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Fibroma Tendon Sheath Vastus Lateralis pada Paha Wanita Berusia 58 Tahun: Laporan Kasus

Fibroma of the Vastus Lateralis Tendon Sheath in the Thigh of the 58-year-old Female: A Case Report

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Abstrak

Fibroma of the Tendon Sheath (FTS) adalah tumor fibrosa non-kanker yang tumbuh lambat dan jarang terjadi, biasanya berukuran kecil, tidak nyeri, dan mengenai tendon ekstremitas atas pada pria dewasa muda. FTS pada ekstremitas bawah adalah jenis yang tidak biasa dan jarang dilaporkan sehingga menimbulkan tantangan diagnostik sebelum operasi. Kami melaporkan kasus atipikal fibroma besar pada tendon vastus lateralis pada seorang wanita berusia 58 tahun dengan benjolan nyeri di paha kanannya dalam enam bulan terakhir. Pemeriksaan fisik menunjukkan adanya massa keras dengan diameter kurang lebih 6 cm teraba di bagian anterior paha bawah. Massa teraba halus, bergerak, padat, dan memiliki batas yang jelas. Tidak terdapat perlengketan pada kulit, kemerahan, atau nyeri tekan. MRI menunjukkan tumor berukuran 4,2 x 5,8 x 6,2 cm dengan sinyal isointens pada gambar T1-weighted (T1WI), sinyal hipointens heterogen pada gambar T2-weighted (T2WI), dan sinyal hiperintens pada gambar FatSat. Biopsi tidak menunjukkan temuan ganas dan tumor telah direseksi melalui pembedahan. Studi pencitraan untuk FTS jarang dijelaskan, T1WI sering menunjukkan massa sinyal yang rendah, dengan sedikit isointens hingga hipointens pada otot. Tampilan FTS T2WI lebih bervariasi. FTS termasuk kasus yang jarang, namun harus tetap dimasukkan sebagai diagnosis banding dari massa paha terutama jika massa tersebut terasa nyeri dan tampak jinak pada pemeriksaan fisik dan radiologi.

Kata Kunci: *Fibroma Tendon Sheath Vastus Lateralis, Tumor Jaringan Lunak, Tendon Vastus Lateralis, Magnetic Resonance Imaging*

Abstract

Fibroma of the tendon sheath (FTS) is a rare slow-growing noncancerous fibrous tumor that is usually small, painless and involves the upper extremity tendons in young adult males. FTS of the lower extremity is an unusual and underreported variety that poses a diagnostic preoperative challenge. We report an atypical case of a large fibroma of the vastus lateralis tendon in a 58-year-old female presented with a painful lump in her right thigh within the past six months. Physical examination showed a hard firm mass approximately 6 cm in diameter palpated in the anterior of the lower thigh. The mass was smooth, mobile, solid, and had well-defined borders. There was no adhesion to the skin, redness, or tenderness. MRI showed a 4,2 x 5,8 x 6,2 cm tumor with isointense signals on T1-weighted images (T1WI), heterogeneous hypointense signals on T2-weighted images (T2WI), and hyperintense signals on FatSat images. Biopsy revealed no malignant findings and the tumor had been surgically resected. Imaging studies for FTS have rarely been described, T1WI often show a low signal mass, with slight isointense to hypointense to the muscle. The T2WI's appearance of FTS is more variable. In spite of rarity, FTS must still be included as a differential diagnosis of a thigh mass especially if the mass is painful and benign-appearing on physical exam and radiology.

***Keywords**: Fibroma of the Tendon Sheath, Soft-Tissue Tumor, Vastus Lateralis Tendon, Magnetic Resonance Imaging*

Introduction

Fibroma of the tendon sheath (FTS) is a rare slow-growing noncancerous fibrous tumor that is usually painless and involves the upper extremity tendons. The initial documentation of this condition was provided by Geschichter and Copeland in 1949 (Fu et al., 2019; Ko et al., 2021). FTS typically affects young adult males, with a female-to-male ratio of 1: 1.5-3, a high incidence occurring between the ages of 20 and 50, and a history of trauma associated with the development of the lesion documented in 9% of cases. The upper extremities mostly around small joints particularly the fingers, hands, and wrists are where FTS most frequently manifests itself (Huang et al., 2019; N et al., 2021).

FTS of the lower extremity is an unusual and underreported variety that makes a preoperative diagnostic challenge (Arıcan et al., 2020). Previous studies reported only Forty-three FTS cases that occurred around large joint regions (shoulder, elbow, knee, and ankle) were summarized. The most common large joint region was around the knee joint (Suzuki et al., 2017). The FTS are generally small, with most sized between 1 and 2 cm (Minagawa et al., 2022). Here we report a rare atypical case of a large FTS in the vastus lateralis tendon of a 58-year-old female presented with a painful lump on her right thigh. To our knowledge, this is the second reported FTS in the distal vastus lateralis tendon and the first report from Indonesia.

Case Report

A 58-year-old female came to our hospital with a painful lump on her right thigh that had emerged within the past six months. The swelling initially started small but gradually increased in size. There was no history of trauma or other risk factor related to FTS with her medical history and family history. During a physical examination, a lump was identified in the anterior lower area of the right femur. A firm mass approximately 6 cm in diameter was palpated. The mass was smooth, mobile, solid, and had well-defined borders. There was no adhesion to the skin, redness, or tenderness.

Magnetic resonance imaging (MRI) revealed a lobulated shaped mass of 4,2 x 5,8 x 6,2 cm. That tumor was showed low to intermediate signal on T1 weighted image, inhomogeneous predominantly low signal on T2 weighted image, and high signal on FatSat. The vastus lateralis tendon, vastus intermedius sub-deep fascia, lateral patellofemoral retinaculum, and iliotibial tract were all completely torn. This soft tissue lesion was extra-articular to the knee joint and had a lobulated appearance. Both vascular and bone involvement were absent. There was no cartilage damage, no periosteal response, and no cortex of the nearby femur bone was destroyed. Fibroma of tendon sheath is difficult to diagnose prospectively because the lesion shares imaging features with those of other tumors. Characteristic of this tumor is no involvement of bones.

Biopsy revealed no malignant findings and was characterized by a dense stroma created by collagen fibers enveloping fibroblasts. The tumor is lobulated, encapsulated mass consisting of spindle cells and collagen fibers of tendon sheath. The tumor had been surgically resected. There were no complications. A 3-month follow-up examination revealed that the patient was doing well without any relapses or complaints.

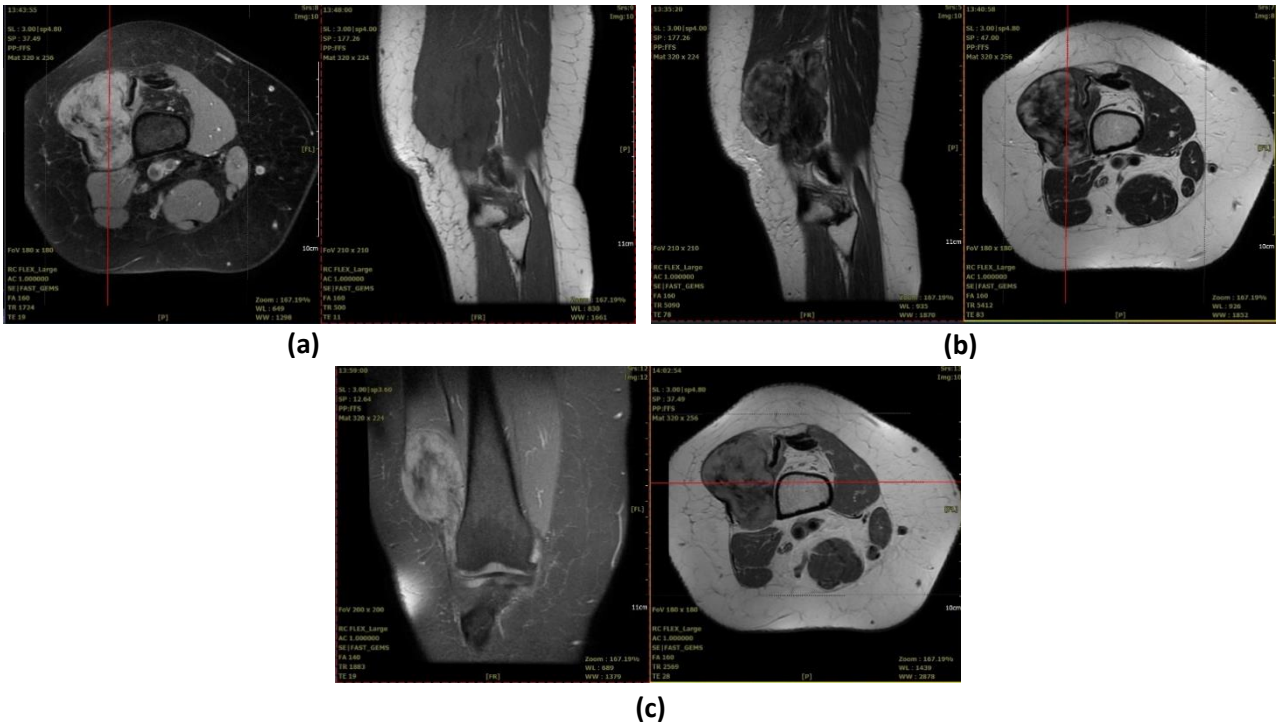

Figure. 1 MRI analysis showed a lobulated shaped tumors extra-articular to the knee joint and no involvement of bones with (a) isointense signals on T1WI; (b) heterogeneous hypointense signals on T2WI; and (c) hyperintense on FatSat images.

Discussion

FTS is an abnormal tissue growth originating from the synovium of the tendon sheath and resembles a tumor. This soft tissue tumor firmly adheres to the tendon sheath. Due to its frequent association with the tendon sheath, it can be readily differentiated from malignant conditions affecting the cartilage or bone. FTS is reported as a painless, small, slowly growing, and well-defined lesion that is common in middle-aged adult males. The peak incidence of FTS was observed in patients between the ages of 30 and 50 years and was more common in males (75%) (Ko et al., 2021; Minagawa et al., 2022). FTS is a tumor that majority occurs in the extremities (98%), with a predominance in the upper extremities (87.5%) (Minagawa et al., 2022; Pilania et al., 2019). Especially around small joints involving tendon or tendon sheaths of the wrists (10.3%), hands (24.8%), and most often the fingers (47.9%) (Suzuki et al., 2017; Nakazawa et al., 2022). In our case, unlike usual FTS occurred in the lower extremity, especially in the thigh of a 58-year-old female and the mass felt pain. Extra-articular FTS arises around the knee joint in the distal tendon sheath of vastus lateralis.

In particular, FTS arising around large joints (shoulder, elbow, knee, and ankle) is a very rare condition. The large joint most commonly affected by FTS is the knee. The most common symptoms previously reported of FTSs around a large joint previously reported were pain (62.5%), a palpable mass (54.2%), and decreased range of motion (50%). The pain with movement of the joint in extra-articular FTS occurs due to the growing tumor that irritates surrounding tissue such as the nerve (Suzuki et al., 2017). FTS manifests as slow-growing, round, or oval-shaped. FTS is often attached to tendons or tendon sheaths, has well-defined borders, is nodular or lobulated, dense, rubbery, tough and tenacious, flat in texture, and uniform grey in color. In general, the tumor is small, with most measuring between 1 and 2 cm. They often present as painless masses that gradually increase in size, although some cases may involve accompanying pain or discomfort (Minagawa et al., 2022; Lelong et al., 2021). In our case, FTSs are large with size 4,2 x 5,8 x 6,2 cm and had a lobulated appearance that affected surrounding tissue but does not involve vascular and bone.

The differential diagnosis of FTS of the knee includes various benign and malignant diseases and neoplasms. The list includes things like inflammatory synovitis myxoma para-articular fasciitis nodular synovial, fibrosarcoma, synovial sarcoma, and others. However, the closest analogs are usually extra-abdominal desmoid tumors, giant cell tumors of the tendon sheath (GCTS), and pigmented villonodular synovitis (PVNS) (Moretti et al., 2010).

Imaging studies for FTS have rarely been described, on ultrasound (USG), the lesion appears encapsulated hypoechoic due to the high fibrous content of FTS. (Ko et al., 2021). MRI is useful for the diagnosis of the properties and localization of the tumor. MRI has greatly increased the capacity to demonstrate detailed pathological changes and has become an indispensable tool for the advanced diagnosis and follow-up testing of FTS (Suzuki et al., 2017; Gaafary et al., 2021). Previous studies reported MRI can be used for differential diagnosis of FTS and GCTTS with sensitivities of 83–100%, specificities of 29–79%, and diagnostic accuracies of 60–89% (Ge et al., 2019).

On MRI, FTS shows low to intermediate intensity on T1WI and intermediate to hyperintensity on T2WI, according to the degree of hyalinization and cellularity (Fu et al., 2019; Emori et al., 2021). Other MRI findings have previously been reported, with most lesions showing a low signal in T1WI, the surrounding muscle signal slightly lower or equal, and some showing a slightly higher signal. Differences in the degree of hyalinization and the number of proliferating fibroblasts can result in variations in T2WI (Huang et al., 2019). Hypointensity of T2WI, in particular, because these tumors have many collagen bundles, may be observed in some patients. FTS, with heterogeneous hypointense patches near the lesion's core, is likely because there is the majority of spindle cells there. (Ge et al., 2019; Finkelstein et al., 2021). FTS, with all hypointense areas at the center of the lesion, probably because most spindle cells were present at the center. However, in our patient, the MRI signal was isointense at T1WI, heterogeneous hypointense at T2WI, and hyperintense on FatSat. The clinical symptoms and MRI are similar with FTS but accurate diagnosis requires histopathological analysis.

In terms of histopathology, FTS is characterized by a dense stroma created by collagen fibers enveloping spindle or stellate-shaped cells similar to fibroblasts. This tumor was lobulated, encapsulated mass consisting os spindle cells and collagen fibers that arise from a tendon sheath. In certain cases, individuals may have a history of trauma, suggesting a potential connection between the trauma and the development of the disease (Fu et al., 2019). Because of the lack of cases, it is difficult to establish a consensus for treatment in FTS. However, the local recurrence rate after excision was 24 % for the largest FTS series to date. Because of its benign histological appearance and slow growth, the prognosis after marginal removal of the lesion is generally good. (Moretti et al., 2010). The final diagnosis based on the different histological features. Treatment is by local surgical excision with tendon preservation, with a reported recurrence rate of 24% (Emori et al., 2021).

Conclusion

We report an unusually rare case of large FTS in the vastus lateralis tendon of a 58-year-old female presented with a painful lump in her right thigh. Imaging studies for FTS have rarely been described, characteristic of MRI feature of FTS was nodular or mass like with T1WI tends to reveal a low signal mass, slightly isointense to hypointense to muscle. The FTS's appearance on T2WI sequences is more variable according to the degree of hyalinization and fibroblasts cellularity. Accurate diagnosis requires histopathological analysis. In spite of rarity, FTS must still be included in the differential diagnosis of a thigh mass especially if the mass is painful and benign-appearing on physical exam and radiology.

Conflict of interest

The authors declare no conflict of interest.

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Reference

Arıcan, M., Turhan, Y., & Gamsızkan, M. (2020). A rare localized giant cell tumor of the tendon sheath originating from the ligamentum mucosum: A case report. Joint Diseases and Related Surgery, 31(1), 149-153. https://doi.org/10.5606/ehc.2020.72323

Emori, M., Takashima, H., Iba, K., Sonoda, K., Oda, T., Hasegawa, T., & Yamashita, T. (2021). Differential diagnosis of fibroma of tendon sheath and giant cell tumor of tendon sheath in the finger using signal intensity on T2 magnetic resonance imaging. Acta Radiologica, 62(12), 1632-1638. https://doi.org/10.1177/0284185120976915

Finkelstein, D., Foremny, G., Singer, A., Clifford, P., Mazzini, J. P., Kerr, D. A., & Subhawong, T. K. (2021). Differential diagnosis of T2 hypointense masses in musculoskeletal MRI. Skeletal Radiology, 50, 1981–1994. https://doi.org/10.1007/s00256-021-03711-0

Fu, Z., Liu, J., Huang, D., Jia, X., Liu, Z., & Liu, B. (2019). Fibroma of tendon sheath embedded in carpal bones mimicking carpal enchondroma. Medicine, 98(16), e15262. https://doi.org/10.1097/MD.0000000000015262

Gaafary, S. M. E., Rahim, S. A. A. A., Ali. H. H. S. A. (2021). Evaluation of Role of Magnetic Resonance Imaging in Detection and Characterization of Soft Tissue Masses of the Hand and Wrist. The Medical Journal of Cairo University, 89(June), 661-671. https://doi.org/ 10.21608/mjcu.2021.167873

Ge, Y., Guo, G., You, Y., Li, Y., Xuan, Y., Jin, Z.-W., & Yan, G. (2019). Magnetic resonance imaging features of fibromas and giant cell tumors of the tendon sheath: differential diagnosis. European Radiology, 29(7), 3441–3449. https://doi.org/10.1007/s00330-019-06226-4

Huang, C., Li, C., Zhang, X., Zhao, Z., Gan, D., Zhao, B., & Luo, J. (2019). Fibroma of the tendon sheath in the patellar tendon in a Chinese boy. International Journal of Clinical and Experimental Medicine, 12(1), 1066–1070.

Ko, A., Lee, G. Y., Kim, S., Lee, J., & Hwang, H. W. (2021). A Fibroma of Tendon Sheath Causing Carpal Tunnel Syndrome: A Case Report of an Atypical Clinical Presentation. Journal of the Korean Society of Radiology, 82(6), 1600–1605. https://doi.org/10.3348/jksr.2020.0151

Lelong, C., Delpierre, I., Remmelink, M., & Verbeurgt, C. (2021). Fibroma of the tendon sheath of the neck. European Annals of Otorhinolaryngology, Head and Neck Diseases, 138(1), 35-36. https://doi.org/10.1016/j.anorl.2020.03.010.

Minagawa, Y., Yasuda, T., Kanzaki, K., Kusaba, A., Ohike, N., & Inagaki, K. (2022). A Rare Bone Erosion due to Fibroma of the Tendon Sheath. 12(January), 14–17. https://doi.org/10.13107/jocr.2022.v12.i01.2596

Moretti, V. M., de la Cruz, M., Lackman, R. D., & Fox, E. J. (2010). Fibroma of the tendon sheath in the knee. The Knee, 17(4), 306–309. https://doi.org/10.1016/j.knee.2010.02.014

N, S. P., K, S., & Ram, S. (2021). Fibroma of extensor digitorum tendon sheath in 27yr old male patient: A case report. Int J Orthop Sci, 7(4), 164-169. https://doi.org/10.22271/ortho.2021.v7.i4c.2878

Nakazawa, R., Dohi, T., Hatsuoka, Y., Kigure, R., & Ogawa, R. (2022). Fibroma of the tendon sheath in the dorsum of the foot: A case report. Journal of Surgical Reconstruction, 35(November), 24–28. https://doi.org/10.1016/j.jpra.2022.11.005

Pilania, K., Jankharia, B., & Memon, F.W. (2019). Fibroma of the patellar tendon sheath—a rare case in a young boy. Skeletal Radiology, 48, 1457–1461. https://doi.org/10.1007/s00256-019-03178-0

Suzuki, K., Yasuda, T., Suzawa, S., Watanabe, K., Kanamori, M., & Kimura, T. (2017). Fibroma of the tendon sheath around large joints: clinical characteristics and literature review. BMC Musculoskeletal Disorders, 18(1), 376. https://doi.org/10.1186/s12891-017-1736-5