



Should we routinely supplement calcium and Vitamin D for children with acute lymphoblastic leukemia (ALL) and osteoporosis?

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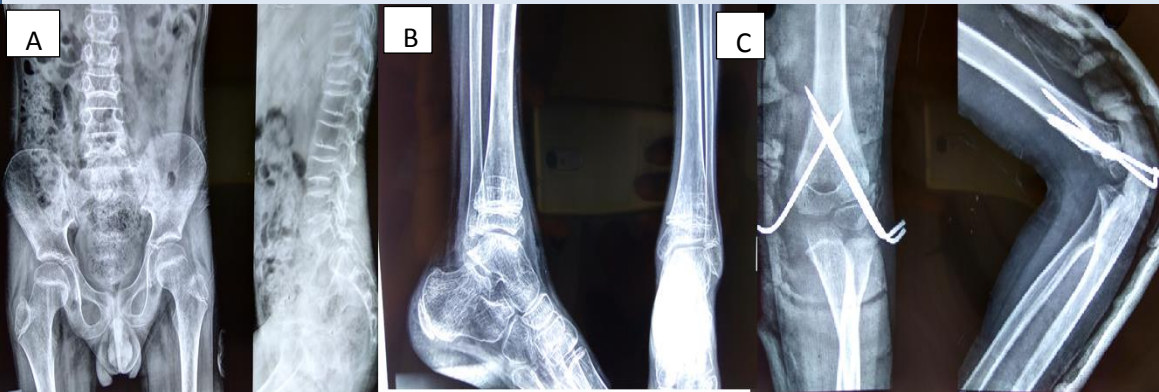
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Introduction

Fractures due to osteoporosis can be a presenting feature of ALL or seen as the consequence of treatment.(glucocorticoids, methotrexate, mercaptopurine). We are presenting three cases of children with ALL on treatment who developed fractures whilst on maintenance treatment and reviewed literature about the routine supplementation of vitaminD and calcium to these children in developing countries.

Materials and Methods

During maintenance treatment as per UKALL 2003 protocol three children presented with fractures with history of trivial fall. A 5 year old girl and 3 year old boy developed fracture of the lower end of humerus and 12 year old boy developed vertebral fracture. Their radiographs showed significant osteoporosis and their vitamin D levels were low. They were poorly nourished from the beginning. They did not have any prior x rays apart from chest x rays. We reviewed the literature whether any role for routine supplementation of Vitamin D and Calcium to prevent development of osteoporosis.



Results

All three children have developed osteoporosis.

Case 1: A 12 yrs old boy has been on maintenance treatment for ALL 6 months found to have vertebral fractures and severe osteoporosis, when evaluated for back pain. His Vitamin D levels were low (18ng/ml) with normal calcium, phosphorous and alkaline phosphatase. HE was treated on vitamin D for 2 months and monthly zoledronic acid for 6 months. He is still on calcium supplements for the past 10 months. (Figure A&B)

Case: 2

A 5 yrs old girl with ALL on maintenance treatment fractured lower end of her left humerus with a trivial fall requiring nailing. The x ray showed osteoporosis. Her Vitamin D level was low too (21ng/ml). She was treated with vitamin D for 2 months and on calcium supplements for the past 9 months.(Figure C)

Case 3:

A 3 yrs old boy developed left humerus fracture whilst on maintenance for ALL. The X ray showed severe osteoporosis. His vitamin D levels were low (16ng/ml). The calcium and phosphorous and alkaline phosphatase levels were within normal ranges. He received vitamin D supplements for 2 months and currently on calcium supplements for 6 months. On detailed literature review Bone II study showed routine supplementation of calcium and vitamin D may have some role in mineralisation of bones in children.

Conclusions

In developing countries poorly nourished children at diagnosis may benefit from supplementing calcium and vitamin D whilst receiving treatment for ALL. Though there are conflicting reports of benefit of supplementing in mineralisation of the bones further prospective randomized studies are required to come to conclusion one way or the other.

References

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