

Hypercalcaemic Crisis as the Presenting Manifestation of Abdominal Tuberculosis : A Case Report

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Summary

This report deals with a young man having prolonged fever presenting with hypercalcaemic crisis. Subsequent investigations confirmed tuberculosis (TB) peritonitis in the absence of pulmonary involvement as the cause of his symptoms. His hypercalcaemia and fever resolved with anti-TB therapy. Abdominal TB needs to be included in the differential diagnosis of otherwise unexplained hypercalcaemia especially in our region where TB is an endemic problem and is treatable.

Key Words: Extrapulmonary tuberculosis, Tuberculous peritonitis, Hypercalcaemia, Pyrexia of unknown origin

Introduction

Hypercalcaemia is a recognised feature of pulmonary TB¹ whereas hypocalcaemia is a more frequent finding in abdominal TB². Herein, we report a patient who had hypercalcaemic crisis as the presenting manifestation of TB peritonitis in the absence of pulmonary involvement.

Case Report

A 30-year old man was admitted to the hospital for further management of abdominal pain and vomiting.

He was well till 4 months earlier, when he developed diffuse upper abdominal pain. A few weeks later, he became constipated on and off. At the same time, he experienced fever especially in the evenings. He had poor appetite and lost 8 kg in weight over this period. There was very little response to the treatment he received from his general practitioner.

A week prior to entry, he was also troubled by intermittent bouts of vomiting. On direct enquiry, he admitted to polyuria and polydipsia but denied respiratory symptoms and backache.

Physical examination revealed an ill looking cachetic patient. He was apathetic and had to be coaxed into answering questions. His temperature was 39°C. There was pallor but no jaundice or peripheral lymphadenopathy. Examination of the cardiovascular and respiratory symptoms was unremarkable. There was diffuse tenderness on palpating the abdomen but no organomegaly. He vomited food residues and bile stained fluid while being examined. The vomitus, however did not contain frank blood or coffee ground material.

The laboratory evaluation on admission yielded a normocytic normochromic anaemia with a haemoglobin concentration of 97 g/L. Total white cell count was normal but the platelets were raised at $498 \times 10^9/L$.

Erythrocyte sedimentation rate (ESR) was 97mm in the first hour. The following investigations were either normal or negative: septic workout including blood, stool and urine cultures, repeated peripheral blood smears for malarial parasites, Widal agglutination test, echocardiogram, chest X-rays repeated at 10 day intervals, the human immunodeficiency virus (HIV) screening, hepatitis B and C, thyroid function test, antinuclear antibody, rheumatoid factor, random blood sugar, renal profile and urinalysis. Mantoux was non-reactive.

Liver function tests (LFT) showed normal total bilirubin and alkaline phosphatase levels. The total serum protein was 93gm/L with the albumin and globulin components being 36 and 57 gm/L respectively. The aspartate (AST) and alanine transaminases (ALT) levels were mildly raised at 87 and 56 IU/L respectively. Lactate dehydrogenase (LDH) was elevated at 1022 IU/L. The prothrombin time (PT) was normal.

Serum calcium was repeatedly raised at 3.25 mmol/L (normal: 2.10-2.55 mmol/L). Similarly, the ionised calcium was also raised at 1.91 mmol/L (normal: 1.13-1.37 mmol/L). The serum phosphate was low at 0.88 mmol/L (normal: 0.9-1.5 mmol/L).

Immunoglobulin electrophoresis showed an elevation in acute phase proteins and polyclonal increase in gamma-globulin; no paraprotein band was detected.

The peripheral blood film showed marked rouleaux formation and numerous platelets but bone marrow biopsy was negative for myelomatosis, malignant infiltration or granulomas.

Ultrasound examination of the abdomen revealed an enlarged liver with a coarse echogenic texture, minimal ascites and thickened small bowel wall. Paracentesis was attempted but failed to aspirate any fluid. Upper gastrointestinal endoscopic and colonoscopic examinations, barium enema study and computerised axial tomographic scan (CT scan) of the abdomen were essentially normal. Gastric, rectal, colonic and the liver biopsies showed no evidence of malignancy or granuloma formation.

The patient was treated with continuous saline infusion and an empirical course of intravenous ceftazidime.

Steroids were added when the hypercalcaemia remained refractory to saline infusions. However, the patient continued to be hypercalcaemic and febrile with temperatures spiking to 39 to 40°C in the evenings. His abdominal pain and vomiting too were only temporarily relieved with ranitidine, antispasmodics and metoclopramide injections. The patient discharged himself against medical advice after three weeks of hospitalisation.

A month later, he was re-admitted as an emergency in a moribund state. While out of the hospital he had sought traditional treatment. The findings on clinical assessment of the patient were almost similar to the earlier admission except that he was more ill. The serum calcium was again raised at 3.4 mmol/L and the serum phosphate was 1.88 mmol/L. The renal function was impaired with the blood urea and the serum creatinine being raised at 16.9 mmol/L (normal: 1.0-5.7 mmol/L) and 224µmol/L (normal: 62-133µmol/L) respectively. The other biochemical and septic workout findings reflected earlier results. A repeat chest X-ray was normal. The Mantoux test was reactive at 10mm.

Diagnostic laparotomy was performed. The parietal peritoneum was found to be grossly thickened. The gut was matted with the omentum forming an omentum cake. The serosa of the gut was studded with nodular plaques. The pelvic peritoneum also had similar appearance. Histopathology of the peritoneal biopsy showed caseating granulomas with central necrosis surrounded by epithelioid cells, lymphocytes and Langherhan's giant cells (Figure 1). A Ziehl-Neelsen stain of the peritoneal tissue was negative for acid-fast bacilli.

The patient was treated with a course of anti-tuberculosis drugs consisting of rifampicin, isoniazid and pyrazinamide. In addition, he was also on saline infusion till the serum calcium normalised. He responded well to treatment and gained 12 kg over the next 4 months and returned to full employment shortly thereafter.

Discussion

It was obvious that the patient had hypercalcaemic crisis on both the admissions. But, the underlying

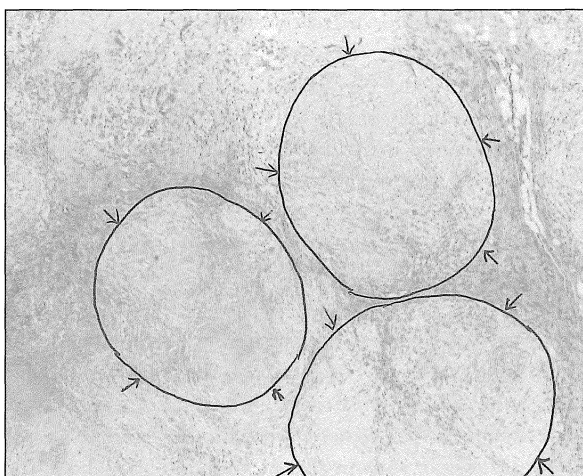


Fig. 1: Peritoneal biopsy showing numerous caseating granulomas circle with arrows : Granulomas

condition remained elusive. Thus, the extensive workup became necessary to define the primary problem. The common causes of hypercalcaemia include malignancies, multiple myeloma and sarcoidosis. The several diagnostic procedures were negative for underlying malignancies including multiple myeloma and lymphomas. The paucity of other features, negative response to steroids and the prompt response to anti-TB therapy spelt against sarcoidosis.

Fortunately the peritoneal biopsy gave us the final diagnosis. Although we did not culture the tissue for mycobacterium tuberculosis, the histopathologic

findings of the peritoneal biopsy and the patient's prompt response to anti-tuberculosis therapy were sufficient ground for the diagnosis of TB peritonitis³. Moreover, the positive Mantoux reaction during the second admission and the thrombocytosis too pointed towards TB.

The association of hypercalcaemia with pulmonary TB is now well established¹. But, its occurrence in gut TB in the absence of lung involvement appears to be rare. In fact, hypocalcaemia appears to be a more frequent finding in abdominal TB². Our search of the literature found one earlier case report in which the patient had hypercalcaemia in association with TB peritonitis without active pulmonary involvement although, the chest X-ray showed 'fibrotic changes in the right lower lung with minimal bilateral pleural effusions'⁴. In contrast, the chest X-ray was repeatedly normal in our patient.

Our patient offers persuasive evidence to include abdominal TB in the differential diagnosis of febrile illness associated with hypercalcaemia, even in the absence of lung involvement especially, in Malaysia where TB is common and is a treatable condition.

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References

1. Abbassi AA, Chemplavil JK, Farah S, Muller BF, Arnstein AR. Hypercalcaemia in active pulmonary tuberculosis. *Ann Intern Med* 1979; 90 : 324-8.
2. Ramanathan M, Safari E, Sellaiah SP. Abdominal tuberculosis : A presumptive diagnosis. Abstract First Scientific Meeting of the Ministry of Health, Malaysia, Oct. 1994; Kuala Lumpur.
3. Lungenfelter T, Zak J, Marks IN, Steyn E, Halkett J, Price SK. Abdominal tuberculosis : Still a potentially lethal disease. *Am J Gastroenterol* 1993; 88 : 744-50.
4. Lin SM, Tsai SL, Chan CS. Hypercalcaemia in tuberculous peritonitis without active pulmonary tuberculosis. *Am J Gastroenterol* 1994; 89 : 2249-50