Langerhans Cell Histiocytosis
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Section: Musculoskeletal system
Imaging Technique: MR
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Case Type: Clinical Cases
Authors: T. Weits, G.J.I.M. van der Werf
Patient: 27 years, male

Clinical History:

Progressive low back pain. Personal medical history revealed intermittent low back pain for several years, but no trauma nor other chronic diseases. On physical examination, a slight kyphosis of the thoracolumbar spine was found. Neurological and laboratory examinations were normal.

Imaging Findings:

A 27-year-old man was admitted to the orthopedic department of the hospital because of progressive low back pain. Personal medical history revealed intermittent low back pain for several years, but no trauma nor other chronic diseases. On physical examination, a slight kyphosis of the thoracolumbar spine was found. Neurological and laboratory examinations were normal.

Discussion:

Langerhans cell histiocytosis or histiocytosis X is an uncommon disease with multisystemic presentation. Pathohistologically, it is characterized by a granulomatous proliferation of the reticulum cells at one or several sites in the reticuloendothelial system. The etiology is unknown. It is possibly related to prior infection. The disease may occur in the skeleton, spleen, thymus, lymph nodes and skin. There are three major manifestations of histiocytosis X: eosinophilic granuloma, Hand-Schüller-Christian disease and Letterer-Siwe disease. It is believed that these three disorders are expression of the same basic pathological process. The role of MRI in the evaluation of Langerhans cell histiocytosis is twofold: identification of the lesion and staging, i.e. definition of location and extent. On MRI the skeletal lesions are often well defined, isointense or hypointense on T1-weighted images and definitely hyperintense compared to bone marrow on fat saturated T2-weighted images. The lumbar and thoracic spine are predominantly affected. Involvement of one or several adjacent vertebrae is often seen. Intervertebral discs usually remain normal, but a paraspinal mass may be evident, simulating a soft-tissue abscess. The imaging findings of skeletal histiocytosis resemble those of osteomyelitis, Ewing’s sarcoma, lymphoma or multiple myeloma. Therefore, these diseases should be considered in the differential diagnosis.

Differential Diagnosis List: Langerhans cell histiocytosis

Final Diagnosis: Langerhans cell histiocytosis

References:
Figure 1

Description: Conventional radiography of the lumbar spine, a-p projection shows deformation of L1 and L2 vertebral bodies with narrowing of the intervertebral disc space. Vertebral pedicles are hardly visible on a-p projection. Origin:
Description: Radiography of the chest, AP view demonstrates fine reticular pattern of the pulmonary interstitium on both lungs without alveolar consolidation, lymphadenopathy or pleural effusion. Origin:
**Figure 3**

**a**

*Description:* TSE T1-weighted image shows malformation and abnormal signal intensities of T12, L1 and L2 vertebral bodies and pathological tissue showing isointensity on T1- and hyperintensity on T2-weighted sequences, with slight enhancement after Gadolinium administration (not shown). Mild kyphosis and deviation of the spinal cord and scalloping of the posterior wall of the involved vertebral bodies are noted. **Origin:**

**b**

*Description:* GE T2-weighted image. Same caption as 3a. **Origin:**
**Figure 4**

**a**

**Description:** Sagittal TSE T1-weighted image bone marrow infiltration of three adjacent vertebrae (Th4, Th5, Th6). Malformation and signal intensities are comparable with that of the lesions described at the lumbar spine. No evidence of intrathecal pathology is visible. Clinical data and imaging findings suggest a systemic disease. A CT-guided biopsy of L1 was performed. Histological examination revealed Langerhans histiocytosis. **Origin:**

**b**

**Description:** GE T2-weighted image. **Origin:**