J Orthop Spine Trauma. 2023 December; 9(4): 192-4. DOI: 10.18502/jost.v9i4.13938

Case Report

The Knee Tenosynovial Giant Cell Tumor: A Deceptive Case Report with Non-Specific Presentations

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Received: 17 March 2023; **Revised:** 16 May 2023; **Accepted:** 13 July 2023

Abstract

Background: Tenosynovial giant cell tumor (TGCT) is a rare hyperplastic disease of the synovial membrane of the joint with a high recurrence rate and tumor-like features, affecting large joints such as the hip, knee, and ankle. Dull and chronic pain is common, as is swelling of the joint, which can make definitive diagnosis difficult. The gold standard of treatment is complete resection of the lesion. In this case report, we present a TGCT at the knee joint of an adult patient with nonspecific clinical presentation.
Case Report: We present a 33-year-old male patient who presented with chronic swelling, warm sensation, and limited range of motion (ROM) in the knee. He had no history of trauma and infectious disease had been ruled out. After several nonspecific orthopedic procedures and inadequate treatment of signs and symptoms, he was finally diagnosed with local TGCT.
Conclusion: To make the correct diagnosis, the unusual and somehow deceptive clinical presentation of TGCT must be considered.

Keywords: Giant Cell Tumor of Tendon Sheath; Pigmented Villonodular Synovitis; Arthroscopy

Citation: Kazemi S, Minaei-Noshahr R, Hosseininejad S. **The Knee Tenosynovial Giant Cell Tumor: A Deceptive Case Report with Non-Specific Presentations.** *J Orthop Spine Trauma* 2023; 9(4): 192-4.

Background

Tenosynovial giant cell tumor (TGCT) is a rare hyperplastic entity formerly known as pigmented villonodular synovitis (PVNS) that affects the synovial membrane of a joint, tendon sheath, and bursa, with a potentially recurrent and aggressive feature. The prevalence of TGCT is approximately 9.2 or 1.8 cases per 1 million population (1-3). There used to be a variety of names for this disease, including myeloplaxoma, synovial xanthoma, benign fibrous histiocytoma, fibrohemosideric sarcoma, and synovial endothelioma (1, 2). One of the histologic features of TGCT is the deposition of hemosiderin in the proliferated synovium. Large weight-bearing joints are frequently affected, including the knee, hip, and ankle. Affected individuals are usually in their third and fourth decades of life. TGCT affects only one joint at a time with a diffuse or localized pattern. In addition, the etiology of TGCT is still unclear (2, 4, 5).

The clinical presentation of the diffuse form of TGCT may include limited range of motion (ROM), progressive pain, recurrent nontraumatic joint swelling, and effusion. In localized lesions, symptoms may resemble a torn meniscus (6, 7). As mentioned earlier, the appearance is not specific and cannot be easily differentiated from other knee diseases. Excisional biopsy of the lesion by arthroscopy or arthrotomy is the accepted diagnostic and treatment approach. Radiation may be used as adjunctive therapy to surgery (5, 6).

Case Report

A 33-year-old, otherwise healthy professional man was referred to our orthopedic clinic complaining of persistent, unexplained pain and swelling in his left knee for the past eight months that did not respond adequately to conservative treatments. At that time, he had also been treated for possible infection, which did not resolve. No recent trauma was reported. On physical examination, the left knee was swollen, but ROM was almost normal, with no signs of inflammation, such as redness or warmth. There was no instability or evidence of meniscal tear. Lower limb alignment was normal, and no muscle atrophy was noted. The other lower limb joints were normal on examination. Radiographic evaluation of the left knee was also normal (Figure 1). We then performed magnetic resonance imaging (MRI) of the affected knee.

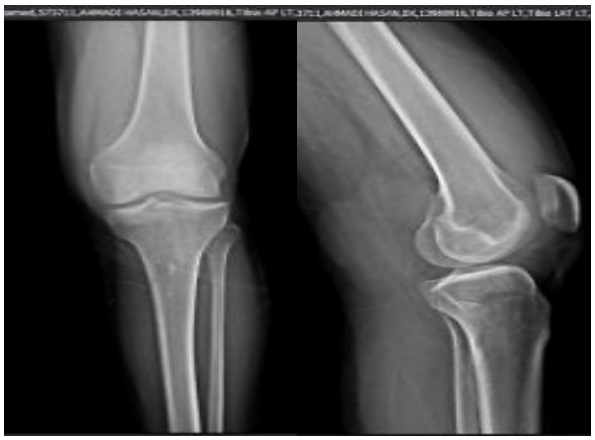

Figure 1. X-ray of the left knee showing no bony irregularity

The 1.5 Tesla MRI scan revealed a multilocular structure around the anterior and posterior cruciate ligaments and the femoral notch, which extended into the suprapatellar

and retropatellar regions and was associated with synovial thickening (Figure 2).

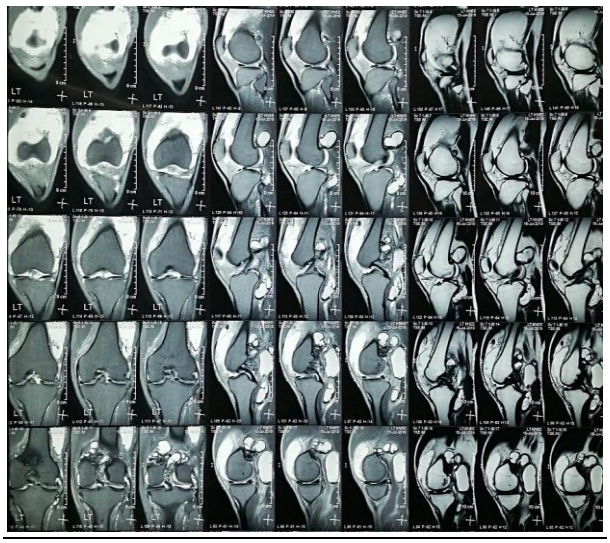

Figure 2. T1 and T2-weighted magnetic resonance imaging (MRI) showing an effusion in the joint and periarticular bursae in addition to synovial thickening and intra-articular multi-loculated lesions

After obtaining informed consent, the patient was then taken to the operating room for needle aspiration and arthroscopy. Initially, needle aspiration of the knee joint space was performed, which was bloody; the aspirated fluid was sent to the laboratory for content analysis. Arthroscopic intervention through anterolateral and anteromedial portals near the posterior compartment was performed in the affected knee under spinal anesthesia (6). Diffuse lesions were seen in all areas of the inner layer of the synovium (Figure 3). They were then shaved and completely excised.

Figure 3. Arthroscopic view of the joint space depicting diffuse villi

Histopathological examination, which showed pigmented villonodularity of the synovium, confirmed the diagnosis of TGCT; the laboratory results are shown in table 1.

Our patient felt relief of symptoms at the 1- and 3-month follow-up visits, and the examination revealed no abnormalities. He was instructed to perform physical therapy exercises to improve knee ROM. Finally, it was suggested that the periarticular musculature should be strengthened three times a week (using standard modalities) and the patient should come for a follow-up examination 3 months later.

Table 1. The knee joint synovial fluid lab analysis

Synovial fluid analysis	
Aerobic culture	No growth after 72 hours nor 3 weeks
Appearance	Bloody
Color	Red
WBC (cells/µl)	1900
Polymorphonuclear (%)	45
Lymphocyte (%)	55
Total protein (g/dl)	5.1
Glucose (mg/dl)	117
RBC (cells/µl)	22000
Gram stain	No organism seen
Blood lab test	
ESR (mm/h)	8
CRP quantitative (mg/l)	4

WBC: White blood cell; RBC: Red blood cell; ESR: Erythrocyte sedimentation rate; CRP: C-reactive protein

Discussion

We presented here a case of TGCT with a nonspecific clinical manifestation. TGCT is divided into localized tenosynovitis, diffuse-type giant cell tumor, and PVNS. Intra-articular involvement is a rare form with somehow invasive and malignant behavior, mostly affecting middle-aged individuals (2, 3). Because of its rarity, TGCT can be easily misdiagnosed. Moreover, the diagnosis is usually delayed (8-10). Both the diagnosis and treatment of TGCT are challenging due to the nonspecific and vague natural history of the disease and its diverse manifestations (2, 11-13).

In most patients, TGCT presents with some chronic, nonspecific symptoms that may distract the physician from making a diagnosis. Imaging studies, especially MRI and arthroscopy, are necessary to confirm the diagnosis (2, 12-14). There is some controversy about treatment options. The gold standard is complete resection of the lesion, either open or by arthroscopy. The latter is less invasive and preferred by most surgeons, whereas open resection carries the risk of invading adjacent tissues. Moreover, according to the literature, the results of arthroscopic excision of the lesion are satisfactory, with a low recurrence rate (6, 11-13).

Conclusion

TGCT is a rare hyperplastic disease that mostly affects the knee joint. Patients usually have a nonspecific presentation; thus, it must be considered among differential diagnoses. Further investigations such as MRI and arthroscopy help to establish the diagnosis. Therefore, intraarticular synovial disease should be suspected in patients with chronic, unexplained knee pain and effusions that present with nonspecific and deceptive symptoms. An alert mind that raises suspicion of the rare condition could shorten the time to diagnosis and lead to relief of symptoms. Arthroscopic or open resection of the lesion is the treatment of choice, depending on the location, aggressiveness, and involvement of adjacent tissue.

Conflict of Interest

The authors declare no conflict of interest in this study.

Acknowledgements

Written informed consent was obtained from the patient for publication of this case report and accompanying images. The authors wish to give their special thanks to the patient for his full compliance. They declare that this work was not supported by any grants or funding support.

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