

Pheochromocytoma in Association With Graves' Disease; A Case Report

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We have presented a case with pheochromocytoma and thyrotoxicosis. She was admitted on the grounds of weight loss, palpitation, sweating and headache. She described numerous attacks of flushing and palpitation. On physical examination her thyroid gland was diffusely enlarged and she had a mild tremor. Laboratory investigations were in accordance with both pheochromocytoma and Graves' disease. Abdominal ultrasonography and computerized tomography scan revealed a mass located in the right adrenal gland. Metaiodobenzylguanidine scintiscan confirmed the diagnosis. The patient had preoperative medical therapy for both Graves' disease and pheochromocytoma. After surgical removal of the tumor and right adrenal gland, the patient was euthyroid without any medical therapy during the follow-up period. In this case we wanted to point out the possible role of catecholamines in the physiopathology of hyperthyroidism and Graves' disease.

Keywords: Pheochromocytoma, Hyperthyroidism, Graves' disease

Introduction

Pheochromocytoma and thyrotoxicosis are two entities that may mimic many similar symptoms and signs alike; therefore, one must be careful in the differential diagnosis. In the rare cases where both entities coincide, a meticulous history, physical examination and detailed laboratory investigation are needed to make a precise diagnosis.

The possible induction of thyrotoxicosis by catecholamines in the association of pheochromocytoma and Graves' disease, is under dispute.

Case report

A Forty-five-year old female patient attended the endocrinology outpatient clinic in July 1997 with complaints of weight loss, palpitation, sweating and headache. She described bouts of hypertension crisis accompanied by flushing and palpitation. Her blood pressure was 120/80 mmHg, heartbeat was 100/min. and rhythmic. Her skin was wet and thin with periorbital edema. We observed a mild tremor. Her thyroid gland was considered as diffuse, grade I b. Her laboratory findings were as follows; free T3: 27,13 pg/ ml (N: 1.45-3.48), free T4; 6 ng/dl (N: 0.71-1.85), hTSH: 0.09 uIU/ml (N: 0.49-4.67), anti-M and anti-Tg were positive. We started 300 mg/day propylthiouracil with the diagnosis of diffuse toxic goitre.

During her stay she had hypertension bouts rising up to 200/110 mmHg. Abdominal sonography revealed a mass 31 x 25 mm in size located in the right adrenal gland. This mass was also present in

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abdominal CT. 24 hour urine analysis showed; VMA: 13.9 mg/day (N: 1-10), metanephrin: 2.36 mg/day (N: 0-1). The mass was thought to be a

pheochromocytoma. The patient underwent I ¹⁷¹ metaiodobenzylguanidin sintiscan to confirm the diagnosis and to check the presence of another localization of the tümör. There was a tümör only -on the right side (figure 1). We could not find any sign of an accompanying MEN2a or MEN2b syndrome. We started 4 mg/day prazosin to control the hypertension bouts and to prepare the patient for surgery.

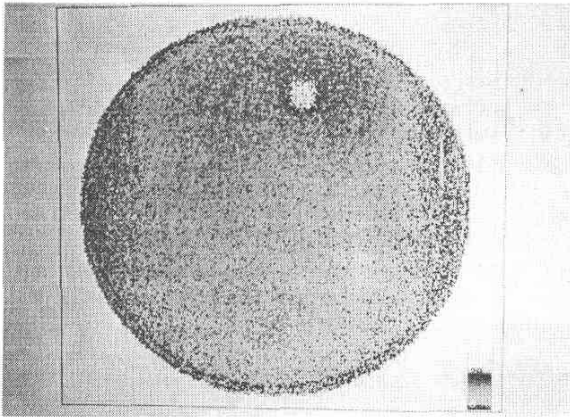


Figure 1

The patient was taken to the operation room six weeks after the start of medical treatment in a clinically euthyroid state. The mass was approached through a right subcostal incision. Blood pressure reached a level of 260/120 mmHg when the gland was palpated, which was normalized again with phentolamine. Through meticulous work, the gland was dissected, the vein ligated and totally excised. We did not observe any complications during the postoperative period. Histopathological study confirmed the lesion as a pheochromocytoma. There was no invasion of the vessels or the capsule.

During the follow-up period, the patient's blood pressure was within the normal range after one, six and 12 months, with no bouts of hypertension. She was also euthyroid without any medication.

Discussion

Pheochromocytoma is an adrenal medullary tümör originating from the chromaffin cells located in the sympathetic peripheral nerves. The symptoms

presented in this entity are due to hyperexcretion of epinephrine or norepinephrine (1). Symptoms connected mostly with sympathetic tonus concerning thyrotoxicosis are due to the direct effect of thyroid hormones on various tissues (2).

It is well known that pheochromocytoma is accompanied by medullary thyroid malignancy in MEN syndromes. It has been stated that autoimmune thyroid diseases may also accompany pheochromocytoma. Becker et al. have shown that five out of 36 cases with pheochromocytoma presented with thyroid disease other than medullary carcinoma and in three of these (8,3 %) they observed abnormal thyroid functions (4). Braverman and Sullivan in 1969 and Dimova and Kiscleva in 1987 presented cases with pheochromocytoma and accompanying diffuse toxic goitre (5,6). Snow and Burton presented a case in 1976 revealing a postmortem pheochromocytoma operated for hyperthyroidism, the previous symptoms depending on the tumor (7). Bartholomew et al. have pointed out a case with pheochromocytoma accompanying autoimmune hypothyroidism (8).

Our patient has attended with signs and symptoms mimicking both diseases. Even though our primary approach was towards thyrotoxicosis, bouts of hypertension has intensified our attention to pheochromocytoma.

The thyroid gland is enlarged in 6 % of the cases with pheochromocytoma. It has been shown that experimental infusion of norepinephrine may lead to such enlargement (9, 10). This mechanism and its action on human goitre etiology has not yet been clarified. It is known that catecholamines stimulate thyroxine, calcitonin, PTH and gastrin secretion via beta receptors (11). It is also been stated that catecholamines aggravate immunologic deficiency leading to Graves' disease (10). From this point of view it can be postulated that pheochromocytoma may share a part in the pathophysiology and exacerbation of Graves' disease. The remission of Graves' disease following surgical treatment of pheochromocytoma in our patient supports our thesis.

On the contrary, Harrison reported patients with pheochromocytoma whose serum protein bound iodine, rate of release and uptake of I ¹³¹, and rate

of clearance of labelled T₃ or T₄ were within the normal range, thus denying the effect of pheochromocytoma in these cases (12).

The diagnosis of pheochromocytoma is difficult in cases sharing symptoms of thyrotoxicosis, where both diseases may be operating at the same time. The role of catecholamines in the physiopathology of hyperthyroidism is still under dispute.

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