INTERNAL MEDICINE

□ PICTURES IN CLINICAL MEDICINE □

Concomitant Deposition of Aluminum and Iron in Bone Marrow Trabeculae

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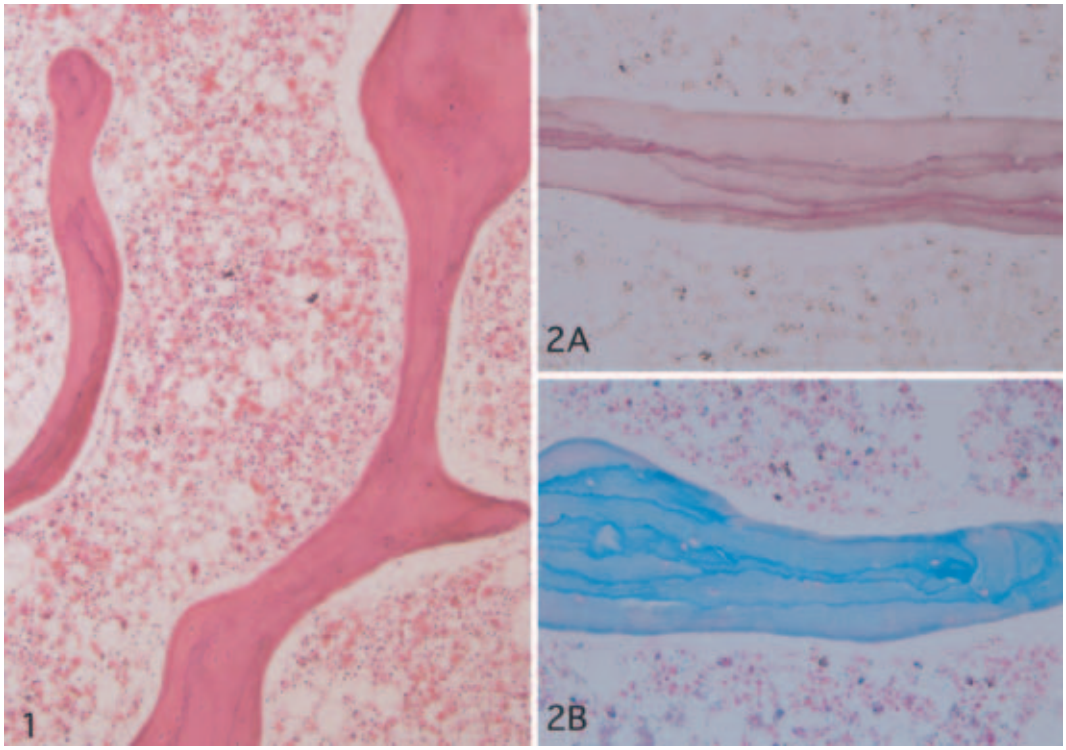

Figure 1. **Vertebral bone marrow showing trabecular narrowing and scarcity (HE stain).**
Figure 2. **Trabecular bone showing deposits of aluminum (A, Maloney's aluminum stain) and iron (B, Prussian blue stain) both at the mineralization front and along the cement lines.**

A 53-year-old man was admitted with cervical and inguinal lymphadenopathy. Computed tomography scans showed mediastinal and paraaortic lymphadenopathy and multiple nodular lesions in the liver. An inguinal lymph node biopsy revealed anaplastic Ki-1-positive lymphoma. Laboratory examination showed blood urea nitrogen 66 mg/dl, creatinine 3.6 mg/dl, uric acid 9.9 mg/dl, serum iron 130 μg/dl, total iron binding capacity 140 μg/dl, and ferritin 3,735 ng/ml. He was given one course of combination chemotherapy (cyclophospamide, vincristine, adriamycin, prednisolone). This was followed by progression of renal failure and hemodialysis was performed for 5 days with recovery of the renal function. One month later, however, meningeal involvement and nodal regrowth occurred and the patient died of cerebral hemorrhage shortly after the second course of chemotherapy. Postmortem examination showed infiltration of lymphoma cells in the lymph nodes, heart, lungs, liver, and pancreas. Vertebral bone marrow was hypoplastic with trabecular narrowing and scarcity (Fig. 1). Deposits

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of aluminum and iron were detected histochemically both at the mineralization front and along the cement lines of the trabecular bone (Fig. 2). Of several trace elements known to accumulate in the bone of uremic patients, aluminum has been most often incriminated in renal osteodystrophy. In the present patient who had iron overload, iron had also accumulated in the bone. Aluminum and iron would additively cause mineralization defects. Treatment with desferrioxamine is expected to reduce the burden of both elements.