Radiological Sciences Proceedings

Unilateral Hypertrophy of Tensor Fasciae Latae: A Report of Two Cases

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UCLA Radiol Sci Proc. 2023;3(1):13-16

Abstract: Unilateral hypertrophy of the tensor fasciae latae (TFL) is an uncommon radiologic finding that may present as a palpable soft tissue mass in the thigh. Accurate radiologic diagnosis can circumvent unnecessary biopsy for this benign finding. We report two cases of unilateral hypertrophy of tensor fasciae latae muscles, both of which presented as a proximal thigh mass. We provide examples of sonographic, computed tomography (CT), and magnetic resonance imaging (MRI) features.

Keywords: *soft tissue mass, tensor fasciae latae, muscle hypertrophy*

Key Points

- Unilateral hypertrophy of the TFL is postulated to occur due to altered biomechanics.
- This is a benign entity that does not require specific treatment. Accurate radiologic diagnosis can help avoid unnecessary further workup.

Abbreviations

CT: computed tomography
MRI: magnetic resonance imaging
TFL: tensor fasciae latae
US: ultrasound

Case 1 Presentation

A 27-year-old woman with a history of bilateral L5 spondylolysis and chronic low back pain presented with a mass in the left thigh, which she noticed approximately 4 weeks prior. The patient endorsed associated pain in specific positions. On examination, there was no visible abnormality, but a hard and nonmobile lesion was palpable on the lateral proximal left thigh. The patient's muscle tone was normal. Targeted sonographic imaging demonstrated no neoplastic soft tissue mass in the area of palpable abnormality (Figure 1A). Further comparison of the same area on the contralateral thigh revealed asymmetric hypertrophy of the left tensor fasciae latae (TFL) muscle (Figure 1B), which was confirmed by computed tomography (CT) obtained later (Figure 2).

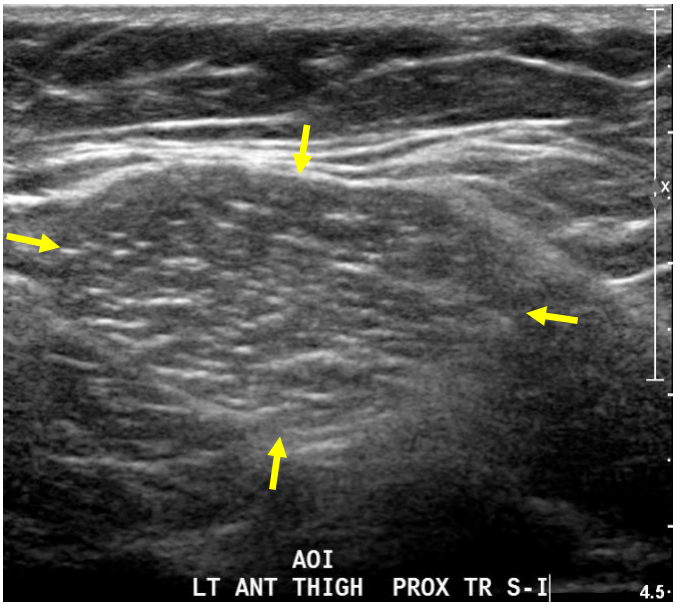
Case 2 Presentation

A 65-year-old woman with osteoporosis presented with the insidious growth of a left proximal and lateral thigh mass, which she had noticed beginning many years prior. The patient requested a referral to surgery for removal. During surgical consultation, a raised area in the proximal and lateral quadriceps region was noted. The patient did not complain of pain. The surgeon noted the prominence of deeper musculature on the physical exam without a palpable firm or discrete mass. Targeted sonography revealed a structure with echotexture resembling that of muscle with mild internal vascularity (Figure 3A). A comparison to the contralateral TFL muscle revealed mild asymmetry (Figure 3B). Magnetic resonance imaging (MRI) confirmed asymmetric unilateral

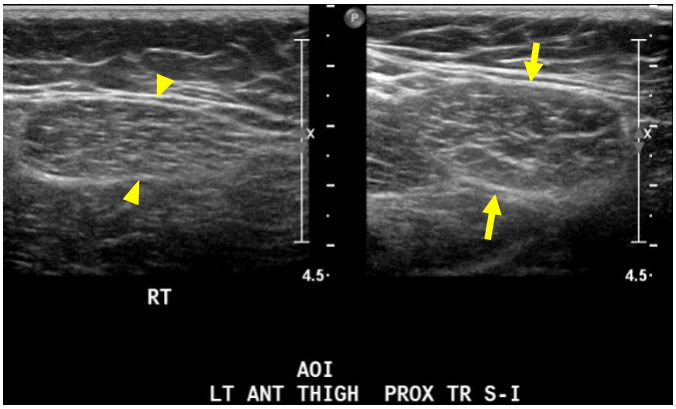
hypertrophy of the left TFL muscle with mild associated muscle edema along the anterolateral aspect of the thigh (Figure 4).

Figure 1. Ultrasound (US) Images of the Anterolateral Thigh of a 27-year-old Woman (Case 1).

A Transverse view



B Transverse views



(A) US image over the area of palpable abnormality reveals a normal appearing tensor fasciae latae muscle (arrows). (B) US images over the area of palpable abnormality in the left thigh (arrows) compared to the contralateral thigh (arrowheads) indicates hypertrophy in the former.

Discussion

Unilateral hypertrophy of the TFL muscle is an uncommonly encountered clinical entity that has been sporadically reported in the literature.[1] As a primary finding, pain is not reliably present. In contrast, pain is more commonly the primary concern in patients with prior total hip arthroplasty and unilateral hypertrophy of the TFL muscle as a secondary finding. In these patients, TFL muscle hypertrophy usually occurs on the side of the arthroplasty.[2]

Figure 2. Computed Tomography (CT) of the Tensor Fasciae Latae Muscles in a 27-year-old Woman.

CT image demonstrates asymmetric unilateral hypertrophy of the left tensor fasciae latae muscle (arrows) compared to the right (arrowheads).

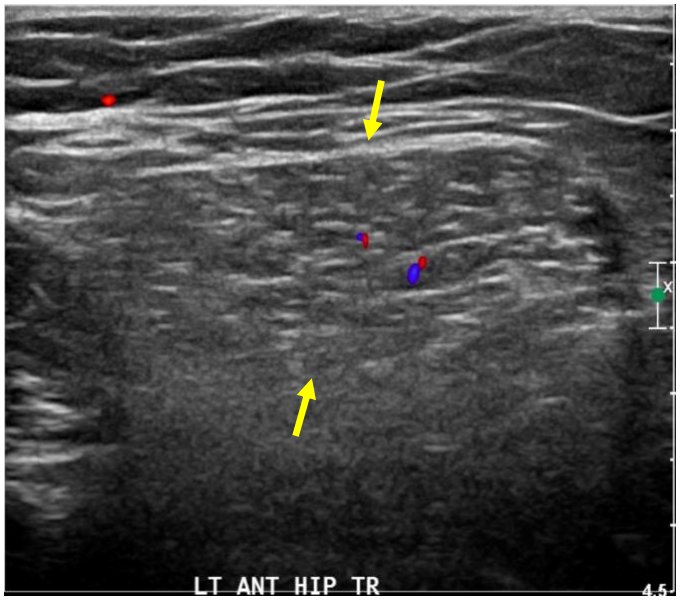
Congruent with the cases presented here, the most commonly presenting symptom is a palpable soft tissue mass. This mass may indicate a growing neoplasm and, therefore, should prompt diagnostic imaging workup.[1]

The pathophysiology of unilateral hypertrophy of the TFL muscle is incompletely understood; however, muscle hypertrophy with increased weight loading secondary to altered biomechanics is thought to be a predisposing factor. For example, a history of prior surgery,[1] abductor tendon abnormality,[3] or injury[4] that alters weight-bearing mechanics and induces compensatory function of the muscle[3] has been reported in cases of unilateral hypertrophy of the TFL muscle.

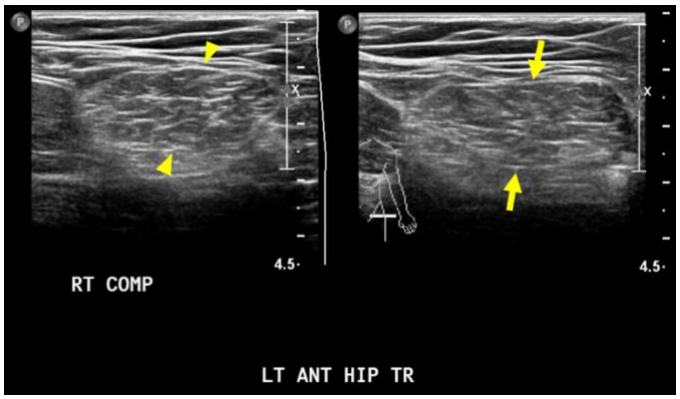
Additional cases have been noted as a result of superior gluteal nerve injury during total hip arthroplasty.[5] The precise surgical technique employed was noted to be an important factor, with an increased incidence of hypertrophy with a lateral approach compared to an anterolateral approach.[6] This is thought to be due to increased injury to the gluteus medius muscle.[6]

Figure 3. Ultrasound (US) Images of the Anterolateral Thigh of a 65-year-old Woman (Case 2).

A Color Doppler image, transverse view



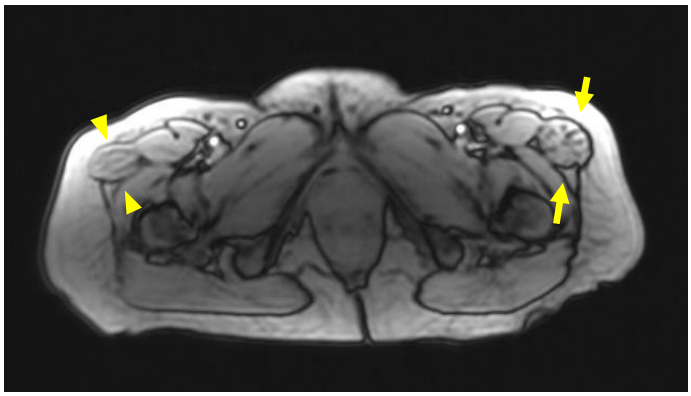
B Transverse views



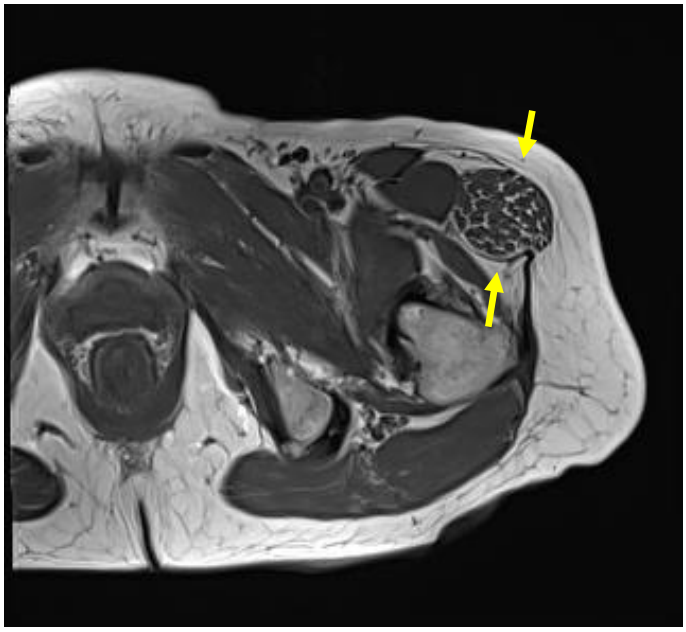
(A) Color Doppler image of the area of palpable abnormality demonstrates a normal tensor fasciae latae muscle. (B) US image over the area of palpable abnormality (arrows) indicates hypertrophy when compared to a transverse image over the contralateral thigh (arrowheads).

Figure 4. Magnetic Resonance Imaging (MRI) of the Anterolateral Thigh of a 65-year-old Woman (Case 2).

A Localizer image



B T1-weighted MRI



(A) Localizer image demonstrates asymmetric unilateral hypertrophy of the left tensor fasciae latae muscle (arrows) compared to the right (arrowheads). (B) T1-weighted image demonstrates hypertrophied left tensor fasciae latae muscle (arrows) with evidence of fatty infiltration.

In addition, unilateral hypertrophy of the TFL muscle was seen in the nonsurgical patient population, particularly in those with neuropathy or lumbosacral radiculopathy.[1,7,8] In biopsies, pathologic findings were congruent with hypertrophied muscle.[1] Hence, hypertrophy is distinct from pseudohypertrophy, the latter of which is characterized by the degree of fatty infiltration and increase in connective tissue and is often found in conditions such as muscular dystrophy disorders.[1,9]

To our knowledge, this is the first report of sonographic cases of unilateral hypertrophy of the TFL muscle. Prior literature has reported features on CT or MRI with or without biopsy as diagnostic criteria. This case report describes the characteristic sonographic findings of unilateral hypertrophy of the TFL: muscle-like structure with

normal muscle echogenicity in the area of palpable mass in the anterolateral thigh. When faced with no obvious sonographic correlate of the palpable mass, direct comparison with the contralateral thigh reveals asymmetry of the muscle surface area despite normal symmetric echotexture, aiding in diagnosis. This is further facilitated by the convenience of ultrasound in ruling out other muscle pathologies,[10] potentially circumventing the need for further cross-sectional imaging such as CT or MRI. Furthermore, knowledge of this benign entity is useful to prevent unnecessary, invasive biopsy.

Unilateral hypertrophy of the TFL muscle is often treated symptomatically without complications.[2] Notably, spine rehabilitation, strengthening, and steroid injections have been used in patients with lumbosacral radiculopathy.[8] In addition, abductor training in patients with abductor tendon injury[4] has been utilized, indicating that treatment of the underlying condition causing altered biomechanics may be key to improvement.

Conclusion

Unilateral hypertrophy of the TFL muscle is an uncommon entity that typically presents with a palpable mass at the proximal thigh. This clinical finding is postulated to occur due to altered biomechanics at the abductor muscles, either from nerve injury or uneven weight loading. Here, we provided examples of the sonographic, CT, and MRI findings that correspond with this entity. Comparing the area of concern to the contralateral side, when possible, is useful in clinching the diagnosis. Radiologic diagnosis of this benign entity can prevent a more invasive workup, including biopsy.

Author Contributions

Conceptualization, K.M. and S.S.Y.; Acquisition, analysis, and interpretation of data, K.M. and S.S.Y.; Writing – original draft preparation, S.S.Y.; Review and editing, K.M. and S.S.Y.; Supervision, K.M. All authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved. All authors had full access to all the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Disclosures

None to report.

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