectional images revealed that the tumor was subsynovial with no invasion of the underlying bone or overlying quadriceps tendon.

There was no significant finding regarding the menisci, the ligaments, and the cartilage.

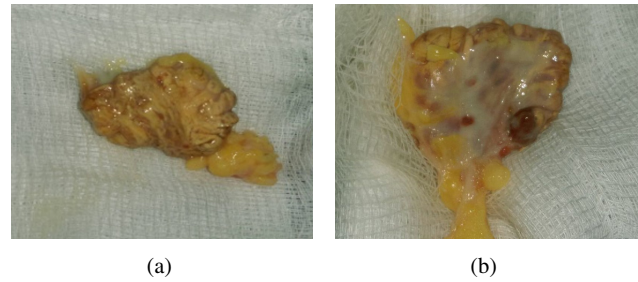


Figure 3: The gross appearance of the tumor.

3. Operative details

The decision to proceed with an operation was made after careful deliberation, with the patient and her husband, about the possibility of it being a malignant lesion and surgery might only include biopsy.

Under spinal anesthesia, a tourniquet was applied. A complete diagnostic arthroscopy was performed and there was some chondral damage to the medial femoral condyle (ICRS stage 2), for which shaving chondroplasty was done to the fibrillated cartilage. Mild debridement of the meniscal fibrillation was done aided by radiofrequency. After careful inspection of the suprapatellar pouch, an elevated area was observed and probed to determine the exact boundaries. A rubbery mass underneath the synovium was felt with poor boundaries, the suprapatellar synovium was incised with the aid of an arthroscopic scissor, and a golden yellow lobulated mass started to herniate from the incision. The tumor was adhered to the synovium so they were removed together. Hemostasis was obtained with the aid of radiofrequency. The tumor was extracted in one piece through a 4 cm incision on the medial side of the suprapatellar pouch; on measurement the tumor size was 5.8 cm × 2.2 cm (Figures 3(a) and 3(b)). A suction drain was left behind and knee brace was applied for 48 h for the sake of pain relief.

Postoperative period was uneventful and the patient started full weight bearing one week later. She regained full range of motion after three weeks of physical therapy.

Gross histopathology showed a well circumscribed lobulated mass with a yellowish red color. Microscopic appearance revealed a collagenous stroma containing mononuclear fibrohistiocytic cells that are giant with hemosiderin laden microphage. The mitotic figure was normal.

4. Discussion

GCT-TS in large joints may be more difficult to diagnose, as there are few symptoms which are nonspecific [6,7,8]. The differential diagnosis includes malignant fibrous histiocytoma, ganglion, synovial sarcoma, liposarcoma, and lipoma.

The usual presentation of patients who got the localized type is painless masses sometimes accompanied by anterior knee pain with or without locking [3,9].

Rarely GCT-TS causes bony erosion, so a plain X-ray will not aid in the diagnosis [10]. MRI is recommended in suspicious cases.

GCT-TS although it is a benign tumor, surprisingly it is notorious for being highly recurrent tumor even after complete resection which may reach 10–20% [2]. Thus, a careful follow-up is needed to detect recurrence. In our case, the patient is symptom free and there is no sign of recurrence till now as proved by MRI. After 48 months we could not report any sign of recurrence. This may indicate that the role of adequate and careful excision plays a major role and may preclude the need of adjuvant radiotherapy [11].

5. Conclusion

Giant cell tumor of the suprapatellar region is unusual, especially when accompanied by pain in a patient who is diagnosed already as case of osteoarthritis. The absence of recurrence that is proved by MRI and the clinical improvement after surgery show the importance of meticulous surgical excision in preventing recurrence despite relatively high recurrence rates.

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Conflict of interest The author declares that she has no conflict of interest.

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