Low Backache as Initial Presentation of Acute Lymphoblastic Leukemia

G Garg¹, A Gogia², A Kakar³

¹PG Student, ²Associate Professor, ³Professor, Ganga Ram Institute of Post-Graduation Medical Education (GRIPMER), New Delhi

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Fig. 1: Microscopic examination of peripheral smear showing normal haemopoietic cells

Fig. 2: MRI whole spine T1 weighted images showing diffuse infiltrative vertebral column involvement throughout spine having decreased signal intensity of marrow

Fig. 3: MRI whole spine T2 weighted images showing diffuse infiltrative involvement throughout spine having hyperintense signals of marrow

Fig. 4: Bone marrow biopsy on 100X respectively showing hyper cellular areas that are completely replaced by blast cells with paucity of normal hemopoietic elements
A 16 year old male presented with complaints of severe lower back pain. Examination revealed, febrile patient, pallor was present but no lymphadenopathy or sternal tenderness. On musculoskeletal examination, there was tenderness in lumbosacral region and sacro-iliac joints. Schober’s test was negative. There was no peripheral swelling or synovitis. Haematological investigations showed haemoglobin 12.8 g/dl, total leucocyte count – 5300/μl, platelet count – 2,75,000/μl and normal peripheral blood smear (Figure 1). MRI spine showed diffuse infiltration of spine with possibility of infiltrative disease (Figures 2, 3) for which bone marrow examination was done. Aspiration of marrow was a dry tap and marrow imprint smears were negative for myeloperoxidase. Bone marrow biopsy and immunohistochemistry was diagnostic of B cell acute lymphoblastic leukemia (ALL) (Figure 4). Immunostaining was positive for CD 10, 20 and negative for CD3, 34. Patient was given chemotherapy which consisted of adriamycin, vincristine and L-asparaginase and his backache improved with treatment.

Bone pain is a frequent complaint in patients with ALL and the diagnosis may be difficult to establish as clinically it may mimic other diseases like osteomyelitis, septic arthritis or as juvenile rheumatoid arthritis. Approximately 10% of ALL patients have spinal involvement despite normal peripheral blood counts as it was in our case.1

In ALL osteoarticular symptoms are present in 30.5% of cases, middle sized joint involvement occurs in 55.6% of cases, whereas involvement of large joints and spine is very rare.2 Appendicular (pelvic girdle, pectoral girdle and bones of upper and lower limbs) involvement in ALL can be upto 50 percent. Direct invasion of spinal cord is exceedingly rare and only few cases are reported.

The radiological findings in patients of ALL with bone involvement include generalized reduced bone density, metaphyseal lucent band, lytic bone lesions, metaphyseal cortical bone erosions, collapsed vertebra and widening of sutures and periosteal reactions. During treatment, patients are at risk for osteoporosis or osteonecrosis. This case highlights importance of spine involvement (patchy and extensive involvement) despite normal peripheral smear.

References