

Short Communication

Osteoporosis and Vertebral Compression Fractures as a Presenting Feature Of Childhood Acute Lymphoblastic Leukemia

Amaresh Reddy P^{1*}, Alok Sachan² and Suresh V²¹Department of Endocrinology, Narayana Medical Institutions, India²Department of Endocrinology, Sri Venkateswara Institute of Medical Sciences, India

*Corresponding author

Amaresh Reddy P, Department of Endocrinology, Narayana Medical Institutions, India, Tel: 0861-2355511-ext-2145, Email: amareshreddy7@gmail.com

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- Fractures
- Osteoporosis
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Abstract

Osteoporosis and vertebral compression is a rare but important clinical presentation of Acute lymphoblastic leukaemia.

INTRODUCTION

Bone and joint pain may be a presenting symptom in 25% of patients with acute leukaemia [1] whereas generalised osteopenia and vertebral complications are less [2]. We report a child in whom back pain associated with vertebral compression and collapse and osteoporosis were presenting features of childhood acute lymphoblastic leukaemia (ALL). Pain decreased with return of function occurred with remission.

Case report: 14 years male child presented with back ache, bone pains, difficulty in walking, intermittent low grade fever for 6 months with significant weight loss. Localization symptoms for fever were absent. He was sick, wasted with weight of 20 kg (<< 3rd centile), with height of 146 cms (<< 3rd centile). He had mild pallor with bone tenderness over spine, sternum and shin.

Investigations revealed normochromic normocytic anemia with relative lymphocytosis. X-ray skull revealed multiple lytic lesions (Figure 1). X-ray spine showed osteoporotic collapse and fractures of multiple lower dorsal and lumbar vertebrae (Figure 2). BMD lumbar spine (AP) and femur showed Z score of -4.1 and -3.1 respectively. MRI dorsolumbar spine revealed reduced height of lower dorsal and lumbar vertebrae, biconcave vertebral bodies with diffuse low signal in the vertebral marrow cavities (Figure 3). He had serum calcium of 10.5 mg/dl, phosphorous of 3.8 mg/dl, alkaline phosphatase of 99 IU/L (normal- 130-525 IU/L). Bone marrow aspiration revealed Acute Lymphoblastic Leukemia (ALL) L 1 type with 86% blasts. He was started on induction chemotherapy after which he had significant improvement in symptoms.



Figure 1 X-ray Skull showing multiple lytic lesions.



Figure 2 X-ray spine showed osteoporotic fractures of lower dorsal and lumbar vertebrae.

DISCUSSION

Radiological evidence of demineralization during the course of leukaemia can be caused by disease, inactivity, steroids, or other antileukemic drugs, or to abnormalities in mineral homeostasis [3]. Spinal involvement may be a presenting feature despite normal peripheral blood counts which was there in our case [4,5]. The use of MRI in the diagnosis of bone marrow disease in children is complicated by the change that takes place in the relative proportions of haematogenous and fatty marrow. In the context of bony pain with vertebral collapse, the finding of diffuse low signal in the vertebral marrow cavities is a strong indicator of a systemic disease affecting the marrow. Steroid therapy causing vertebral collapse should leave the marrow signal in other vertebrae unchanged [6]. Bisphosphonates decrease bone pain and help to prevent complications of progressive vertebral collapse [7], but in our case pain and other symptoms improved after starting chemotherapy. Vertebral compression fractures seldom cause neurological compromise, and they appear to remodel as the underlying disease is treated. ALL which presents with leucopenia, severe and constant pain, and a long interval between the onset of symptoms and diagnosis, carries an unfavorable outlook [8]. The significance of bone involvement at

diagnosis is uncertain. Heinrich et al suggested that duration of symptoms prior to diagnosis influences outcome rather than the nature of skeletal radiographic abnormalities [9]

CONCLUSION

There should be a high index of suspicion in patients, particularly if there is worsening back pain with the associated radiographic findings of vertebral compression fractures and an abnormal bone marrow signal on MRI. Antileukemic treatment usually results in rapid symptomatic relief as well as radiographic evidence of bony remodeling.

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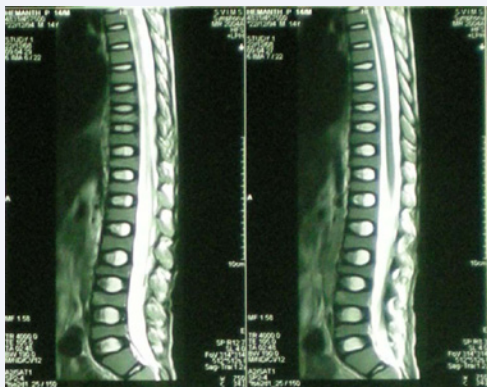


Figure 3 MRI dorsolumbar spine revealed biconcave vertebral bodies with diffuse low signal in the vertebral marrow cavities.

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