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IMAGE OF THE MONTH

Multiple skeletal lesions on FDG PET in severe primary hyperparathyroidism

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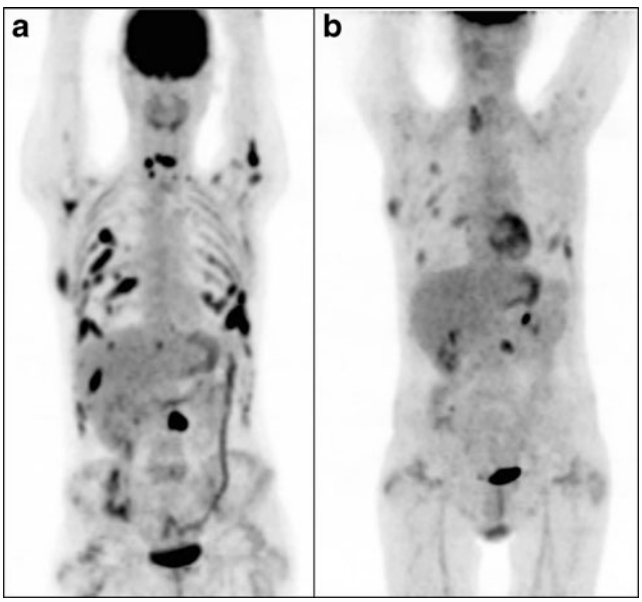
A 55-year-old man presented with weight loss and diffuse bone pain. Strongly elevated concentrations of calcium (3.49 mmol/L, with normoalbuminuria) and parathyroid hormone (260 pmol/L) indicated primary hyperparathyroidism.^{18}F-FDG PET/CT scanning demonstrated uptake in the right upper and right lower pole of the thyroid region but also multiple ^{18}F-FDG-avid osteolytic lesions, including the 7th cervical and 3rd lumbar vertebrae (a). Histopathological examination of a vertebral bone biopsy revealed a brown tumour. An enlarged left upper and right upper parathyroid gland were resected using a sestamibi gamma probe. In addition, a left-sided hemithyroidectomy with ipsilateral paratracheal nodal dissection was performed because of a suspected mass in the left thyroid lobe and enlarged lymph nodes [1]. Pathological examination demonstrated a parathyroid adenoma but no carcinoma. Postoperative recovery was complicated by a severe hungry bone syndrome. Repeat ^{18}F-FDG PET/CT scanning 4 months after surgery showed a marked reduction in the number of ^{18}F-FDG-avid lesions in the skeleton (b). Also the intensity of ^{18}F-FDG uptake in the remaining lesions was significantly lower.

Severe parathyroid bone disease is nowadays rarely encountered [2]. Brown tumours are osteolytic lesions which may mimic skeletal metastasis [3–5]. Microscopically, excessive osteoclast resorption is seen with destruction of cortical bone and formation of fibrous cysts. The marrow may be replaced by vascularized fibrous tissue and osteoclast-like giant cells. Haemosiderin deposits give these tumours their characteristic brown colour. Reduction in abnormal ^{18}F-FDG uptake paralleled resolution of the hungry bone syndrome in our patient. Indeed, brown tumours may disappear after successful parathyroidectomy [5].



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