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

Kiltili dizin sık olmayan bir sebebi: Tenosinovyal dev hücreli tümör

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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 tümör iyi huylu, yavaş büyüyen ve sıklıkla otuzlu yaşlarda görülen bir tümörüdür. Biz bu yazında ön çapraz bağdan kaynaklanan ve kilitleme 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 (6). 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 (6-7). 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
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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. Standard 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 histopathologic 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. The amount and dissemination of the hemosiderin pigment and evidence of hyalinised 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 still 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 entity because of its different growth pattern. (2,3) Ushijima et al. (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 rheumatoid 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. Histopathologically, the tumor must be distinguished with pigmented villonodular 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 hemosiderin 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 differential diagnosis of knee locking symptom.

Figure 1: Sagittal T1-weighted MR image

Figure 2: Coronal T2-weighted fatsat MR image
Yazarlarla ilgili bildirilmesi gerekken konular (Conflict of interest statement) : Yok (None)

References
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.