Early Stage Spine Infarct Accurately Diagnosed by ^{99m}Tc-HMDP Bone Scintigraphy Performed on a Combined Single Photon Emission Computed Tomography/Computed Tomography System Correlation with Magnetic Resonance Imaging and Histopathological Findings

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A 53-year-old man with no significant medical, drug, or trauma history was referred for bone scintigraphy following acute lumbar pain and suspicious magnetic resonance imaging (MRI) findings. MRI examination showed anomalies (Figure 1) that, although not specific, were consistent with neoplastic bone involvement. A ^{99m}Tc-HMDP single photon emission computed tomography (SPECT)/CT scan (Figure 2) showed a hypometabolic aspect of the whole corpus of L1, the posterior arch appearing normal. The CT part of the scan was normal, ruling out known causes of cold vertebrae such as osteolytic metastasis[1], plasmocytoma[2], and hemangioma[3]. The hypothesized diagnosis was early-stage bone infarct, with an increase in tracer uptake expected to be observed at a later stage, as in avascular necrosis of the femoral head[4]. However, due to the MRI results, a surgical biopsy was performed.

Pathological examination (Figure 3) was consistent with early bone necrosis. The lack of anomaly in the posterior part of the vertebrae in both MRI and bone scintigraphy results was consistent with knowledge on lumbar spine vascularization, the vertebral body and posterior arch comprising distinct entities[5]. Since our patient presented no risk factor for avascular bone necrosis, an idiopathic spine infarct was presumed[6]. After a 9-month followup period, persistent lumbar pain was noted, but no relapse was suspected.

In light of our report, one may assume that new hybrid SPECT/CT devices equipped with helical CT, which have already proven to be useful in the staging of cancer[7], could also influence management of rheumatology patients.

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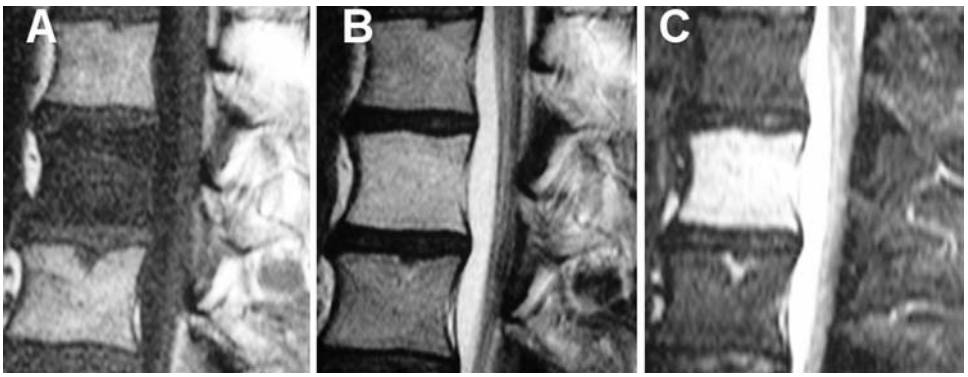

Figure 1. MRI sagittal views centered on the lumbar spine. Signal intensity at L1 vertebral body is decreased on T1 weighted images (A), slightly increased on T2 weighted images (B), and markedly increased on T2 weighted images with fat saturation (C). No vertebral deconfiguration or epidural anomaly is visible.

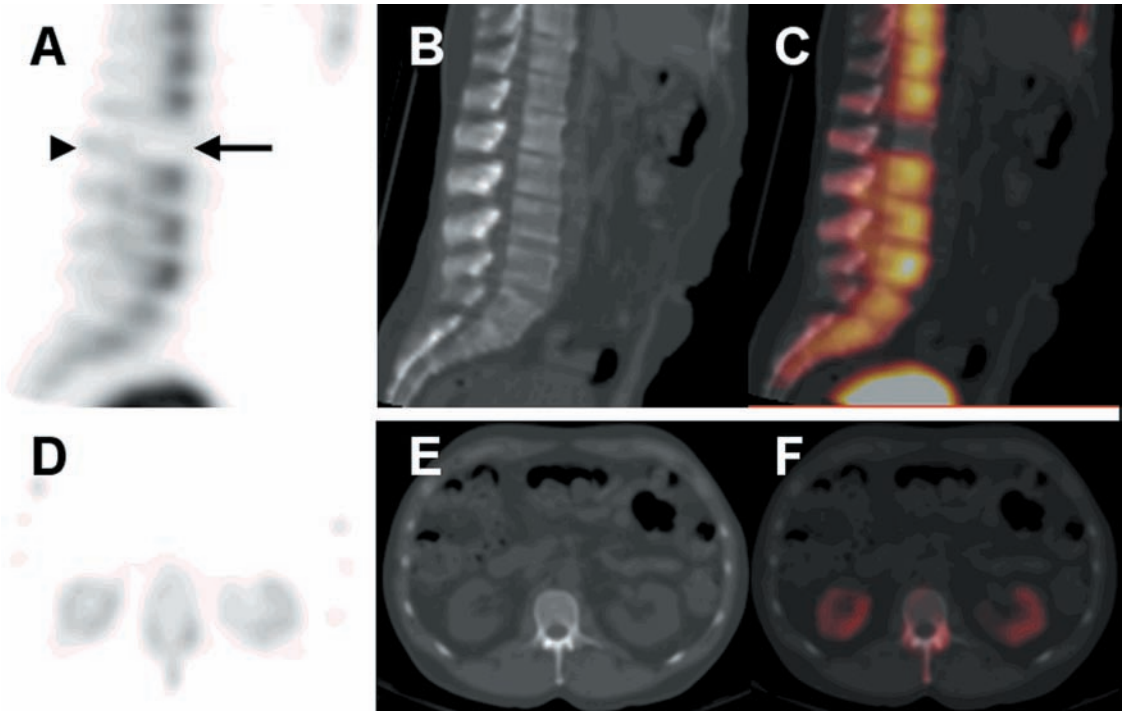

Figure 2. SPECT/CT sagittal (A, B, C) and transaxial (D, E, F) views. SPECT scans (A and D) show a hypometabolic aspect of the whole corpus of L1 (arrow). The posterior arch appears normal (arrowhead). The CT part of the SPECT/CT (B and E) scan is normal. Fused SPECT/CT (C and F) allows precise localization of scintigraphic anomalies.

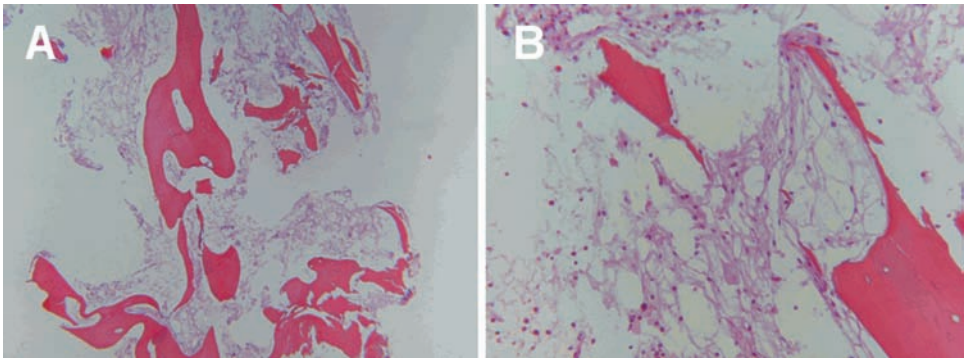

Figure 3. Pathological examination of transpedicular biopsy shows trabecular bone with empty osteoplasts with neither osteoblastic nor osteoclastic activity. Trabeculars are normal in size. Peritrabecular tissue showed focal adiponecrosis. (A: original magnification ×4; B: original magnification ×40.)