

A rare case of hernias of the anterior compartment of the leg

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Learning objectives

The purpose of our educational exhibit is to highlight the occurrence of fat herniation and its radiological presentation.

Background

Hernia intermuscular adipose tissue of the lower extremities is a rare condition that occurs through weak points of fascia cruris (a fascia of the leg that forms a complete investment to the muscles) crossed by perforating vessels that cause fascial defect, most between tibialis anterior and extensor muscles, simulating muscle herniation. We present a case of a 15-years old woman presented to our observation with a history of pain and weakness of the legs. She was referred to our department because of onset of symptomatic nodules occurred in the middle to lower third of the anterior compartment in both legs and progressive worsening of symptoms. On clinical examination, the nodules were soft, subcutaneous and compressible. These nodules were visible, curiously, when she was in an upright position and with the legs flexed , and painful after some hours in this position. These aspects have led us to suppose a muscle herniation, that, in the lower leg, is a relatively common clinical condition, especially of the tibialis anterior muscle, the most common described in literature.

Findings and procedure details

Our young patient was underwent to a dynamic ultrasonographic study, performing an axial and longitudinal scan of the mass with a 18 MHz linear transducer (MyLab TWICE, Esaote Biomedica, Genoa, Italy) , with the patient in upright position and tibialis anterior muscle tension, that showed small hypoechoic formations through fascia cruris defect crossed by perforating vessels (fig. 1-3) , to report to small hernias intermuscular adipose tissue, condition that occurred when some position of the leg increase the pressure inside.

Subsequently, she performed a MRI exam (Siemens Aera 1.5 T, Monaco, Germany) of both legs, by T1 weighted, T2 weighted and T2 fat suppression sequences, which evidenced hyperintense masses in T1 and T2 weighted sequences (fig. 4a, 4d), hypointense in T2 fat suppression sequence (fig. 4b), most between tibialis anterior and extensor muscles. Such signal features, along with site and morphology of the masses, confirmed the ultrasound diagnostic hypothesis and finally excluded other conditions such as muscle herniation, lipomas, angioliomas, fibromas .

Images for this section:

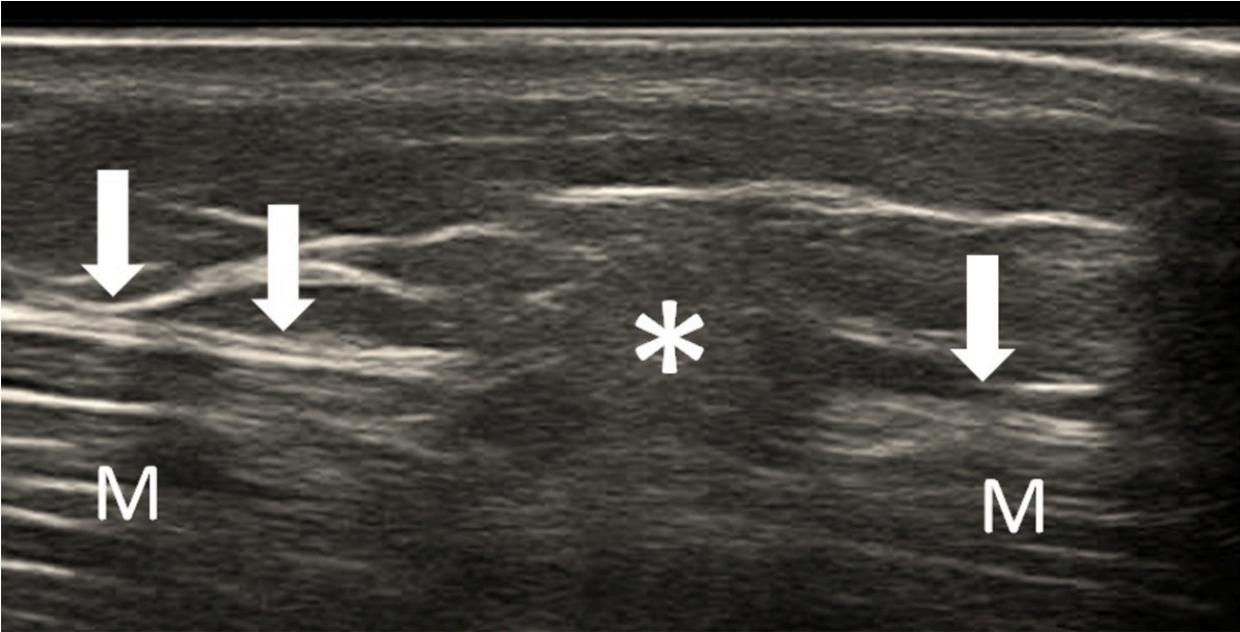


Fig. 1: Fig 1 : axial scan of a small hypoechoic fat herniation (asterisk) through fascia cruris (white arrows) defect ; M: muscles.

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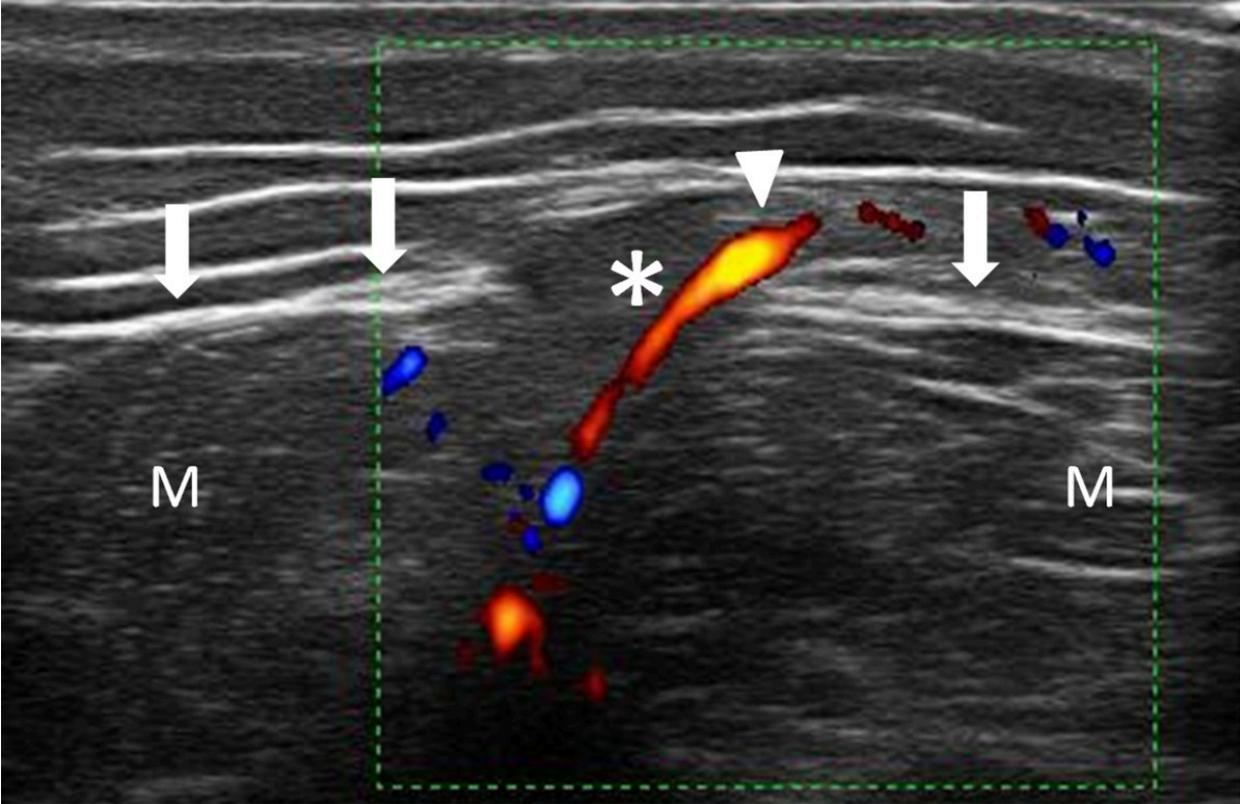


Fig. 2: Fig 2: axial scan of a small hypoechoic fat herniation (asterisk) through fascia cruris (white arrows) defect crossed by perforating vessels (arrowhead) ; M: muscles.

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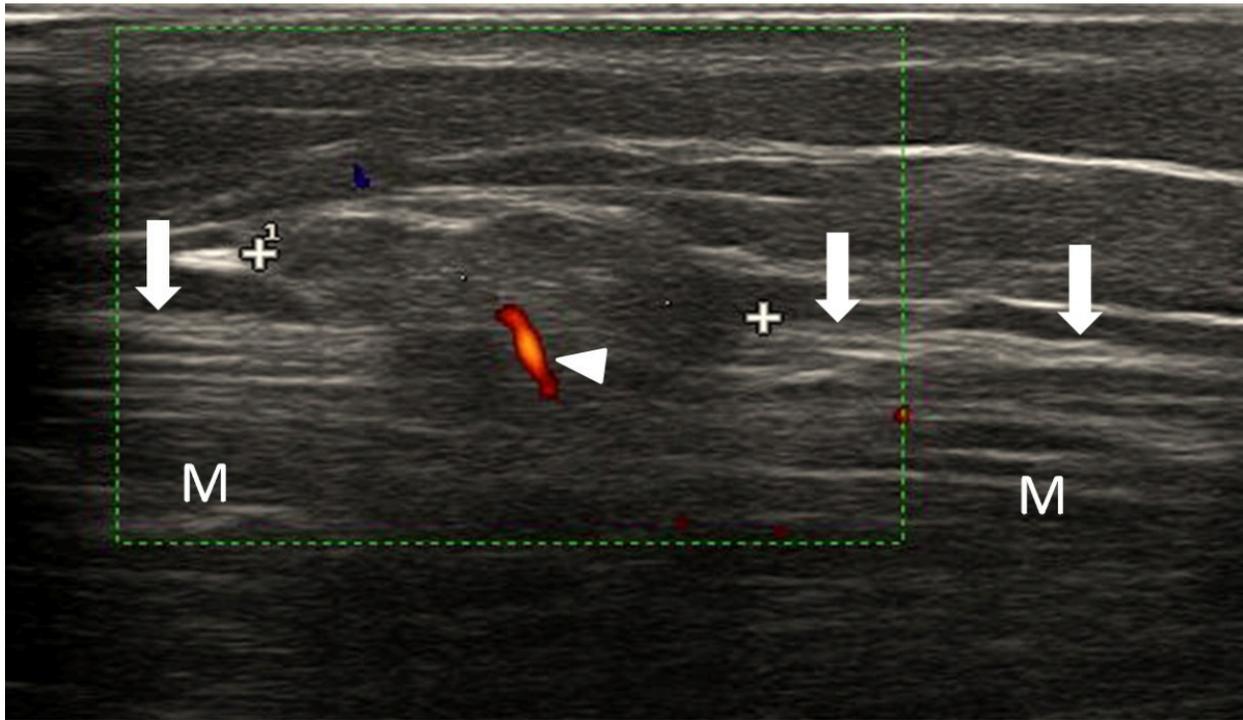


Fig. 3: Fig 3: axial scan of a small hypoechoic fat herniation (crosses) through fascia cruris (white arrows) defect crossed by perforating vessels (arrowhead); M: muscles.

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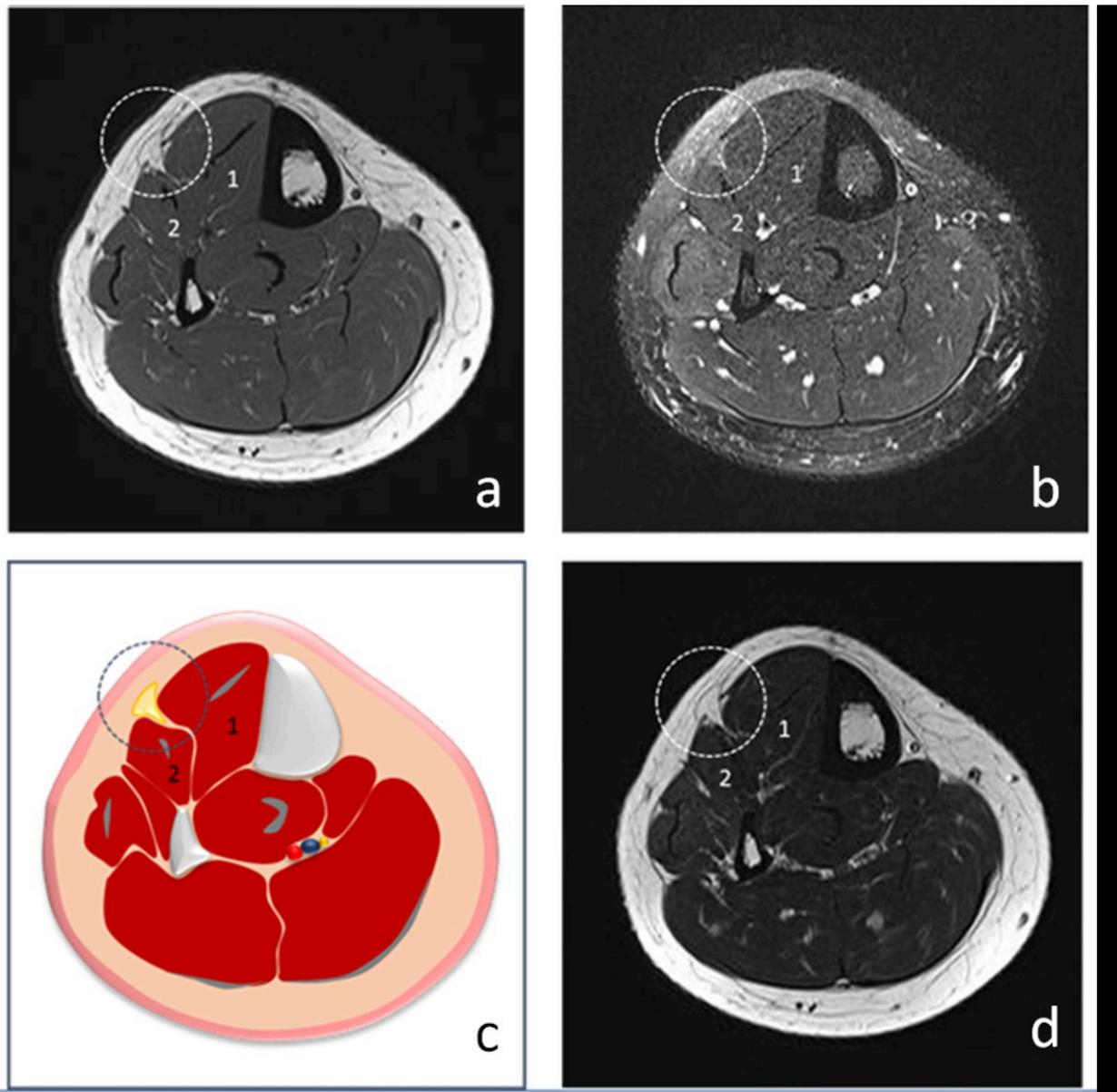


Fig. 4: Fig 4 : (a) hernia intermuscular adipose tissue (circle) appears hyperintense in T1 and T2-weighted sequences (a,d), hypointense in T2 fat suppression sequence (b), between tibialis anterior (1) and extensor (2) muscles; c: anatomical scheme.

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Conclusion

The diagnosis of fat herniation should be considered in patients with positionally variable subcutaneous nodules, especially in the lower extremities, a rare condition occurred through weak points of fascia cruris crossed by perforating vessels that cause fascial defect. Ultrasonographic examination is useful for detecting the fascial defect; in addition to offering high-resolution imaging, ultrasound also provides the capability of real-time dynamic assessment of soft-tissue structures excluding other conditions caused by soft tissue tumours such as lipomas, angioliipomas, fibromas and the relatively common condition of muscle herniation. A MRI exam, performed by T1 weighted, T2 weighted and T2 fat suppression sequences, can be useful to confirm the ultrasound diagnosis.

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