An unusual cause of knee locking symptom: Tenosynovial giant cell tumor

Kilitli dizin sık olmayan bir sebebi: Tenosinovyal dev hücreli tümör

Ahmet Firat[1], Alper Deveci[2], Osman Tecimel[3], Sema Hücümenoğlu[4]

[1]Keçiören Training and Research Hospital, Orthopaedics and Traumatology Clinic, Ankara

[2]Etlik İhtisas Training and Research Hospital, Orthopaedics and Traumatology Clinic, Ankara

[3]Atatürk Training and Research Hospital, Orthopaedics and Traumatology Clinic, Ankara

[4]Etlik İhtisas Training and Research Hospital, Department of Pathology, Ankara

Corresponding author: Ahmet FIRAT, 15. Cadde, 1587 Sokak, Yesilkonaklar sitesi E/9, Elvankent, TR-06770, Ankara, Turkey, Phone: +90 5054002676, Fax: +90 312 2618740 E-mail: ahmetfirat24@yahoo.com

Geliş tarihi / Received: 20.11.2011 **Kabul tarihi / Accepted:** 18.10.2012

Abstract

Tenosynovial giant cell tumor is a benign, slow-growing tumor that may occur at any age, but most patients are in their thirties. We described a case of tenosynovial giant cell tumor arising from anterior cruciate ligament causing knee locking symptom.

Key words: Knee, tenosynovial giant cell tumor

Özet

Tenosinovyal dev hücreli tumor iyi huylu, yavaş büyüyen ve sıklıkla otuzlu yaşlarda görülen bir tümöördür. Biz bu yazıda dizde ön çapraz bağdan kaynaklanan ve kilitlenme semptomuna neden olan bir vaka tanımladık.

Introduction

Tenosynovial giant cell tumor (TSGCT) is a benign, slow-growing tumor that may occur at any age, but most patients are in their fourth decade. The tumor is more common in women, which rates up to 67% (1-3). TSGCT, usually arise from the synovial tissue of the joint, tendon sheath, mucosal bursa or fibrous tissue adjacent to the tendon (2). These tumors predominantly involve the palmar side of the fingers and toes, and seldom larger joints like knee or ankle. TSGCT are rarely intra-articular (4, 5). We described a case of tenosynovial giant cell tumor arising from anterior cruciate ligament (ACL) causing knee locking symptom.

Case

A 35-year old man, with a 4-month history of falling on his right knee applied to our clinic complaining of swelling and pain on the injured knee. He did not have any previous history of trauma to the affected knee. On physical examination there were generalized pain, palpable effusion and 15 degrees of limitation during extension. Twenty milliliters of haemorrhagic joint effusion was aspirated. Plain X-Rays of the knee did not show any pathological change. MRI views of right knee showed a signal intensity of a mass which is slightly greater than of skeletal muscle. It was a 2.5x2 cm, sharply bordered soft tissue mass. Intraarticular soft tissue mass was

originated from the ACL and was within the anterior meniscosynovial recess (Figure 1). Coronal T2-weighted fatsat MR image showed the mass to be of greater signal intensity than adjacent skeletal muscle (Figure 2). Other laboratory studies were within the normal limit. As a result of diagnostic findings arthroscopic management was planned and performed. Standart anterolateral and anteromedial portals were used. At arthroscopy, a 1.5 x 2 x 2.5 cm, spheric, well-encapsulated, redish-brown colour, pedunculated mobile soft tissue mass was attached to the synovium of the ACL within the meniscosynovial recess , and it was impinging during the extension of the knee between the trochlea and anterior tibial plateau in front of the anterior cruciate ligament (Figure 3). There was no damage on both cruciate ligaments, menisci, or articular cartilage. The mass was detached carefully under the arthroscopic control and removed through the anteromedial portal. After the arthroscopic excision of the mass from the ACL the specimen sent for hystopathologic examination. The histopathological examination revealed a composition of sheets of round or polygonal cells that blended with collagenised zones. Multinucleated giant cells were scattered throughout the lesion. Xanthoma cells and haemosiderin granules were present (Figure 4). Based on these histological findings, the diagnosis was tenosynovial giant cell tumor arising from the ACL. The patient was followed in the outpatient clinic for 1 year, with no sign of local recurrence. The patient was completely asymptomatic and had a full range of motion of his right knee without pain.

Discussion

TSGCT is divided into the localized and diffused forms based on their growth characteristics. TSGCT is a benign, slow-growing mass that may occur at any age, but is common between the ages of 30 and 60 years. The tumor is more common in women, up to 67% (2, 3). In a review of 81 cases, the location of the lesion was at fingers and thumb with a percentage of 57%, at knee with 28%, toes with 9%, hip with 2.5%, ankle with 2.5% and wrist with 1% (6). In a study of 207 TSGCT cases, it was observed that 8 of the tumors were localised in the knee (3).

Plain radiographic images usually show soft tissue lesion which does not make any alterations on bony structure. MR imaging has been reported to be the best diagnostic technique for this lesion (7). The amount and dissemination of the hemosiderin pigment and evidence of hyalinisied fibrous connective tissue are the remarks of magnetic resonance imaging of the TSGCT. The tumor, usually, is seen isointense with the surrounding muscle tissue in T1 series. In T2 weighted views, although is seen with hypointense signal characteristics, there may be a hyperintense view due to low hemosiderin pigment amount. In postcontrast series, usually a diffuse signal enhancement is expected (8). Macroscopically, TSGCT is a well-encapsulated, grey-white tumor which contains yellow or brown patches.

Histologically, the lesion is characterized by a fibrous stroma, deposition of hemosiderin, and proliferation of round, polyhedral, histiocytic cells or spindle cells. Furthermore, irregularly shaped multinucleated giant cells and foam cells are constantly present, scattered within the hyaline stroma (3, 9).

This tumor was first described in 1852 by Chassiagnac as "cancer of the tendon sheath," but the controversial whether it differs from pigmented villonodular synovitis is stil in debate. The earliest

investigators considered that giant-cell tumor and pigmented villonodular synovitis represented different manifestations of the same process, according to the common histological features. Subsequent authors defined giant-cell tumor as a separate clinical enity because of its different growth pattern.(2,3) Ushijima et a1. (3) demonstrated that lesions without villous projections of the synovium are not pigmented villonodular synovitis but giant-cell tumor.

Myxoid cysts, dermatofibroma, glomus tumors, neurofibroma, sweat gland tumors, giant cell tumors of the soft tissue, giant cell tumors of the bone, fibromas and rheumatiod nodules and primitive neuroectodermal tumors should also be considered in the clinical differential diagnosis of the TSGCT (10). These tumors are usually differentiated by the help of histopathological examinations. Histopathologycally, the tumor must be distinguished with pigmented villonoduler synovitis (PVNS), fibroma, and giant cell tumor of the bone (11).

TSGCT and localized PVNS are histologically identical and share a common pathogenetic mechanism. The only difference is that they occur in different clinical settings. One can argue that they should be separated diagnostically, because TSGCT usually behaves in a non-aggressive fashion while PVNS usually behaves aggressively and may require total synovectomy and has significant potential for destructive local recurrence with the need for eventual joint replacement. However, this is not always true, and behavior is related significantly to whether the lesions are circumscribed or infiltrative (12). TSGCT has a well-defined growth, occurring along a tendon (10). PVNS by contrast, is characterized by extensive intraarticular synovial involvement associated with multiple frondlike villous masses and by abundant hemosidenin deposition (13). The treatment of choice is a local resection of the tumor; arthroscopic removal without arthrotomy has the advantage of less morbidity and rapid rehabilitation. Synovectomy or radiotherapy is not required (14).

Due to our research on literature, only one case of TSGCT arising from anterior cruciate ligament was published and ours is the second one (5). In conclusion, it should be noted that TSGCT is an important case for differantial diagnosis of knee locking symptom.

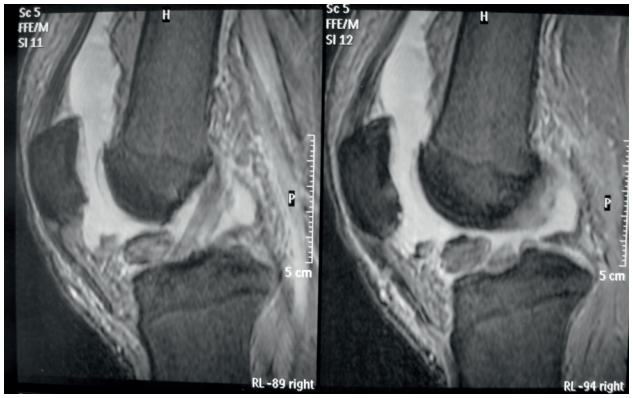

Figure 1: Sagittal T1-weighted MR image

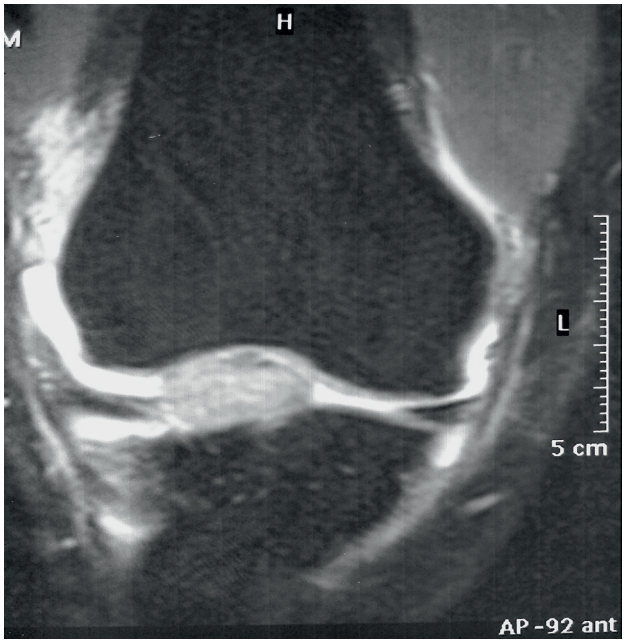

Figure 2: Coronal T2-weighted fatsat MR image

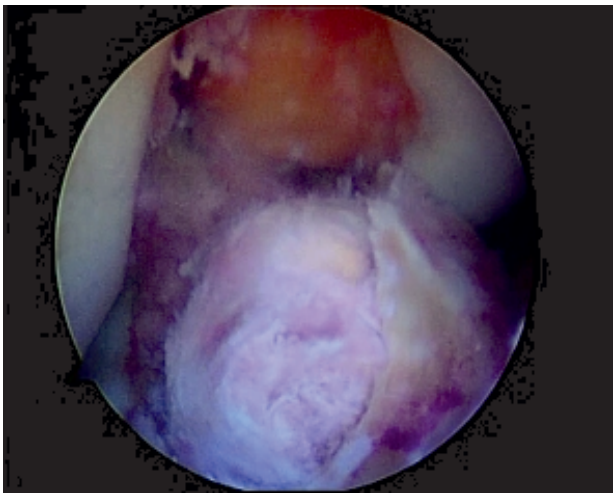

Figure 3: Arthroscopic view of the tumor

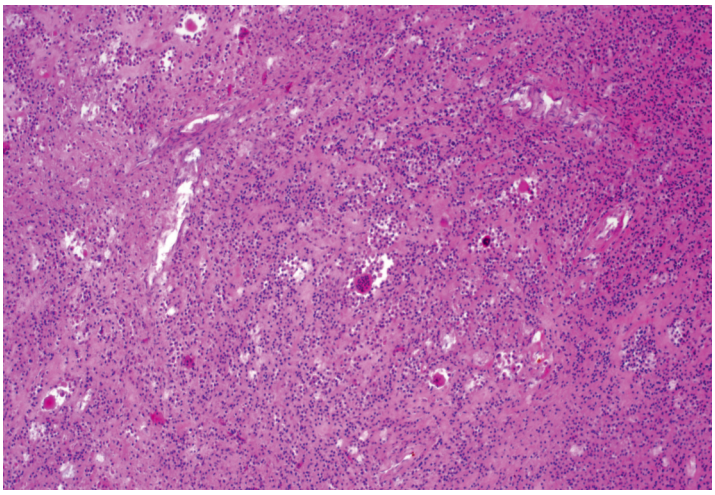

Figure 4: Microscopic apperence of tenosynovial giant cell tumor

Yazarlarla ilgili bildirilmesi gereken konular (Conflict of interest statement) : Yok (None)

References

1) Myers BW, Masi AT. Pigmented villonodular synovitis and tenosynovitis: a clinical epidemiologic study of 166 cases and literature review. Medicine (Baltimore) 1980; 59(3): 223-38.

2) Enzinger FM, Weiss SW. Benign tumors and tumor-like lesions of synovial tissue. Enzinger FM, Weiss SW, eds. Soft tissue tumors. 3rd ed. St Louis: CV Mosby, 1995; 735-55.

3) Ushijima M, Hashimoto H, Tsuneyoshi M. Giant-cell tumor of the tendon sheath (nodular tenosynovitis). A study of 207 cases to compare the large joint group with the common digit group. Cancer 1986; 57(4): 875-84.

4) Kuhnen C, Müller KM, Rabstein S, Kasprzynski A, Herter P. [Tenosynovial giant cell tumor]. Pathologe 2005, 26(2): 96-110.

5) Otsuka Y, Mizuta H, Nakamura E, Kudo S, Inoue S, Takagi K. Tenosynovial giant-cell tumor arising from the anterior cruciate ligament of the knee. Arthroscopy 1996; 12(4): 496-9.

6) Rao AS, Vigorita VJ. Pigmented villonodular synovitis (giant-cell tumor of the tendon sheath and synovial membrane). A review of eighty-one cases. J Bone Joint Surg 1984; 66(1): 76-94.

7) Kitagawa Y, Ito H, Amano Y, Sawaizumi T, Takeuchi T. MR imaging for preoperative diagnosis and assessment of local tumor extent on localized giant cell tumor of tendon sheath. Skeletal Radiol 2003; 32(11): 633-8.

8) Sheppard DG, Kim EE, Yasko AW, Ayala A. Giant cell tumor of the tendon sheath arising from posterior cruciate ligament of the knee: a case report and review of the literature. Clin Imaging 1998; 22(6): 428-30.

9) Flandry F, Hughston JC. Pigmented villonodular synovitis. J Bone Joint Surg Am 1987; 69(6): 942-9.

10) Jelinek JS, Kransdorf MJ, Shmookler BM, Aboulafia AA, Malawer MM. Giant cell tumor of the tendon sheath: MR findings in nine cases. AJR 1994; 162(4): 919-22.

11) Yildiz S, Cetinkol E. [Case report: Tenosynovial giant cell tumor arising from the knee joint]. Tani Girisim Radyol. 2003; 9(1): 81-3.

12) Rubin BP. Tenosynovial giant cell tumor and pigmented villonodular synovitis: a proposal for unification of these clinically distinct but histologically and genetically identical lesions. Skeletal Radiol. 2007; 36(4): 267-8.

13) Somerhausen NS, Fletcher CD. Diffuse-type giant cell tumor: clinicopathologic and immunohistochemical analysis of 50 cases with extraarticular disease. Am J Surg Pathol 2000; 24(4): 479–92.

14) Kim SJ, Choi NH, Lee SC. Tenosynovial giant-cell tumor in the knee joint. Arthroscopy 1995; 11(2): 213-5.