Hypercalcaemia in Hodgkin's disease without hyperparathyroidism or skeletal metastases

The commonest cause of hypercalcaemia is metastatic malignancy, such as carcinoma of the breast or myeloma. Hypercalcaemia is relatively rare in lymphoma, particularly in Hodgkin's disease.^{1,2} When present, it is usually associated with extensive bone disease. In Canellos's review of 190 cases¹ 34 patients had bone disease but hypercalcaemia was present in only one. We report a patient with Hodgkin's disease who presented with hypercalcaemia without demonstrable skeletal disease.

Case report

A 22 year old man presented with a two day history of breathlessness and pleuritic chest pain. He had no fevers, night sweats, weight loss, bone pain nor symptoms of hypercalcaemia. Examination showed a large left pleural effusion, but no lymphadenopathy or hepatosplenomegaly. Haemoglobin concentration was 128 g/l, white cell count $23.3 \times 10^9/l$ (84% neutrophils, 6% lymphocytes), platelet count $465 \times 10^9/l$ and ESR 33 mm/first hour. The plasma calcium concentration was 3.23 mmol/l, phosphate 0.8 mmol/l, albumin 39 g/l, alkaline phosphatase 1159 IU/l, γ glutamyl transpeptidase 287 IU/l and lactate dehydrogenase 465 IU/l. Renal function was normal. A chest x-ray picture showed massive upper mediastinal enlargement and a moderate left pleural effusion. The pleural fluid contained no malignant cells. A mediastinal lymph node biopsy specimen showed nodular sclerosing Hodgkin's disease. Bone marrow examination, isotope bone scan, and abdominal computed tomographic scan were normal. The parathyroid hormone (PTH) activity was suppressed (<0.8 pmol/l; normal range, 0.8–8.5 pmol/l). He was hydrated and chemotherapy with MOPP/ABV was started.³ The plasma calcium concentration returned to normal within two weeks, and alkaline phosphatase activity was normal after two courses of treatment. Serial chest radiographs confirmed progressive resolution of the mediastinal mass.

Discussion

This case is of interest in that our patient with Hodgkin's disease presented with hypercalcaemia but without clinically apparent bone disease. His plasma alkaline phosphatase activity was high, but this was probably due to hepatic disease as the γ glutamyl transpeptidase activity was also high. He had no bone

pain, and both an isotope bone scan and bone marrow trephine biopsy specimen were normal. Although these investigations will usually detect bone disease in Hodgkin's disease, they may not always do so.⁴

Hypercalcaemia in malignancy usually results from resorption of bone in the presence of skeletal metastases, together with an inability of the kidney to excrete the excess calcium load. In some cases it seems to be humorally mediated, and there have been reports of secretion of PTH-like substances, prostaglandins, an osteoclast-activating factor or vitamin D metabolites by the tumour.⁵ Increased immunoreactive PTH has been found in some patients with lymphoma, and hypercalcaemia in Hodgkin's disease has been associated with increased serum 1,25-dihydroxyvitamin D.⁶

Hypercalcaemia in our patient responded rapidly to treatment of the underlying Hodgkin's disease. We found no evidence for a PTH-like hormone causing the hypercalcaemia, but there remains the possibility that some other humoral factor, such as a vitamin D metabolite or a prostaglandin secreted by the tumour, may have been responsible.

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Matters arising

Fetal volvulus and premature labour

Ashworth makes the intriguing suggestion that fetal volvulus causes premature labour.¹ Fetuses of the age he describes certainly respond hormonally to pain.² Fetal adrenal glucocorticoids, however, induce parturition with a minimum latency of 72 hours.³ Ashworth's fetuses appeared fresh and their intestines had not infarcted, indicating perhaps that the intestinal pathology was too recent to account for miscarriage via normal physiological pathways. The mothers also appeared to miscarry rather than to have gone into premature labour.

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Dr Ashworth comments:

I hoped my article would stimulate the sort of interest shown by Godfrey Smith. Firstly, a point of clarification—"miscarriage" and "premature labour" are semantic terms for the same thing, 28 weeks' gestation traditionally separating the two.

There is little doubt that if we really understood what stimulated premature labour (or miscarriage) and were thereby able to prevent it, neonatology would be in imminent danger of being rendered redundant. I agree that my hypothesis may be unduly simplistic. Are we, however, sure that it is only glucocorticoids that are involved? Are we dealing with a "normal" situation? The similarity in the presentations of these four cases was what made me postulate some dramatic event, which in the circumstances suggested that hormones were intimately involved.