

MUSCULOSKELETAL CASE 5. DIAGNOSIS

HEMANGIOMA OF BONE

Sagittal T_1 -weighted and T_2 -weighted spin-echo (SE) images of the lumbosacral spine (Fig. 1) demonstrate predominant preservation of bone marrow signal within the L5 vertebral body. Close inspection shows vertical striations of low signal intensity (SI) within the vertebral body that correspond to prominent vertical trabeculae seen on plain radiographs (Fig. 2). This “corduroy vertebra” is characteristic of hemangioma of bone. The absence of cortical thickening and enlargement of the vertebra refute the diagnosis of Paget’s disease.

Hemangiomas of bone have been reported with increasing frequency since the introduction of magnetic resonance imaging (MRI) to clinical practice. The “corduroy vertebra” represents an infrequent, essentially

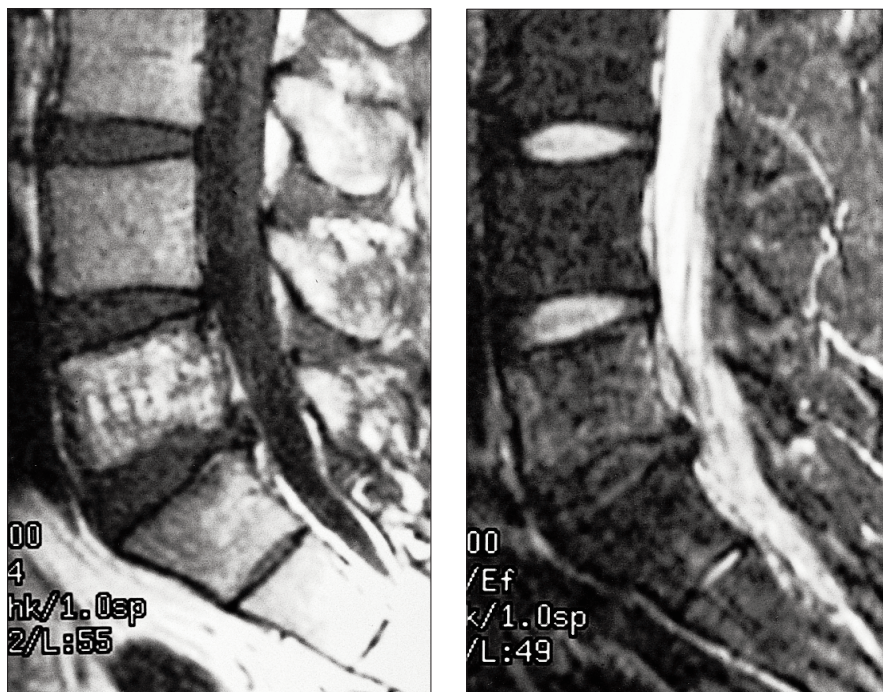


FIG. 1

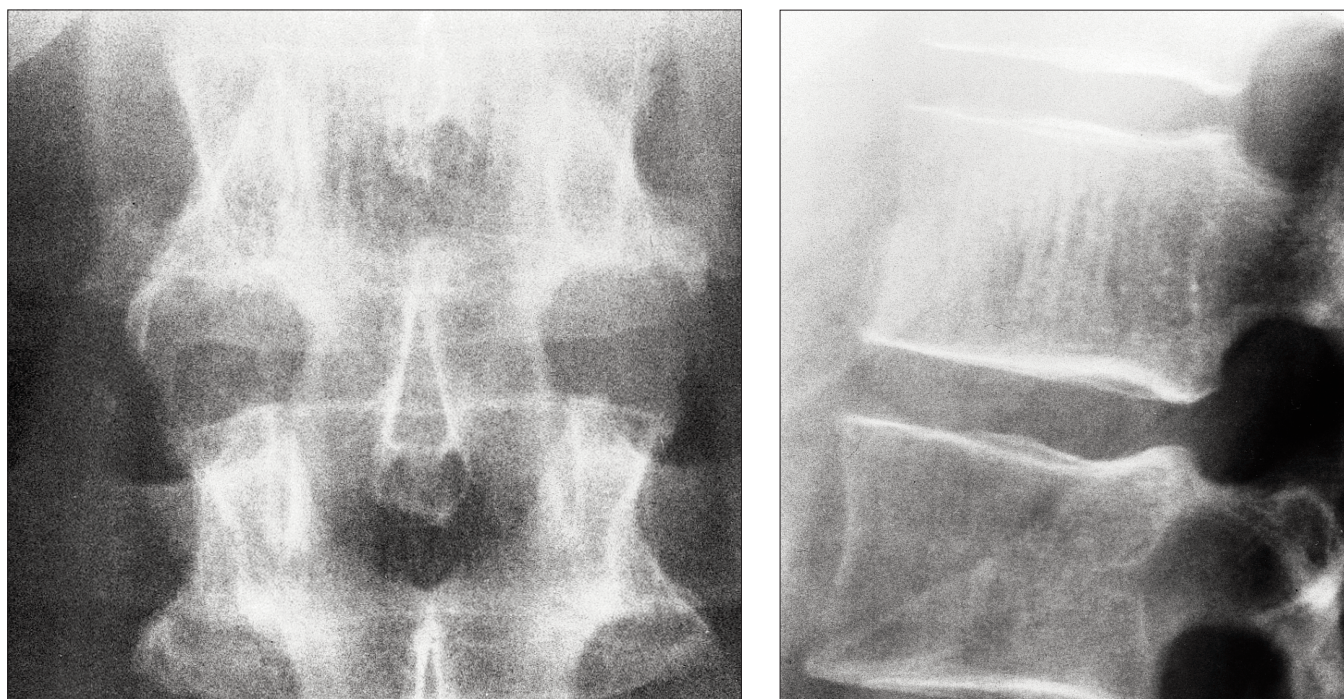


FIG. 2

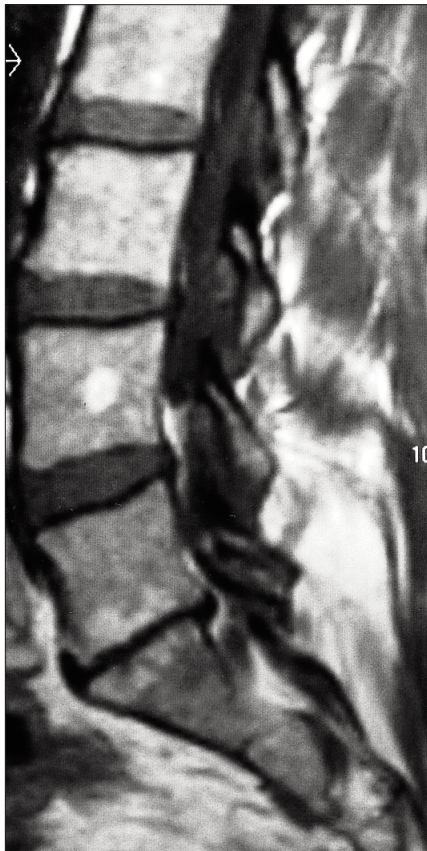
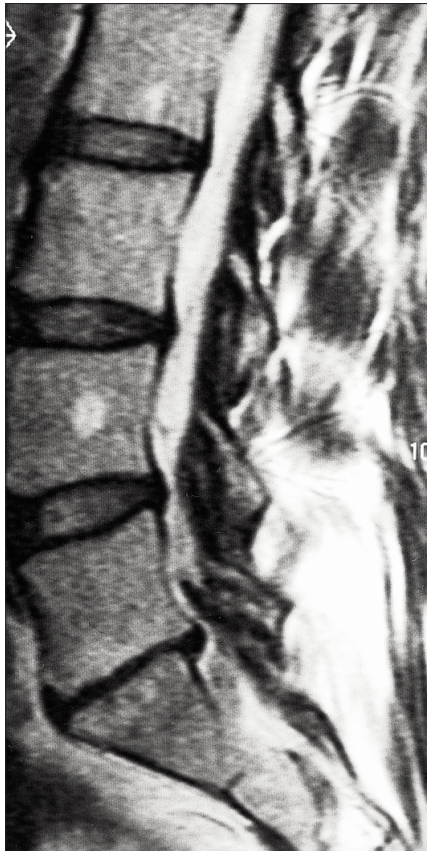


FIG. 3

pathognomonic appearance of hemangioma of bone on both plain radiographs and MRI.

When hemangioma of bone exhibits high SI on T_1 -weighted SE images (Fig. 3, left) and low SI on T_2 -weighted SE images (Fig. 3, right), the diagnosis is made with a high degree of confidence and warrants no further radiologic investigation.¹ This pattern is attributed to hemangiomas having a high adipose tissue content.

Frequently, the hemangioma of bone is of low to intermediate SI on T_1 -weighted SE images and high SI on T_2 -weighted SE images, a pattern that may be indistinguishable from metastatic disease and multiple



myeloma. The administration of gadolinium contrast may be helpful by demonstrating the absence of enhancement in hemangiomas of bone. However, this is not foolproof since aggressive lesions demonstrate variable vascularity.

Because of the high sensitivity of MRI for marrow disorders, plain radiographs are typically normal in patients with suspected hemangioma of bone. Since most of these lesions are small (less than 2 cm in dimension), corresponding bone scintigraphy, both planar and single photon emission computed tomography (SPECT) imaging, is usually normal.² Computed tomography is the imaging

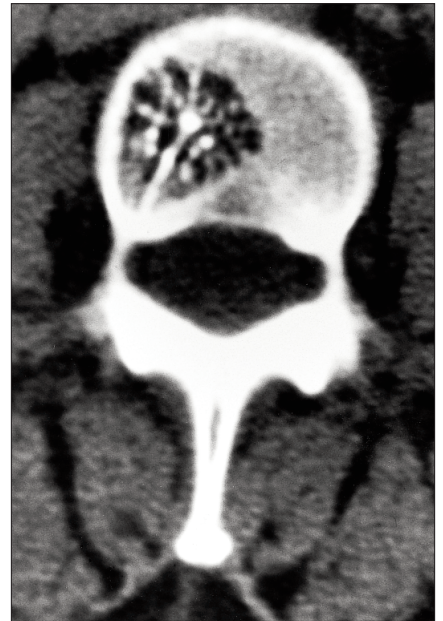


FIG. 4

modality of choice to distinguish between malignant disease and hemangioma of bone. The latter will appear as a well-defined lesion with prominent trabeculae. The "cartwheel" appearance is pathognomonic of hemangioma of bone (Fig. 4). The detection of fat within the lesion further supports the diagnosis of hemangioma of bone.

References

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2. Han BK, Ryu JS, Moon DH, Shin MJ, Kim YT, Lee HK. Bone SPECT imaging of vertebral hemangioma correlation with MR imaging and symptoms. *Clin Nucl Med* 1995;20(10):916-21.

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