

Corticosteroid therapy for rheumatoid arthritis masking double ectopic parathyroid adenomas

Sirs,

Concomitant existence of rheumatoid arthritis with primary hyperparathyroidism is rare. We present an unusual case of co-existence of rheumatoid arthritis with double ectopic parathyroid adenomas in a female patient in whom corticosteroid therapy was masking the clinical features of hyperparathyroidism.

A 52-year-old woman, heavy smoker (350 pack-year), with nine-year-history of sero-positive rheumatoid arthritis (RA), shoulder calcinosis, and non-alcoholic fatty liver disease, was initially treated with oral methylprednisolone 6 mg/day and methotrexate 10 mg/week. For the last two years methylprednisolone dose was gradually decreased and when the patient was on 2 mg methylprednisolone daily, the serum calcium levels raised from 9.4 to 10.2 mg/dl. Family history was remarkable for diabetes mellitus type 2 and malignancies.

Upon our evaluation, rheumatoid arthritis was in remission and the rest of physical examination was unremarkable. Bone mass density (left femoral neck) was 0.923 g/cm³ with T-score of -0.5. Laboratory findings showed serum albumin 3.8 gr/dl, creatinine 0.6 mg/dl (n.v. 0.6-1.4), alkaline phosphatase (ALP) 135 iu/l (n.v. 25-129), calcium 10.2 mg/dl (n.v. 8.2-10.1), phosphate: 2.8 mg/dl (n.v. 2.7-4.5), parathyroid hormone (PTH): 113 pg/ml (n.v. 17-72), 25OHvitD: 19.1 ng/ml (n.v. >20) and TSH: 2.1 IU/ml (n.v. 0.27-4.2). Calcium in 24h urine collection was 429.3 mg/24h (n.v. 100-300mg/24 h). Renal sonography was unrevealing. Thyroid sonography showed two hypoechoic nodules with a diameter of 1.5 cm, and increased vascular flow, under the left and right thyroid lobe, respectively. Double-phase 99mTc-sestamibi scintigraphy revealed two lesions with increased uptake of radioactive drug on the front neck, above the suprasternal notch. The first lesion was near the midline and the other on the left neck side (Fig. 1a). The patient underwent minimally invasive parathyroidectomy. Postoperatively, PTH levels decrease to 11 pg/ml. Histology of parathyroid adenomas revealed a mixed population of chief and oxyphilic cells (mixed cell dominant type) (Fig. 1b).

The clue of the diagnosis in our patient was the presence of hypercalcaemia after the gradually decrease of methylprednisolone dose for rheumatoid arthritis. Parathyroid adenomas are usually composed from chief cells (conventional or water-clear), oxyphilic cells and rarely contain mixed cell dominant type composed from conventional and oxyphilic cells. Chief adenoma cells are functional and secrete PTH, while oxyphilic cells have previously been

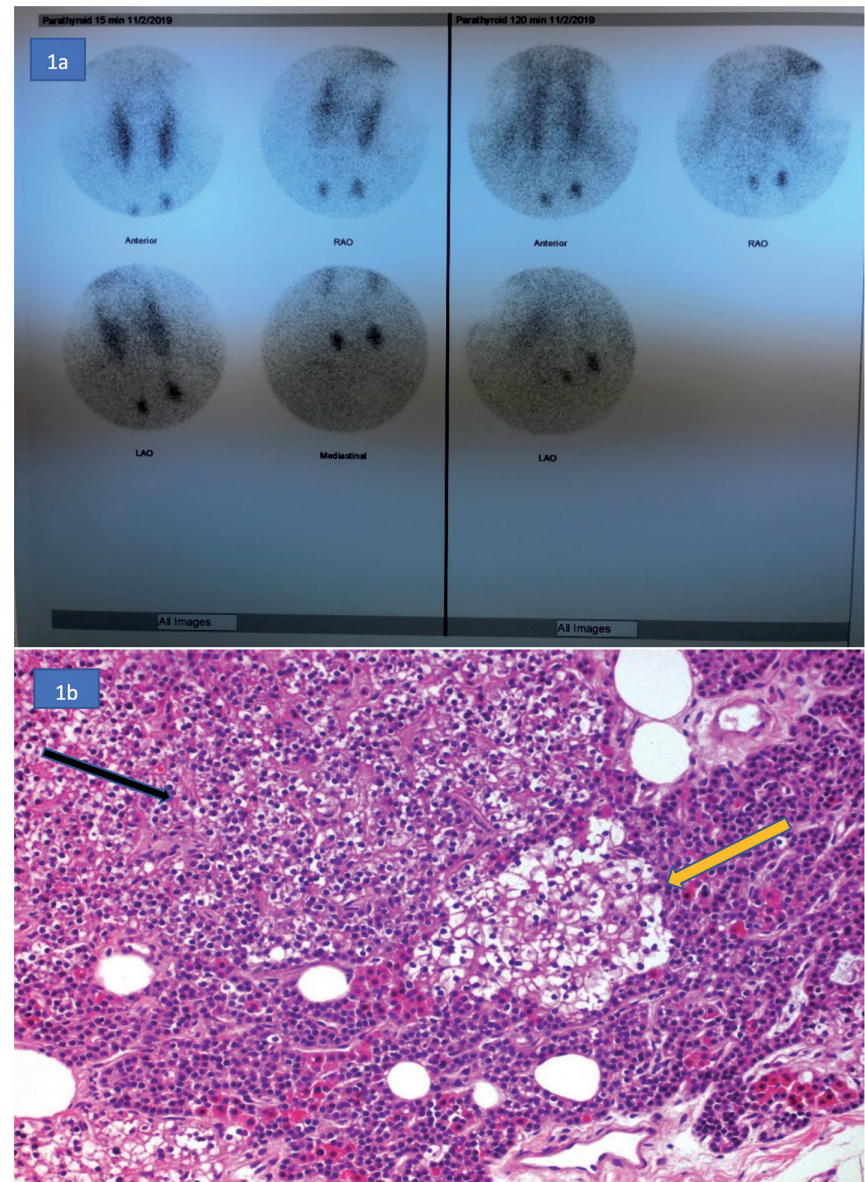


Fig. 1. (a) Double-phase 99mTc-sestamibi scintigraphy revealing the two ectopic parathyroid adenomas. (b) Stained haematoxylin & eosin magnification x200) histologic preparation of parathyroid adenomas revealed a mixed population of chief (yellow arrow) and oxyphilic (black arrow) cells (mixed cell dominant type).

considered as non-functional (1). However, subsequently functional oxyphilic cell adenomas have been reported to constitute 3–6.25% of all parathyroid adenomas (2). Nevertheless, under normocalcaemic conditions, oxyphilic cells produce 50% more PTH than chief cells do, yet display significantly greater PTH suppression and calcium flux response to elevated calcium. Oxyphilic parathyroid cells are increased in number in patients with chronic kidney disease and are more abundant in patients on calcitriol and/or the cinacalcet for secondary hyperparathyroidism (2). Our patient had normal renal function, increased PTH levels and had a mild elevation of serum calcium levels and ALP. There is limited data for the incidence of mixed cell dominant type parathyroid adenomas, since only some cases with ectopic localisation have been

described (3). This case is presented to emphasise that if patients are on corticosteroids and have slightly elevated calcium levels, they should be screened for primary hyperparathyroidism. Furthermore, this case is interesting, since our patient's adenomas contained mixed cellularity and were ectopic. All procedures performed were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards, and Informed consent was obtained.

G. BOUTZIOS¹, MD

H.M. MOUTSOPOULOS² MD, FACP, FRCP (hc)

¹Department of Pathophysiology, National and Kapodistrian University of Athens, Greece;

²Member, Academy of Athens, Greece.

Letters to the Editors

Please address correspondence to:
Dr Georgios Boutzios,
Department of Pathophysiology,
National and Kapodistrian University
of Athens, Mikras Asias 75,
11527 Attica, Greece.
E-mail: gboutzios@med.uoa.gr
Competing interests: none declared.

© Copyright CLINICAL AND
EXPERIMENTAL RHEUMATOLOGY 2020.

References

1. BOUTZIOS G, SARLANIS H, KOLINDOU A *et al.*: Primary hyperparathyroidism caused by enormous unilateral water-clear cell parathyroid hyperplasia *BMC Endocr Disord* 2017; 17: 57.
2. RITTER CS, HAUGHEY BH, MILLER B, BRAWN AJ: Differential gene expression by oxyphil and chief cells of human parathyroid glands. *J Clin Endocrinol Metab* 2012; 97: 1499-505.
3. LU M, KJELLIN H, FOTOUHI O *et al.*: Molecular profiles of oxyphilic and chief cell parathyroid adenoma. *Mol Cell Endocrinol* 2018; 470: 84-95.