

Intra-articular Fibroma of Tendon Sheath in Knee Joint Associated with Iliotibial Band Friction Syndrome: Rare Occurrence in a Teenage Girl

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What to Learn from this Article?

Intra-articular fibroma of the tendon sheath of knee is a rare occurrence and can have varied presentation depending on its precise location. It should be included in the differential diagnosis of any nodular lesion of knee joint, especially in uncommonly affected population subset. Fortunately, it does not have malignant potential and when properly excised, prognosis is good.

Abstract

Introduction: Iliotibial band (ITB) friction syndrome is a common overuse injury typically seen in active athlete population. A nodular lesion on the inner side of the ITB as an etiology or an accompanying lesion with friction syndrome has rarely been reported. Among such nodular lesions around knee, fibroma of tendon sheath (FTS) is a rare occurrence. All the more intra-articular occurrence is extremely rare.

Case Report: A 16-year-old female presented with recurrent pain and movable nodule at the lateral joint area, diagnosed as ITB friction syndrome. The nodule was confirmed as rare intra-articular FTS on the basis of histopathology findings.

Conclusion: When nodular lesions around knee are detected on magnetic resonance imaging, a FTS could be included in the differential diagnosis. Etiology and pathogenesis of ITB friction syndrome should be revised in view of such rare presentations.

Keywords: Fibroma of tendon sheath, iliotibial band friction syndrome, intra-articular fibroma of the tendon sheath, ITBFS in teenage girl, rare presentation of ITBFS.

Introduction

A fibroma of tendon sheath (FTS) is an uncommon benign, painless, slowly growing tumor that usually occurs in the tendon or tendon sheaths of the distal upper extremity (wrist and hand). An intra-articular

location arising in the knee joint is extremely rare [1, 2]. An estimated 80-95% of FTS occur in small joints of the upper extremity (fingers, hand, and wrist). Peak incidence is at 20-50 years, and predominantly in males [1]. To date, <30 reported cases of the disease have been related to

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the knee [2]. Furthermore, the intra-articular location is less common. To our knowledge, around ten cases of intra-articular FTS in the knee joint have been reported [2, 3, 4, 5, 6, 7, 8, 9, 10, 11].

Iliotibial band (ITB) friction syndrome is a common overuse injury typically seen in runners, cyclists, and military recruits [12]. Generally, proposed etiologies of ITB friction syndrome include friction of the ITB against the lateral femoral epicondyle during repetitive flexion and extension activities, compression of the fat and connective tissue deep to the ITB, or chronic inflammation of the ITB bursa [12, 13]. This syndrome is rarely seen in persons below the age of 20 years [14]. Magnetic resonance imaging (MRI) can show the characteristic imaging findings [15]. However, coincidental findings or other accompanying mass lesions on MRI have been rarely reported. A few reports described synovial cysts, meniscal cysts, periarticular ganglia, and synovial sarcomas causing ITB friction syndrome [16, 17].

We report a case of intra-articular FTS in a knee joint associated with ITB friction syndrome, confirmed by excision and histopathological study.

Case Report

A 16-year-old female presented with a history of several months of left lateral knee pain. She also complained of a movable mass at the lateral joint area during ambulation. An MRI scan of left knee was performed. The MRI showed a thickened ITB and oval abnormal altered signal intensity lesion appearing heterogeneously hyperintense on inversion recovery sequences (Figs. 1,2), hypointense on T2-weighted images measuring about 4.1 cm × 2.7 cm × 0.8 cm (cephalocaudal X anteroposterior X mediolateral) located between femoral condyle medially and iliotibial band laterally and is limited inferiorly by lateral tibiofemoral joint line. A well-demarcated, ovoid nodular lesion was also observed in the compartment-like space. The initial diagnosis based on the MRI findings, clinical history, and physical examination was ITB friction syndrome. We suspected the nodular lesion was a ganglion, focal synovial thickening, focal villonodular synovitis, or focal degenerative change of invaginated extra-articular fatty tissue. Unfortunately, the possibility of a FTS was not considered. Patient was taken for an open marginal excision when nodule was found attached to the lateral joint capsule. Lateral synovium was inflamed as is typically seen in ITB friction syndrome. The nodule was successfully resected and was submitted to the department of pathology for histologic analysis. In the resected nodule, abundant collagen fibers, and spindle-shaped cells were seen and scattered fibroblasts were detected (Fig.3). The nodule did not contain giant cells. There were no regions of necrosis, mitotic activity, or cellular atypia. The nodule was diagnosed as a FTS based on the histological findings.

After the surgery patient was followed up for 2 years, during which she did not have any subjective symptoms and was able to do all activities unrestricted. Clinically also, there was no evidence of recurrence.

Discussion

FTS is a slow-growing fibrous nodule that frequently adjoins a tendon sheath and has a predilection for occurring on fingers and hand [1]. Due to rarity of occurrence in other locations, it is generally not considered as a differential diagnosis of nodular swellings occurring elsewhere in the body. Intra-articular location is all the more rare with only around 20 such cases reported in literature [2]. Of these, 10 have been described in knee joint at varied locations [2, 3, 4, 5, 6, 7, 8, 9, 10, 11]. Table 1 shows the cases of intra-articular knee FTS reported in literature so far. Most commonly they are described in middle-aged males and in the posterior compartment of knee. In contrast, our case was of a teenage girl with FTS arising from the lateral joint capsule. A case with similar location and symptoms was described by Ha *et al.* in a middle-aged male [11]. Most of the cases were treated by open excision, and three of them by arthroscopic excision. None of the cases had reported any recurrence which is also true for our case. In contrast, recurrence rate for FTS in general has been reported up to 24% [1]. Most of the recurrence occurs within 1 year and is



Figure 1: Magnetic resonance imaging inversion recovery sequence coronal section showing hyperintense lesion located between femoral condyle medially and iliotibial band laterally and limited inferiorly by lateral tibiofemoral joint line.

Table 1: Intra-articular FTS in knee reported in literature

Author	Year of publishing	Number of cases	Age/sex	Location	Management
Pinar <i>et al.</i> [3]	1995	1	38/male	Posterior joint capsule	Open excision
Hur <i>et al.</i> [4]	1999	1	13/male	Infrapatellar fat pad	Open excision
Hitara <i>et al.</i> [5]	2002	1	50/male	Posterior joint capsule	Open excision
Takakubo <i>et al.</i> [6]	2005	1	46/male	Between PCL and posterior capsule	Arthroscopic excision
Aynaci <i>et al.</i> [7]	2009	1	39/male	Infrapatellar fat pad	Open excision
Ceroni <i>et al.</i> [8]	2010	1	12/male	Attached to PCL and posterior capsule	Open excision
Griesser <i>et al.</i> [2]	2011	1	17/male	Attached to PCL and posterior capsule	Open excision
Kundangar <i>et al.</i> [9]	2011	1	32/male	Adjacent to PCL	Open excision
Hsieh <i>et al.</i> [10]	2013	1	42/female	Medial patella-femoral compartment	Arthroscopic excision
Ha <i>et al.</i> [11]	2015	1	45/male	Lateral joint capsule	Arthroscopic excision

FTS: Fibroma of tendon sheath, PCL: Posterior cruciate ligament



Figure 2: Magnetic resonance imaging inversion recovery sequence axial section showing the hyperintense nodular lesion located between femoral condyle and iliotibial band.

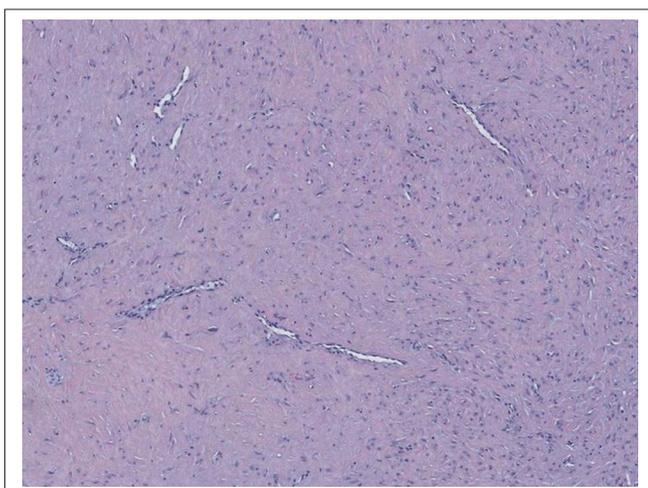


Figure 3: Microscopic appearance of Fibroma of tendon sheath.

believed to be due to incomplete excision. FTS is not recognized to display an aggressive or malignant behavior [18]. Therefore, treatment of FTS consist of complete marginal excision to prevent local recurrence, with preservation of important anatomic structures.

On MRI study, FTS usually appears as well defined, small, soft tissue mass [19, 20]. Signal intensity of the tumor is variable. On T1-weighted images, the tumor is generally of a low signal intensity compared to the adjacent muscle. The mass shows heterogeneous, low to high signal

intensity on T2-weighted images, and a variable enhancement pattern. This variation on T2-weighted images and contrast enhancement study mostly depend on the contents of fibrocollagenous tissue and capillary vascularity near the mass [20]. A definite diagnosis of FTS cannot be made on the basis of MRI characteristics, since many soft tissue tumors may show similar MRI findings [8, 21]. In fact, differentiating FTS from other pathologies such as giant cells tumor of the tendon sheath, pigmented villonodular synovitis, and nodular intra-articular fasciitis remains problematic even using MRI characteristics. In all the case reports previously described, diagnosis of FTS has been made only after histopathological examination [2, 3, 4, 5, 6, 7, 8, 9, 10, 11]. Hence, high index of suspicion is required to include FTS as differential diagnosis preoperatively.

Microscopically, FTS shows a smooth, well-circumscribed, lobulated architecture. FTS has been described as a fibrotic neoplasm or a reactive fibrosis, but its precise origin is still unclear [1, 19]. Microscopically, the mass is composed of scattered, spindle-shaped fibroblasts or myofibroblasts within a dense fibrocollagenous stroma and frequently bears dilated or slit-like vascular channels. The term FTS suggests that the tumor originates from the tendon or tendon sheath. Actually, most of the cases do occur in close association with the tendon or tendon sheath [1]. However, intra-articular FTS usually originates in the joint synovium or capsule, with no apparent connection to any tendons [2, 3, 4, 5, 6, 7, 8, 9, 10, 11].

Symptomatically, it can present as varied presentation, depending on its location inside the joint. Common complaints are pain, tenderness, limitation of motion, difficulty in squatting/climbing stairs. In our case, as the location was lateral it presented as iliotibial band friction syndrome. The patient was completely relieved after excision of the FTS nodule.

Conclusion

FTS arising around knee is uncommon and an intra-articular location is extremely rare. However, as more reports of FTS appear in the literature, it would seem prudent to add this condition to the list of differential diagnosis. Presentation of the case can vary depending on the intra-articular location of the fibroma. ITB friction syndrome is a rare diagnosis in teenage girls. Association with any nodular lesion of knee is uncommon and should be borne in mind.

Clinical Message

ITB friction syndrome should be considered a differential diagnosis even in uncommonly affected population subset when presented with typical clinical features. When nodular lesions on MRI are detected in patients with ITB friction syndrome, a fibroma of FTS could be included in the differential diagnosis.

References

1. Chung EB, Enzinger FM. Fibroma of tendon sheath. *Cancer* 1979;44(5):1945-1954.
2. Griesser MJ, Wakely PE, Mayerson J. Intraarticular fibroma of tendon sheath. *Indian J Orthop* 2011;45(3):276-279.
3. Pinar H, Ozkan M, Ozaksoy D, Pabuçcuoglu U, Akseki D, Karaoglan O. Intraarticular fibroma of the tendon sheath of the knee. *Arthroscopy* 1995;11(5):608-611.
4. Hur J, Damron TA, Vermont AI, Mathur SC. Fibroma of tendon sheath of the infrapatellar fat pad. *Skeletal Radiol* 1999;28(7):407-410.
5. Hitora T, Yamamoto T, Akisue T, Marui T, Nagira K, Ohta R, *et al*. Fibroma of tendon sheath originating from the knee joint capsule. *Clin Imaging* 2002;26(4):280-283.
6. Takakubo Y, Fukushima S, Asano T, Yamakawa M. Case reports: Intraarticular fibroma of the tendon sheath in the knee. *Clin Orthop Relat Res* 2005;439:280-285.
7. Aynaci O, Kerimoglu S, Ozturk C, Saracoglu M, Yildiz K. Intraarticular fibroma of the tendon sheath arising from the infrapatellar fat pad in the knee joint. *Arch Orthop Trauma Surg* 2009;129(3):291-294.
8. Ceroni D, Dumont-Anoosiravani M, Genevay M, Merlini L, Rougemonet AL. Intra-articular fibroma of the tendon sheath of the knee involving a teenager: A case report and review of the literature. *Eur Orthop Traumatol* 2011;1:245.
9. Kundangar R, Pandey V, Acharya KK, Rao PS, Rao L. An intraarticular fibroma of the tendon sheath in the knee joint. *Knee Surg Sports Traumatol Arthrosc* 2011;19(11):1830-1833.
10. Hsieh PL, Wu WL, Shu GH, Tzeng WS, Yu WW, Tsai MY. Synovial fibroma in the knee: A case report 2013;38(386):21-25.
11. Ha DH, Choi S, Kim SJ, Lih W. Intra-articular fibroma of tendon sheath in a knee joint associated with iliotibial band friction syndrome. *Korean J Radiol* 2015;16(1):169-174.
12. Lavine R. Iliotibial band friction syndrome. *Curr Rev Musculoskelet Med* 2010;3(1-4):18-22.
13. Strauss EJ, Kim S, Calcei JG, Park D. Iliotibial band syndrome: Evaluation and management. *J Am Acad Orthop Surg* 2011;19(12):728-736.
14. Pinshaw R, Atlas V, Noakes TD. The nature and response to therapy of 196 consecutive injuries seen at a runners' clinic. *S Afr Med J* 1984;65(8):291-298.
15. Muhle C, Ahn JM, Yeh L, Bergman GA, Boutin RD, Schweitzer M, *et al*. Iliotibial band friction syndrome: MR imaging findings in 16 patients and MR arthrographic study of six cadaveric knees. *Radiology* 1999;212(1):103-110.
16. Costa ML, Marshall T, Donell ST, Phillips H. Knee synovial cyst presenting as iliotibial band friction syndrome. *Knee* 2004;11(3):247-248.
17. Mesiha M, Bauer T, Andrish J. Synovial sarcoma presenting as iliotibial band friction syndrome. *J Knee Surg* 2009;22(4):376-378.
18. Geschickter CF, Copeland MM. Classification of bone tumors. *Bull Hosp Joint Dis* 1951;12(2):498-513.
19. Moretti VM, de la Cruz M, Lackman RD, Fox EJ. Fibroma of tendon sheath in the knee: A report of three cases and literature review. *Knee* 2010;17(4):306-309.
20. Fox MG, Kransdorf MJ, Bancroft LW, Peterson JJ, Flemming DJ. MR imaging of fibroma of the tendon sheath. *AJR Am J Roentgenol* 2003;180(5):1449-1453.
21. Athwal GS, Bueno RA, Bansal M, Mintz DN, Athanasian EA. Intra-articular fibroma of tendon sheath involving the scapholunate and radiocarpal joints. *Skeletal Radiol* 2006;35(8):599-602.

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