

Systemic mastocytosis: bone marrow involvement assessed by Tc-99m MDP scintigraphy and magnetic resonance imaging

Haematologica 2007; 88(9):e119

Mastocytosis is a rare, heterogeneous disease of complex etiology, characterized by a marked increase in mast cell density in the skin, bone marrow, liver, spleen, gastrointestinal mucosa and lymph nodes.^{1,2} The most frequent site of organ involvement is the skin. Cutaneous lesions include urticaria pigmentosa, mastocytoma, diffuse and erythematous cutaneous mastocytosis, and telangiectasia macularis eruptiva perstans. Human mast cells originate from CD34⁺ progenitors, under the influence of stem cell factor (SCF); a substantial number of patients exhibit activating mutations in c-kit, the receptor for SCF.¹ Mast cells can synthesize a variety of cytokines that could affect the skeletal system, increasing perforating bone resorption and leading to osteoporosis.³ The coexistence of hematologic disorders, such as myeloproliferative or myelodysplastic syndromes, or of lymphoreticular malignancies, is common.⁴ Compared with radiographs, Tc-99m methylenediphosphonate (MDP) scintigraphy is better able to show the widespread skeletal involvement in patients with diffuse disease.^{2,5} T1-weighted MR imaging is a sensitive technique for detecting marrow abnormalities in patients with systemic mastocytosis, showing several different patterns of marrow involvement.^{6,7} We report the imaging findings a 36-year old male with well-documented urticaria pigmentosa. In order to evaluate mastocytic bone marrow involvement, ^{99m}Tc-MDP scintigraphy, T1-weighted spin echo and short tau inversion recovery MRI at 1.0 T, were performed. Both scan findings were consistent with marrow hyperactivity. Thus, the combined use of bone scan and MRI may be useful in order to recognize

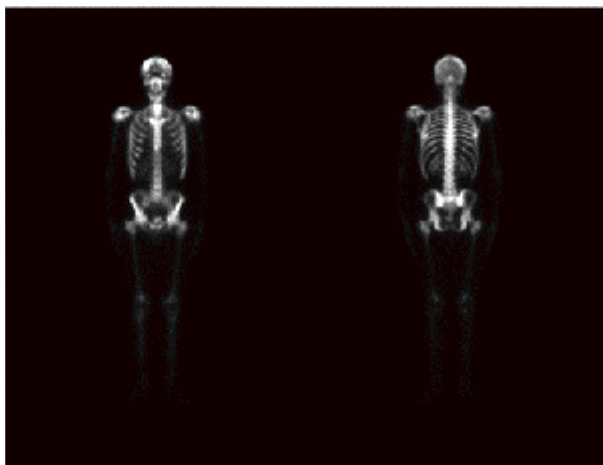


Figure 1. Bone scintigraphy showed a symmetrical increased uptake of ^{99m}Tc-MDP at the epiphysis of the humerus and to a smaller extent at the epiphysis and diaphysis of the femur. Similarly, an intense uptake of radiotracer was seen at the skull. These scan findings are typical of hyperactive marrow.

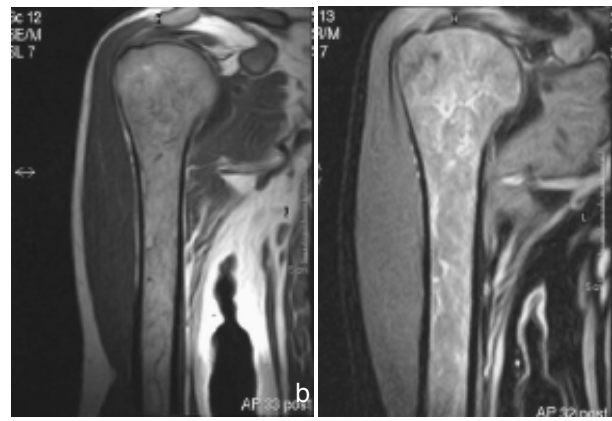


Figure 2. A. Coronal T1-weighted spin echo MRI of the shoulder (1.0 T), shows a low, non-homogeneous signal of the marrow localized in the epiphysis, metaphysis and diaphysis of the humerus. B. Short tau inversion recovery MRI coronal image of the shoulder (1.0 T), shows a high, non-homogeneous signal of the marrow localized in the epiphysis, metaphysis and diaphysis of the humerus.

marrow involvement in suspected systemic mastocytosis, perhaps avoiding bone biopsy.

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