Concomitant Graves’ disease and primary hyperparathyroidism: clinical implications and preoperative localization of parathyroid adenoma by fine needle biopsy

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Abstract: A 53-year old female patient, who presented with retrosternal pain, which could be ascribed to reflux oesophagitis and gastritis, furthermore stated recurrent palpitations, sweating and the feeling of uneasiness. In routine laboratory investigation hyperthyroidism and hypercalcaemia were detected. Further testing revealed elevated TSH receptor antibodies and a parathyroid hormone level within the normal range. Scintigraphically a homogeneous, but increased uptake was found. In ultrasonography guided fine needle aspiration biopsy of a nodule parathyroid hormone was verifiable by immunochemical means.

Under thyrostatic treatment with carbimazole the patient became euthyroid, simultaneous a decrease of serum calcium levels could be observed. Parathyroid hormone level remained in normal range. After confirmation of Graves’ disease and adenoma of the parathyroid gland parathyroidectomy in combination with near total resection of the thyroid gland was performed.

In conclusions concomitant Graves’ disease and primary hyperparathyroidism is rare, but should be considered in case of persisting hypercalcaemia after the patient became euthyroid again, when parathyroid hormone level is in normal range or elevated. Thus a potentially required second operation can be avoided. By ultrasonography guided fine needle aspiration biopsy and immunochemical processing adenomas of parathyroid glands can be localized preoperatively.

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1 Introduction

Several cases of simultaneous hyperthyroidism and primary hyperparathyroidism have been published [1]. Some authors have described the occurrence of hyperparathyroidism following treatment of Graves’ disease with radioactive iodine [2] or in cases adenomas of the parathyroid gland found in the course of thyroidectomy or following histopathological processing [1]. Because hyperthyroidism is often associated with hypercalcaemia due to increased bone metabolism [3], the simultaneous elevation or at least inability of thyrostatic treatment to reduce the level of parathyroid hormone level indicates co-existing hyperparathyroidism [4]. Here, we describe a case of preoperatively confirmed asymptomatic primary hyperparathyroidism with a normal parathyroid hormone level, which was caused by adenoma of the parathyroid gland and coexisting Graves’ disease due thyroid stimulating hormone (TSH) receptor-activating antibodies.

2 Case report

A 53-year old female patient presented with retrosternal and epigastric pain. She also stated that she suffered from recurrent palpitations, sweating, and a feeling of unease. She had a normal appetite, steady body weight, and did not show changes in defecation, micronutrition, or mental health. Eight weeks before, she had been diagnosed with gastric ulcer and treated to eradicate Helicobacter pylori. In addition, her history included hepatitis 30 years before as well as appendectomy and occlusion of the fallopian tubes.

The patient presented with a normal mental status, a height of 160 cm, body weight of 66 kg, and body mass index 25.8. She had a blood pressure of 160/90 mmHg, heart rate of 102 beats per minute (regular), respiration rate of 14 per min, and temperature of 36.6°C. Further physical examination revealed no pathological findings. There were no trophic alterations in her skin, hair, or nails. Also, she showed no signs of orbitopathy.

Blood tests showed suppressed thyrotropin (TSH) (< 0.03 mU/L; normal range = 0.30 – 4.00 mU/L), elevated total triiodothyronine (5.0 nmol/L; normal range = 0.7 – 2.4 nmol/L), free thyroxine (49.6 pmol/L; normal range 9.0 – 26.0 pmol/L), and elevated TSH receptor antibodies (6.9 U/L; normal range 0.0 – 1.0 U/L).

The total serum calcium was 2.7 mmol/L (in a control sample 2.9 mmol/L; normal range = 2.1 – 2.6 mmol/L), inorganic phosphate was 3.5 mg/dl (normal range = 2.5 – 4.8 mg/dl) and intact parathyroid hormone 4.5 pmol/L; normal range = 1.0 – 7.0 pmol/L).

The 24-h collected urine (3800 ml) showed a creatinine clearance of 163 ml/min (normal range = 70 – 160 ml/min), calcium excretion of 16.3 mmol per 24 h (normal range < 10 mmol per 24 h), and a phosphate excretion of 1.0 g per 24 h (normal range = 0.5 – 1.4 g per 24 h).

The serum alkaline phosphatase level was 142 U/L (normal range < 100 U/L), CRP 20.1 mg/L (normal range < 5 mg/l), angiotensin converting enzyme 94 U/L (normal range = =8 – 52 U/L), and leukocyte count 15.7 per nl (normal range = 4.00 – 10.00 per nl). Other routine laboratory parameters, including sodium, potassium, chloride,