CASE REPORT

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Intra-Articular Tenosynovial Giant Cell Tumour of the Knee Mimicking Synovial Sarcoma: A Case Report

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Abstract

The intra-articular form of tenosynovial giant cell tumour is seen as a smooth margined soft tissue tumour which may resemble both benign and malignant pathologies. Clinical and radiologic findings are usually non-specific, and a multidisciplinary approach is important in order to make the right decision for treatment.

Keywords: Tenosynovial giant cell tumor, intraarticular form, MRI

INTRODUCTION

Tenosynovial giant cell tumour (TSGCT) is a rare benign tumour arising from joints, bursae and tendon sheaths. Intra-articular TSGCT is an uncommon form of TSGCT, involving the large joints. Lesions are usually seen as solitary painless masses. Pain and restricted movement are the most common complaints in symptomatic patients. Radiological findings are non-specific, and lesions are seen as a soft tissue masses with smooth margins in magnetic resonance imaging (MRI). Multidisciplinary team work is important before treatment as a benign lesion because of the potential of malign lesions to mimic these findings.

CASE PRESENTATION

A twenty-three-year-old male patient with anterior knee pain and restricted movement on his left knee was referred to our department. The patient claimed to have no history of trauma. Anterior knee pain increasing during extension was noted on physical examination.

The patient had been evaluated in an out-patient medical centre 3 months previously and had MRI examination without contrast administration. Tru-cut biopsy was performed through the anterolateral portal. The pathological findings were non-diagnostic, probably because the specimen was from the necrotic part of the lesion, due to insufficient evaluation of non-contrast MRI.

MRI examination was repeated at our department with a 1.5 T-system (Magnetom Aera, Siemens Healthcare, Erlangen, Germany) with intravenous (i.v.) administration of gadolinium-based contrast agent (20 mL, 0,5 mmol/mL, gadoteric acid, Guerbet, Roissy, France). A 5x4x3 cm sized lesion filling Hoffa fat pad, extending posteriorly to the intercondylar notch anterior to anterior cruciate ligament (ACL) was detected. The lesion was isointense to muscle on T1 weighted and iso-hyperintense on Proton Density with Fat-Saturation images (Figure 1). The lesion contained a T1A hypointense and PD hyperintense focus reflecting necrosis (Figure 2). Intense enhancement was seen after i.v. contrast agent administration (Figure 3). The lesion was reported suspicious for synovial sarcoma, and histologic evaluation from the viable component of the lesion was suggested.

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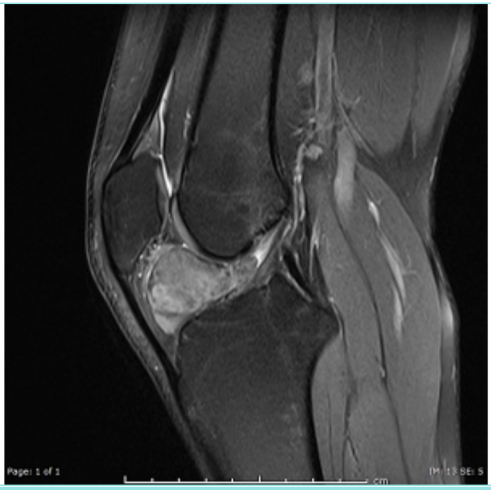

Figure 1. Sagittal PDFS image shows iso-hyperintense tumoural lesion in Hoffa fat pad, extending posteriorly to intercondylar notch anterior to anterior cruciate ligament.

PDFS: Proton density with fat-saturation.

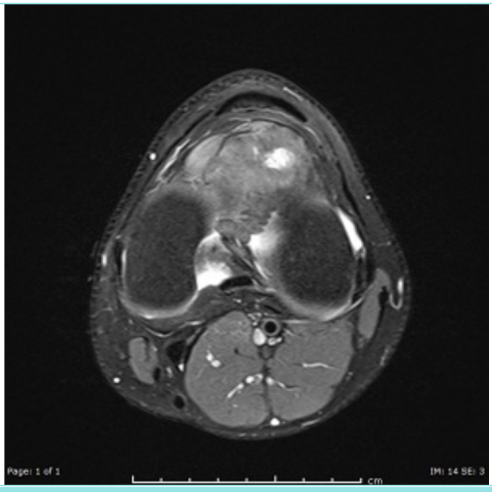

Figure 2. Axial PDFS image shows iso-hyperintense tumoural lesion containing hyperintense necrotic focus.

PDFS: Proton sensity with fat-saturation

Due to the symptoms and radiologic findings, surgery was planned. The patient was positioned supine and the ipsilateral extremity was prepped and draped. Cefazolin 1 gr i.v. was used for prophylaxis and a pneumatic tourniquet was inflated for bleeding control. A 10 cm longitudinal skin incision was made on the anterior aspect of the knee, including the biopsy tract. Skin and subcutaneous tissues were sharply dissected. Medial parapatellar incision was made to deviate the patella laterally and the knee joint was exposed. A 4x4 cm, blueish-purple, solid soft tissue tumour arising from the anterior fat pad was detected. The tumour was well-margined and limited to the infrapatellar region. Intraoperative assessment also revealed that the superior edge of the tumour protruded to the ACL without any sign of invasion. The tumour was marginally resected with the surrounding soft tissue leaving the ACL intact (Figure 4).

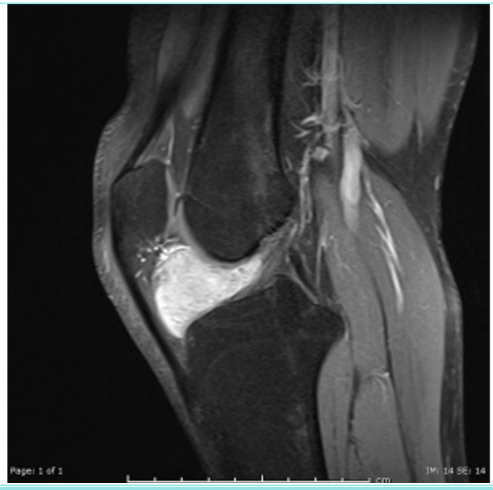

Figure 3. Coronal T1A FS post-contrast image shows intense enhancement.

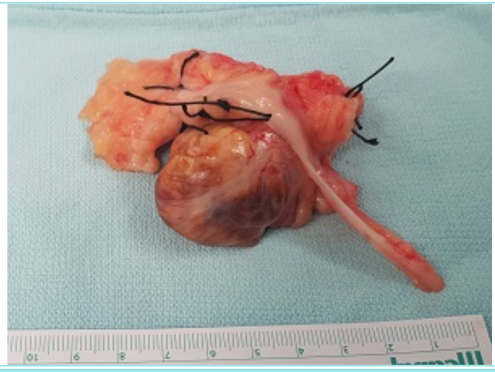

Figure 4. Specimen of resected tumoural lesion.

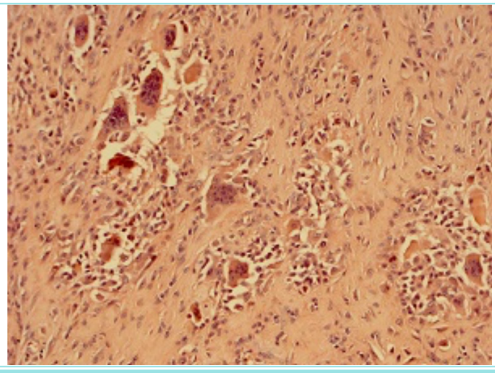

Figure 5. Microscopic appearance of the tumour with high magnification (hematoxylin & eosin, x200) shows multinucleated giant cells and mononuclear cells which have eosinophilic cytoplasm and oval shaped nuclei.

Histopathologic evaluation revealed multinucleated giant cells and mononuclear cells which had eosinophilic cytoplasm and oval shaped nuclei compatible with TSGCT (Figure 5).

The patient was pain free at his 3-month follow-up.

Written consent was taken from the patient.

DISCUSSION

In this case report, we tried to discuss the importance of cooperation between orthopaedic oncologists, radiologists and pathologists through an unusual case. Intra-articular TSCGT is a benign lesion with non-specific clinical and radiological findings. It is important to carefully evaluate the symptoms and consider the radiologic imaging protocol to gain optimal results.

Intra-articular TSGCT involves the large joints, particularly the knee.[1,2] Lesions are usually seen during the 3rd to the 5th decades.[1,3,4] While no specific gender predilection or male dominance was reported in some studies,[1,5] female predominance (1.5-2/1) was mostly stated.[3,6-8] When affected, the infrapatellar fat pad is a common region of involvement in the knee joint. The most commonly seen symptom is a painless soft-tissue mass.[3,7] Pain, swelling, fullness, restricted movement and palpable mass are other clinical manifestations of this disease.[1,3,5,9] These lesions can be pedunculated and cause acute pain because of torsion and necrosis.[10,11] Radiographic examination may show normal findings or rarely a soft tissue mass.[3] Findings by MRI are a circumscribed, sometimes pedunculated intra-articular mass, isointense to surrounding muscle on T1 weighted and iso-hyperintense on T2 weighted and PD images. A cleft-like or linear hyperintense focus related to tissue necrosis can be detected.[11] Macroscopically, lesions are seen as villous or frond-like synovial projections. Microscopically, multinucleated giant cells, macrophages, xanthoma cells and hemosiderin deposits are observed.[3]

Synovial sarcoma shows same age and gender predilection, namely the adolescent and young adult populations, with female dominancy. The infrapatellar fat pad is a common region of involvement in the knee joint.[12] In most of the cases, a common complaint is a slow growing painless mass. Larger lesions demonstrate a typical triple signal caused by haemorrhage, calcification and fibrous tissue. Periosteal reaction or extrinsic erosion at the the adjacent bone has been reported in the literature.[13] However, tumours smaller than 5 cm may demonstrate homogenous signal intensity and well-circumscribed margins, imitating benign lesions, which is very similar to our case.[14] Synovial sarcoma is macroscopically seen as a grey to yellow lesion with necrotic and haemorrhagic components. Microscopic evaluation of the most common monophasic type reveals mesenchymal spindle cells.[12]

While surgical intervention is sufficient for the treatment of intra-articular TSGCT and recurrence is rare,[5,11] wide resection and adjuvant chemo/radiotherapy are recommended for synovial sarcoma because of its high recurrence rates (30-50%) and the distant metastatic (41%) potential of this disease.[12,15] Since surgical and post-operative procedures substantially differ, highly detailed radiological and pathological assessment is important before operation planning.

Intra-articular solitary soft tissue lesion with smooth margins in MRI may reflect either benign or malignant lesions and treatment approach may differ sharply. Thus, multidisciplinary team work is important for treatment.

MAIN POINTS

- Intra-articular TSGCT is an uncommon form of TSGCT in which clinical and radiological findings are non-specific.
- Multidisciplinary team work is important before treating as a benign lesion because of the potential for malign lesions to mimic these findings.

ETHICS

Informed Consent: Written consent was taken from the patient.

Peer-review: Internally peer-reviewed.

Authorship Contributions

Concept: Y.K., E.S., Design: Y.K., E.S., Ö.T., K.E., Supervision: Ö.T., K.E., G.M., Materials: Y.K., E.S., H.Ö., G.M., Data Collection and/or Processing: Y.K., E.S., H.Ö., Analysis and/or Interpretation: Y.K., Ö.T., K.E., Literature Search: Y.K., E.S., Writing: Y.K., Critical Review: E.S., Ö.T., K.E., H.Ö., G.M.,

DISCLOSURES

Conflict of Interest: No conflict of interest was declared by the authors.

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