Primary hyperparathyroidism can be caused by parathyroid adenoma (85%), hyperplasia (15%), and carcinoma (<15%).

There are no specific characteristics that distinguish carcinoma from benign disease preoperatively, other than the rare presence of metastases. In general, severe hyperparathyroidism and hypercalcemia with its subsequent effects suggest a greater likelihood of carcinoma.3 Water-clear cell adenoma is an extremely rare diagnosis in which the tumor is composed entirely of cells with abundant, clear to foamy cytoplasm.5 To our knowledge, there have only been eight previous reports of water-clear cell adenoma.3,4 We present the case of a patient with primary hyperparathyroidism and features concerning for carcinoma, who was ultimately diagnosed with water-clear cell adenoma.

CASE REPORT

A 57-year-old female was admitted to our institution with progressive shortness of breath, fatigue, and generalized weakness. She also complained of lumbago and diffuse joint pains. Her medical history was significant for primary hyperparathyroidism and schizophrenia. There was no history of renal disease or constitutional symptoms. Her physical exam was significant for a 4 cm, firm, immobile, nontender mass in the region of her left thyroid lobe.

On admission, she had a serum calcium level of 15.9 mg/dL (normal 8.2 – 10.0), and intact PTH was significantly elevated at 1905 pg/mL (normal 15-65). Urinary calcium excretion was normal.

An ultrasound of her neck showed a hypoechoic, heterogeneous mass occupying the lower pole of the left thyroid lobe. The mass was strongly positive on Tc-99m sestamibi scintigraphy and appeared well circumscribed and distinct from the thyroid on CT scan. In addition, the CT demonstrated generalized bony demineralization with multiple lytic lesions of the skull and two expansile lesions of the right seventh and ninth ribs, consistent with bone tumors. CT of the pelvis revealed widening of both sacro-iliac joints, significant subchondral resorption, and brown tumors in the right iliac wing and left femoral neck.

The patient underwent neck exploration, during which a large, firm, tan-white left inferior parathyroid mass was found adherent to the left thyroid lobe but separate from the gland. The final parathyroid glands were identified and appeared normal. One was excised for frozen section analysis and was found to have normal histology.

On pathologic review, the left inferior parathyroid mass measured 5 x 3 x 1.5 cm and weighed 22 grams. The cut surface was homogenous and gray-white in color. Microscopically, the mass was comprised entirely of clear cells with a compressed rim of normal parathyroid tissue. There was no evidence of mitoses, necrosis, lymphovascular invasion, or capsular invasion within the tumor. These findings were consistent with a diagnosis of water-clear cell parathyroid adenoma.

The patient’s post-operative course was excellent. Within 48 hours, her serum calcium and iPTH levels normalized to 8.8 mg/dL and 18.4 pg/mL, respectively. She never required calcium supplementation but was started on vitamin D. Six months later, she remained normocalcemic (Ca 8.8 mg/dL).

REFERENCES


