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IMAGES IN HEMATOLOGY

# Bone marrow necrosis in a patient receiving high dose chemotherapy for ALL

**Ahmet İfran[1], Mükerrem Safalı[2], Kürşat Kaptan[1], Cengiz Beyan[1]**

Department of Hematology, Gülhane Military Medical Academy, Ankara, Turkey
Department of Pathology, Gülhane Military Medical Academy, Ankara, Turkey
✉ *ahmetifran@gmail.com*

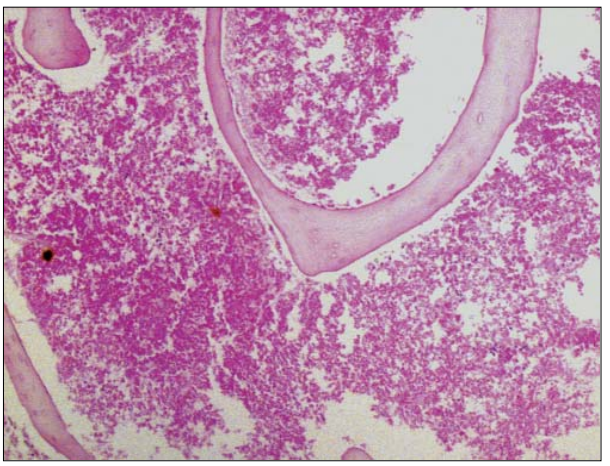

**Figure 1.** Bone marrow space is replaced by eosinophilic debris (bone marrow necrosis) (H&E, X50).

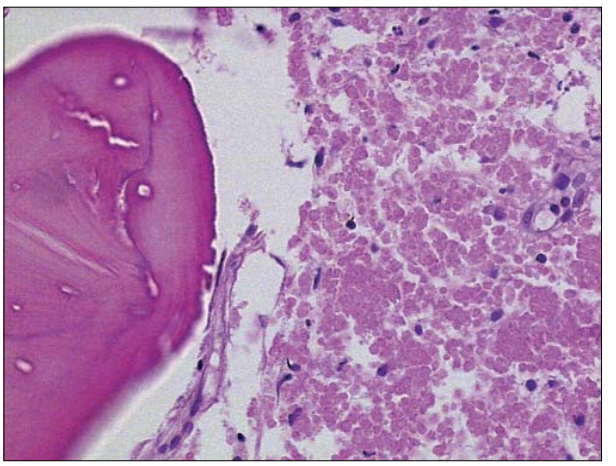

**Figure 2.** Dead bone trabecule with empty lacunes showing loss of osteocytes (osteonecrosis) in closer view (H&E, X200).

A 20-year-old male patient received hyper-CVAD chemotherapy for relapsed acute lymphoblastic leukemia. Febrile neutropenic episode developed on the 15$^{th}$ day of the first course of the regimen, which consisted of cyclophosphamide (2x300 mg/m$^2$ on days 1-3), doxorubicin (25 mg/m$^2$ on days 4,5), vincristine (1 mg on days 4,5 and 2 mg on day 11) and dexamethasone (40 mg on days 1-4 and 11-14). Febrile attacks did not resolve until 50$^{th}$ day of chemotherapy. The patient remained neutropenic despite the use of G-CSF (5 mcg/kg/day).

We evaluated the bone marrow with aspiration and biopsy on the 35$^{th}$ day, and noticed that bone marrow aspiration material was malodorous and muddy. Pathological examination was reported as extensive necrosis of bone marrow and osteonecrosis, with replacement of bone marrow by eosinophilic debris and trabeculae showing loss of osteocytes. Microbiological examination and culture revealed *E. coli* infection. The patient remained aplastic and died on the 95$^{th}$ day of chemotherapy because of septicemia.