Case Study

An unusual cause of hypercalcemia and osteopaenia
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**Abstract**

10 year old boy with no significant past history, presented with backache of 3 month duration. Onset of pain was insidious, with no preceding trauma and because of the pain, he was bedridden. Evaluation revealed hypercaemia and osteopaenia the cause of which turned out to be leukaemia in the end. But, there are certain atypical features in this patient. First, his presentation was with backache alone. He didn’t have any of the typical features of leukaemia like symptoms of anaemia, bleeding or infections. Second, the catching clinical clue in him was pallor (anaemia). This emphasizes the need for a proper clinical examination in all cases of unexplained hypercalcaemia which might reveal pallor or presence of lymphadenopathy/hepatosplenomegaly. The cause of hypercalcemia in him is also multifactorial. In addition to vitamin D toxicity, immobilization and the underlying leukaemia might also have contributed to hypercalcemia. This also should be an eye opener for general care physicians against irrational use of parenteral vitamin D which can lead onto prolonged hypercalcaemia due to storage in fat stores.

**Case Report**

10 year old boy with no significant past history, presented with backache of 3 month duration. He was asymptomatic until 3 months back. Onset of pain was insidious, with no preceding trauma and because of the pain, he was bedridden. No past history of any fracture or myopathy. History of receiving 4 IM injections 2 months back. No significant family history.

On examination, he had pallor, no palpable lymphadeopathy, no hepatosplenomegaly and no focal neurological deficit. His inability to move limbs was mainly due to pain.

On evaluation, he had Hb 8.1gm/dL, TLC 5300 P58L36E6. ESR 55. Peripheral smear didn’t show any abnormal cells. His RFT, LFT was normal. His Serum Calcium on 3 consecutive days were 11.1, 14.3 and 11.8 mg/dL. Corresponding phosphate levels were 3.4, 5.2 and 4.1 mg/dL. Serum albumin was 4 gm/dL and serum alkaline phosphatase was 169 IU. He also had hypercalciuria. His X-ray spine revealed diffuse osteopaenia, biconcave vertebrae with reduced height suggestive of anterior wedge collapse of multiple vertebrae. MRI spine revealed multiple vertebral collapse with no evidence of spinal cord compression. His PTH levels were 14.44 and 9.96 pg/ml. He was further worked up for PTH independent hypercalcemia. Serum ACE levels and 1, 25 (OH)2 D3 levels were within normal limits. 25
(OH) D levels were > 100 ng/ml. In view of the fact that he had PTH independent hypercalcemia with hypercalciuria, osteopaenia and hemogram showing anaemia, we decided to proceed with bone marrow examination. The bone marrow examination findings was suggestive of Acute Lymphoblastic Leukaemia. The patient was maintained on IV hydration and was then referred to medical oncology department for further management.

Discussion:
Haematological malignancies are well described causes of hypercalcemia. Haematological malignancies are also very common in childhood. In this patient, the cause of hypercaemia and osteopaenia turned out to be leukaemia in the end. But, there are certain atypical features in this patient. First, his presentation was with backache alone. He didn’t have any of the typical features of leukaemia like symptoms of anaemia, bleeding or infections. Second, the catching clinical clue in him was pallor (anaemia). We had extensively worked him up for causes of PTH independent hypercalcemia. But, all turned out to be negative. Only because of the presence of anaemia, we decided to proceed with bone marrow examination even though his peripheral smear didn’t show any abnormal cells. The diagnosis was clinched in the bone marrow study. This emphasizes the need for a proper clinical examination in all cases of unexplained hypercalcaemia which might reveal pallor or presence of lymphadenopathy/hepatosplenomegaly. The cause of hypercalcemia in him is also multifactorial. The injection that he received is most probably vitamin D. Though the last dose was 2 months ago, he still had elevated 25 (OH) D levels. In addition to vitamin D toxicity, immobilization and the underlying leukaemia might also have contributed to hypercalcemia. This also should be an eye opener for general care physicians against irrational use of parenteral vitamin D which can lead onto prolonged hypercalcaemia due to storage in fat stores.