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Case report on hurthle cell neoplasm in a patient having chronic kidney disease

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Abstract

Hurthle cell neoplasm (HCN) is an unusual and relatively rare type of differentiated thyroid cancer. It accounts for only about 3-10% of all differentiated thyroid cancer. We studied a rare case of hurthle cell neoplasm diagnosed in a patient having chronic kidney disease. Throid hormones have significant impact on kidney disease so it is important to consider the physiological association of thyroid dysfunction in relation to chronic kidney disease(CKD). Fine needle aspiration cytology (FNAC) was performed which revealed cell-rich smears comprising Hurthle cells arranged in flat sheets, overlapping clusters and scattered singly. Treatment of hurthle cell neoplasm includes mainly surgery as well as adjuvant chemotherapy (Sorafenib).

Keywords

hurthle cell neoplasm;chronic kidney disease;fine needle aspiration cytology; sorafenib

Abbreviations

HCN: Hurthle cell neoplasm; FNAC: Fine needle aspiration cytology; RFT: Renal function test; SEER: Surveillance, Epidemiology, and End Results; S/C: subcutaneous

Introduction

Hurthle cell neoplasm of thyroid gland is an unusual and relatively rare type of differentiated thyroid carcinoma. Hurthle cell neoplasm accounts for only about 3-10% of all differentiated thyroid cancers. The Surveillance, Epidemiology, and End Results(SEER) database from 1988 to 2009 was used to obtain data on patients with thyroid cancer. In total 3311 patients with hurthle cell neoplasm were identified [1].

Oncocytic cells in the thyroid are often called as Hurthle cells, and oncocytic change is defined as cellular enlargement charecterised by an abundant eosinophilic granular cytoplasm as a result of accumulation of altered mitochondria. The proliferation of oncocytes gives rise to hyperplastic and neoplastic nodules. The cytological features for hurthle cell neoplasms are hypercellularity with a predominance of Hurthle cells (usually>75%), few or no lymphocytes, and scanty or absent colloid. Progressive transformation through somatic mutations of genes that are important in growth control are involved in hurthle cell neoplasm formation [2].

Thyroid hormones affect renal development and physiology. Thyroid hormones have pre-renal and intrinsic renal effects by which they increase the renal blood flow and glomerular filteration rate. Chronic kidney disease patients have increased incidence of thyroid dysfunction and malignancies [3].

Case Presentation

A sixty one year old male was presented with gastric symptoms (vomiting and acid regurgitation). Urine output was adequate and there was no hematuria or oliguria . The patient had gastric ulcer 6 years back and dyspeptic symptoms since then. 1 year back, he was evaluated for swelling legs and detected to have deranged RFT (serum creatinine: 5.0). The patient was diabetic and has history of glomerulonephritis.

Routine hematological investigation and biochemical investigation was performed. Haemoglobin level was very low (5.1mg/dL). Bone marrow aspiration was done which showed 10% plasmocytosis, clustering of plasma cells and binucleate cells. Inj. Erythropoetin 4000 IU S/C was administered twice weekly and one unit PRBC was transfused (day 2). Physical examination was done and each thyroid lobe was measured in 2 dimensions using a tape measure. Multiple nodules were present which suggest a multinodular goiter. FNAC thyroid was done which showed palpable nodules of size 1.9cm and loose clusters of polyhedral cells with abundant granular cytoplasm and enlarged nucleus. Thyroid function test revealed T3, 1.15 mcg/ml ; T4, 9.78 mcg/dL ; TSH < 0.004 IU/L.

Chemotherapy is started to the patient. 4 cycles of chemotherapy were planned. The choice of drug was Inj. Sorafenib 30mg (day 2, 3, 4 and 5) along with premedication. Thyroidectomy was planned for the patient.

Discussion

Prevalance of goiter is increased in patients with CKD because of decreased clearance of inorganic iodides, causing a hypertropic effect on thyroid gland tissue leading to goiter.

Hurthle cells arise from the follicular epithelium. Key features of these oncocytic cells include an eosinophilic granular cytoplasm and vesicular nucleas with a large nucleolus. The cytoplasm of the oncocytes in hurthle cell adenomas and carcinomas is characterized by an eosinophilic granular nature which is due to high content of mitochondria [4]. Hurthle cell cancer can be separated into hurthle cell adenoma and carcinomas which are respectively benign and malignant tumors arising from the follicular epithelium of the thyroid gland.

Here, the patient presented with dyspeptic symptoms. Routine biochemical and hematological investigation reveal excess level of serum creatinine and abnormally low levels of hemoglobin. FNAC thyroid was done which showed multinidular goiter and Hurthle cell neoplasm. Bone marrow aspiration was done as hemoglobin level was low to check the presence of any bone marrow diseases such as myelodysplastic syndrome which was found to be negative.

Conclusion

Diabetis mellitus and chronic glomerulonephritis were found to be the major causes of chronic kidney disease in this patient. Chronic kidney disease and cancer are associated because they share common risk factors, most often toxins. Here the case is of coincidental relationship. Cancer risk

increases many folds with relative risks significantly higher than the general population for about ten sites including thyroid cells. Hurthle cell neoplasm are rare type of throid cancer . Surgical excision is the main treatment for patients with hurthle cell neoplasm, however, some experimental trials have yielded promising results.

Early detection and treatment of these tumors increase the survival rates.

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