



Medical Imagery

An unusual cause of hypercalcaemia in a home haemodialysis patient: Peritoneal tuberculosis



A 36-year-old patient of North African origin (lived in Belgium since childhood) who had been on home haemodialysis (HD) for 24 months for end-stage kidney disease secondary to diabetic nephropathy presented with progressive symptomatic hypercalcaemia.

The medical history included poorly controlled diabetes, scabies, subtotal parathyroidectomy, active hepatitis C infection (diagnosed following a holiday in Morocco), and hypertrophic cardiomyopathy secondary to arterial hypertension. Clinical examination was normal. Hypercalcaemia was initially attributed to a high calcium dialysate (1.75 mmol/L) and calcitriol therapy. Calcaemia remained high (2.91 mmol/L corrected for albuminaemia) despite discontinuation of calcitriol and prescription of a low calcium dialysate (1.25 mmol/L). Biological work-up disclosed low parathyroid hormone (PTH; <3 pg/mL) and 25-hydroxyvitamin D (28 ng/mL), high 1,25-dihydroxyvitamin D [129.0 (NV 19.9–79.3) pg/mL] level and no PTH-related peptide.

Differential diagnosis suggested a granulomatosis process such as lymphoma, sarcoidosis or tuberculosis. Positron emission

tomography (PET) scanning (Figure 1A) revealed pluri-compartmental ascites associated with abnormal peritoneal uptake of the tracer. Cytological analysis of the ascites showed a high lymphocyte count (987/ μ L) but no malignant cells. Culture and polymerase chain reaction (PCR) for mycobacterial infection were negative. Diagnostic laparoscopy showed multiple granulomas inside the peritoneal cavity (Figure 1B,C). Biopsy demonstrated large necrotizing granulomas (Figure 1D) from which *Mycobacterium tuberculosis* PCR was negative. Interferon-gamma release assays (QuantiFERON TB Gold; Qiagen, Hilden, Germany) were positive. The patient was therefore diagnosed with extrapulmonary tuberculosis, and classical quadritherapy (rifampicin, pyrazinamide, isoniazid and ethambutol) was initiated for 2 months followed by 4 months of bitherapy (isoniazid and rifampicin). The patient achieved complete biological recovery with calcaemia of 2.40 mmol/L, PTH of 3 pg/mL, 1,25-dihydroxyvitamin D of 47.7 pg/mL and a normal PET scan.

Tuberculosis is a common pathogen, and patients on HD are six to 25 times more likely to contract it compared with non-dialysed

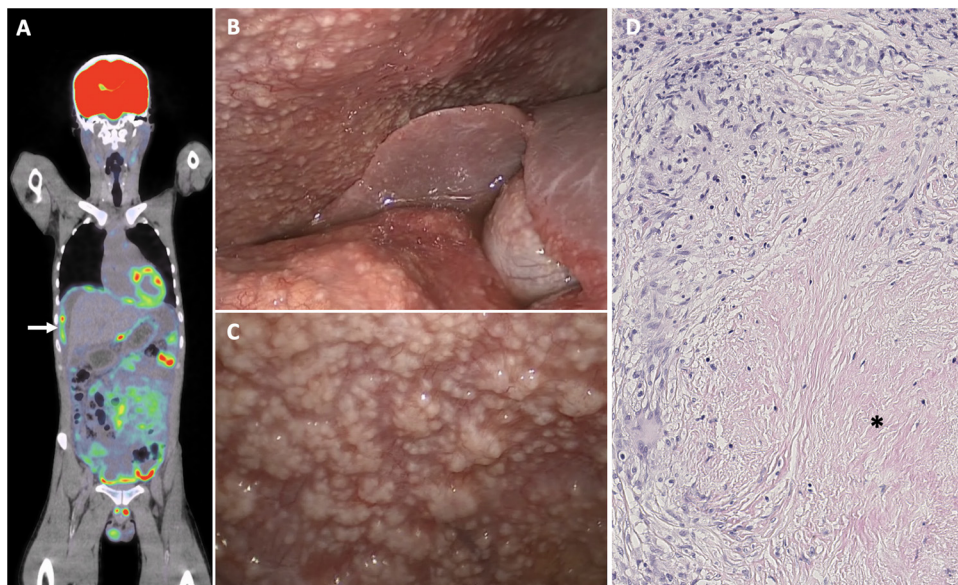


Figure 1. (A) Positron emission tomography scan showing abnormal uptake in the peritoneum (arrow). (B–C) Images obtained during diagnostic laparoscopy showing multiple granulomas on the peritoneum. (D) Peritoneal biopsy stained with haematoxylin and eosin (original magnification $\times 22$). Asterisk indicates necrotizing granuloma.

patients (Segall and Covic, 2010). Patients on HD also present with more extrapulmonary involvement, with or without pulmonary localization, than the general population (Segall and Covic, 2010). Isolated peritoneal tuberculosis is very rare; it has been described in only 4% of patients with extrapulmonary tuberculosis in a US registry (Peto et al., 2009). Atypical presentations, as described in the present case, are often associated with delayed diagnosis and therapeutic intervention. PET scanning can easily describe the localization and treatment response of the lesion (Gambhir et al., 2017). Tuberculosis, in common with other granulomatous disorders, is known to induce hypercalcaemia via overexpression of 25(OH)D3-1 alpha-hydroxylase, the enzyme that converts 25-hydroxyvitamin D to 1,25-dihydroxyvitamin D, in macrophages and lymphocytes of granulomas (Adams and Hewison, 2012; Tebben et al., 2016). This enzymatic overproduction is not regulated by PTH and explains the development of hypercalcaemia (Adams and Hewison, 2012).

Conflict of interest

None declared.

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