Radiographic abnormalities in acute lymphoblastic leukemia

Sheikh A. Aziz, MD, DM, Mushtaq Ahmed, MD, Samoon Jeehani, MD, Abdul R. Lone, MD.

Radiologically detectable skeletal involvement is rare in adults with leukemia and among the characteristic features are diffuse demineralization, horizontal radiolucent bands in metaphysis of long bones, multiple small clearly defined radiolucent defects, periosteal reaction on long bones, fractures, metaphyseal or diaphyseal patches of moth-eaten or permeative bone destruction laminated new bone formation, osteolytic, osteoblastic lesions or a mixture of any other changes. Expressed in approximately 10% of adults with leukemia, skull lytic lesions are variably nonspecific and may precede typical findings in peripheral blood. Herein, we report a young patient who has acute lymphoblastic leukemia (ALL) with predominant bone related complaints.

A 20-year-old male was admitted with chief complaints of easy fatigability, fever, headache and bone pain of one month's duration. Clinical examination revealed pallor, bilateral proptosis, and small nodes in right axilla and femoral region with marked bone tenderness. Systemic examination of chest, cardiovascular system and central nervous system were non-contributory. Per-abdominal examination revealed hepatomegaly and splenomegaly. Abnormal investigations carried out showed hemoglobin 7.8g, total white blood cell count count 15.84, (neutrophils 18%, lymphocytes 33%, and blasts 49%) and platelets 126. Among the biochemical parameters lactic dehydrogenase was 635 U/L, urea 8.3 mg%, calcium 9mg%, alkaline phosphatase 3100 U/ml, serum creatinine 1.0 mg%, chest x-ray, ECG and thyroid function tests were normal. Skull x-ray abnormalities are shown in Figure 1. Serum electrophoresis was normal (Immunoglobulin (Ig)M 998 mg/24 hours, IgG 138 mg/24 hours, IgM 97 mg/24 hours). Twenty-four-hour urinary vanillylmandelic acid levels measured 8.2 mg. Bone scan revealed abnormal intense theca uptake in skull in left parietal bone and 8th rib. Bone marrow biopsy revealed erythrocyte 3%, myelo 3% and blasts 92%. These blasts measured 14-16 microns in diameter, having fine chromatin, inconspicuous 1-2 prominent nucleoli, indented nucleoli and scanty cytoplasm. Immunocytochemistry of the bone marrow slides revealed PAS positivity. The patient was finally diagnosed as ALL-L2 morphology, having lytic lesion in the skull bones. He received induction and intensification and is planned for maintenance chemotherapy.

Unbalanced osteoclastic activity consequent to altered cytokine milieu, whether there is any prognostic implications in adult ALL with lytic lesions is unknown, nevertheless, rare atypical presentation and future studies would unveil these gaps in our understanding.

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From the Department of Medical Oncology, Sher-I-Kashmir Institute of Medical Sciences, Srinagar, Kashmir. Address correspondence and reprint requests to Dr. Sheikh A. Aziz, Additional Professor, Department of Medical Oncology, Sher-I-Kashmir Institute of Medical Sciences, Soura Post Bag No. 27, Srinagar 190011, Kashmir, India. Fax. +91 (194) 493470. E-mail: saejaz@vsnl.com

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