

A Rare Cause of Hyperkalemia: Adrenal Insufficiency Due to Bilateral Adrenal Lymphoma

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Abstract

A 64-year-old female presented to the emergency department with complaints of fatigue, diarrhea, dizziness, and fever. Initial evaluation revealed hyperkalemia and primary adrenal insufficiency. Computed tomography of the abdomen revealed a bilateral adrenal mass. Ultrasonography-guided biopsy of the mass showed bilateral primary adrenal lymphoma, which is a rare condition, and its clinical findings differ from those of other lymphomas, thereby resulting in a delay in the diagnosis and leading to adverse prognosis for the patient. Here we present a typical case of bilateral primary adrenal lymphoma presenting with hyperkalemia due to adrenal insufficiency.

Keywords: Hyperkalemia, adrenal insufficiency, bilateral adrenal lymphoma

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INTRODUCTION

One-third of non-Hodgkin's lymphomas (NHL) are seen in the extranodal regions. Primary endocrine system involvement is uncommon (3%), and the most commonly affected endocrine organ is the thyroid gland (1). Although adrenal involvement is seen in 35% of autopsy series, primary adrenal lymphoma is rare (2) and is commonly seen in elderly males. Most primary adrenal lymphomas are bilateral and are of the diffuse large B-cell lymphoma histological subtype (3). These tumors appear bulky, with an average size of approximately 8 cm. Patients generally have pain in the lumbar area, weight loss, and fever. Additional symptoms related to adrenal insufficiency, such as nausea, vomiting, fatigue, hyperpigmentation, and hypotension, may be seen (4). We present the case of a patient who was admitted with features of adrenal insufficiency and eventually diagnosed with bilateral primary adrenal lymphoma.

CASE PRESENTATION

A 64-year-old female patient with known type 2 diabetes and stage 3 chronic kidney disease (CKD) presented to the emergency department with complaints of fatigue, diarrhea, dizziness, and fever. Her complaints had been continuing since approximately 2-3 months. A physical examination revealed that she had limited orientation and cooperation, bilateral trace pretibial edema, and blood pressure of 90/60 mmHg. Laboratory tests showed high serum potassium, calcium, and creatinine levels and hyponatremia (Table 1). Emergency hemodialysis was performed once because of the resistant hyperkalemia, and she was hydrated with normal saline.

Adrenal insufficiency was considered because of hyperkalemia, hyponatremia, and hypotension. Therefore, morning serum cortisol and adrenocorticotrophic hormone (ACTH) levels were measured. ACTH and cortisol



levels were 193 pg/mL (0-46) and 5.2 µg/dL (6.7-22.6), respectively. Primary adrenal insufficiency was diagnosed. Hydrocortisone was started, which showed an excellent clinical response along with the resolution of hypotension, hyperkalemia, and hyponatremia. Computed tomography (CT) of the abdomen without contrast revealed bilateral 80×50-mm homogeneous adrenal mass (Figure 1). An ultrasonography-guided tru-cut biopsy was performed from the adrenal mass, and the result of the pathological examination was high grade B-cell NHL (Figure 2a-d). Bone marrow biopsy showed no infiltration. These findings favored the diagnosis of bilateral primary adrenal lymphoma.

Hormone replacement was continued. She was followed-up with a plan to start chemotherapy (rituximab, cyclophosphamide, adriamycin, vincristine, and methylprednisolone). After

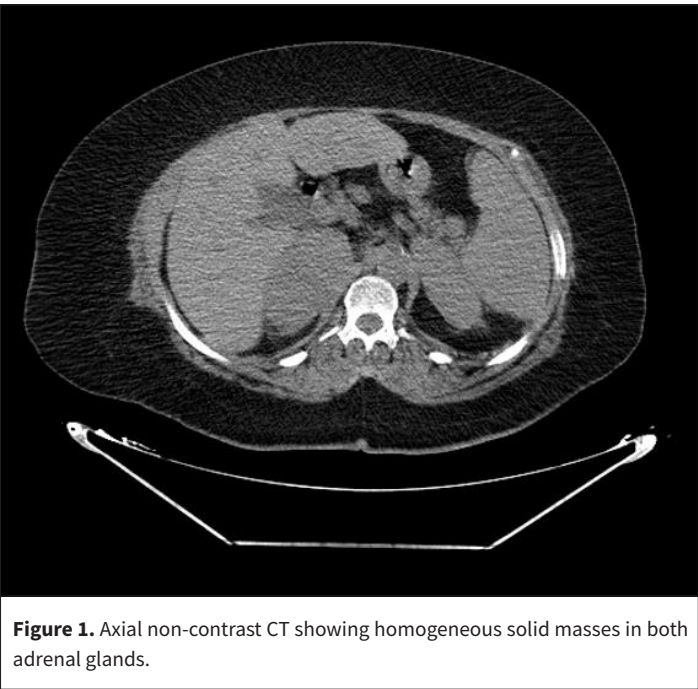
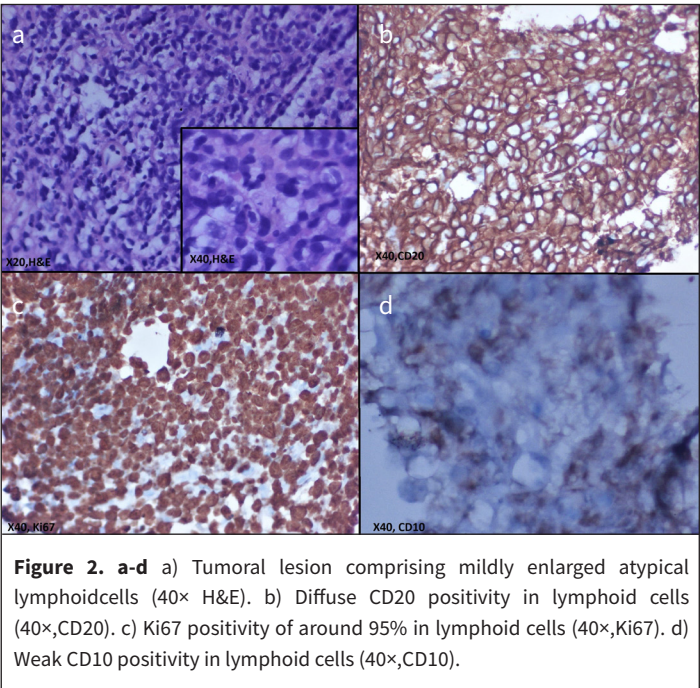
three cycles of chemotherapy, a significant regression of adrenal masses of the patient was observed (Figure 3).

DISCUSSION

In patients with CKD, as long as the release and response of aldosterone are intact and distal delivery of sodium and water is maintained, hyperkalemia is not expected (5). Hyperkalemia is most commonly seen in patients with an advanced stage CKD, those with oliguria, or those who have an additional problem, such as a high potassium diet or increased tissue breakdown. Our patient had potassium elevation incompatible with the

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Table 1. Laboratory results		
Test	Value	Reference range
Urea (mg/dL)	111	15-44
Creatinine (mg/dL)	1.81	0.57-1.11
Sodium (mmol/L)	123	136-145
Potassium (mmol/L)	8.1	3.5-5.1
Calcium (mg/dL)	11.3	8.4-10.2
Glucose (mg/dL)	108	70-105
Lactate dehydrogenase (u/L)	624	125-220
pH	7.35	7.35-7.45
HCO ₃ (mmol/L)	13.3	21-27



stage of CKD. Emergency hemodialysis was performed for resistant hyperkalemia that did not respond to medical treatment.

Bilateral adrenal masses are commonly due to metastases of malignancies such as lung, breast, and colon cancers. Adrenal insufficiency is not frequent at the time of diagnosis, and symptoms generally appear after 90% of the gland is destroyed (6). Primary adrenal lymphoma is rare, frequently bilateral (70%), and seen with adrenal insufficiency.

Systemic chemotherapy is the preferred treatment. The role of surgery and radiotherapy is unclear. The CHOP (cyclophosphamide, adriamycin, vincristine, methylprednisolone) chemotherapy regimen is the most frequently used one. Despite aggressive chemotherapy, patients usually die within 1 year (2). Stage of the disease, increased serum LDH level, tumor size and the presence of adrenal insufficiency are poor prognostic markers (7). One-year survival rate was reported as 17.5% in a meta-analysis of 83 patients (8). Adrenal masses of the patient in the present case diminished after chemotherapy and clinical improvement was seen, and the patient has been under follow-up.

CONCLUSION

Primary adrenal lymphomas are a group of diseases that have not been extensively study because of their low incidence. In nephrology practice, hyperkalemia is a finding that can be seen in CKD. However, patients should also be assessed for other causes of hyperkalemia, such as adrenal insufficiency.

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