Painless mass in leg: diagnosis and discussion

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Published online: 25 July 2009
© ISS 2009

Diagnosis

Parosteal ossifying lipoma of the fibula: a case of benign lipomatous tumor showing gadolinium enhancement on MRI.

Discussion

Radiography shows a well-defined, calcified parosteal soft-tissue mass with fat density and calcification, apparently attached to the fibular cortex. Computed tomography shows both mass components (calcium and fat), well-delimited edges and the cortical relationship with a short narrow pedicle. Magnetic resonance imaging with a gadolinium-enhanced dynamic three-dimensional axial sequence shows inhomogeneity with fat-saturated low signal areas and foci of enhancement in non-fatty areas.

The case presentation can be found at doi:10.1007/s00256-009-0749-z.

We declare that the present research complies with the current laws of the country in which it was done (Spain), and that we have had full control of all primary data.

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The mass was surgically excised with a wide margin. The gross specimen consisted of an encapsulated, $1.8 \times 1.2 \times 1$ -cm mass with a smooth whitish surface, tightly attached to fibular periosteum. Slicing revealed mainly yellowish, adipose tissue with a few whitish fibrous bands and numerous foci of petrous, osseous tissue. Histologically, the tumor showed mature adipose tissue, embedded strands of fibrous tissue and areas of chondro-osseous tissue with typical endochondral bone formation, forming dispersed foci of mature trabecular bone, with abundant intertrabecular vascularization (Fig. 4 of case presentation). No mitotic figures or areas of hematopoiesis were seen. The final pathologic diagnosis was parosteal ossifying lipoma.

Parosteal ossifying lipoma is a very rare subtype of parosteal lipoma intimately related with the periosteum of the adjacent bone. It contains adipose tissue and extensive areas of cartilaginous and osseous differentiation. Only one case has been reported on the fibula [1]. Four possible radiographic appearances of parosteal lipoma have been described, depending on the association with chondroid and/or osseous modulation [2]. The lipoma may rest

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directly on the cortex with no elements of cartilage or bone, or with patches of chondroid and bone tissue scattered throughout the lipomatous mass. It may have a narrow bony stalk with a lucent lipomatous cap mimicking a pedunculated exostosis, or a densely ossified broad-based osteochondromatous element beneath a thin lipomatous cap simulating a sessile exostosis. The differential diagnosis includes other benign fatty tumors, myositis ossificans, florid hyperostosis, synovial sarcoma and low grade liposarcoma.

Panzarella et al. [3] determined the predictive value of preoperative gadolinium-enhanced MRI in distinguishing 32 well-differentiated liposarcomas from benign fatty tumors. As a predictor of liposarcoma, the presence of gadolinium enhancement showed 100% sensitivity, 71% specificity, 53% positive predictive value and 100% negative predictive value. Gadolinium enhancement of thick septa and/or nodular or globular foci in a mostly homogeneous, fatty, soft tissue tumor is a sensitive screening method to determine the diagnosis of a well-differentiated liposarcoma. However, as a predictor of liposarcoma, false positive findings affect its specificity and positive predictive value. This occurs with gadolinium-enhanced MRI of benign fatty tumors (angioliipoma, fibrolipoma, hibernoma and ossifying chondroid lipoma),

due to their increased vascularity [3–5]. This first report of a gadolinium-enhanced MRI of parosteal ossifying lipoma shows that it should also be considered in this group of benign lipomatous tumors. Nevertheless, the typical radiographic appearance, CT and MRI features should be sufficient to diagnose a parosteal ossifying lipoma with no further contrast studies, as signal enhancement does not contradict its benign nature nor modify its differential diagnosis or therapeutic approach.

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