HORMONES 2012, 11(4):505-506

Letter to the Editor

Primary aldosteronism associated with severe hypokalemic rhabdomyolysis

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Dear Sir,

Reports associating hypokalemic rhabdomyolysis with primary aldosteronism are rare.[1,2] Hypokalemia does not develop in every patient with primary aldosteronism, and hypokalemic rhabdomyolysis is even rarer in patients with primary aldosteronism.[3] We present here a patient with primary aldosteronism, who developed hypokalemia and rhabdomyolysis. This cases furnishes an instructive example of the potential for rhabdomyolysis to develop in patients with primary aldosteronism.

A 49-year-old hypertensive woman was sent to our emergency room for general weakness mainly involving her two legs. Her serum potassium was extremely low (1.8mEq/L) and her creatine phosphokinase 1,753 U/L (normal levels 90-140). Base on these data and the clinical picture hypokalemic rhabdomyolysis was diagnosed. She had a previous history of intracranial hemorrhage, primary aldosteronism, and hypertension, all diagnosed two years previously. At that time, low renin (0.35 pg/ml), high aldosterone (336.73pg/ml), and high aldosterone-renin ratio (ARR, 962) had been noted. Abdominal CT showed bilateral adrenal tumors, both homogenous, hypodense, right 2.29 cm and left 0.92 cm in diameter (Figure 1). She received right laparoscopic adrenalectomy and a 2x2 cm tumor was extirpated. Hypokalemia resolved after the operation but hypertension persisted, which was controlled by two anti-hypertensive agents, amlodipine and valsartan. However, hypokalemia (1.8mEq/L, with CPK 1,753U/L), low renin (1.06 pg/ml), high aldosterone (648.9 pg/ml), and high ARR (677) were determined at this admission. The patient also had metabolic alkalosis, with positve electrocardiogram change (U wave and inverted T wave). Abdominal CT showed a left adrenal tumor measuring 1.5cm in diameter. After treatment with hydration, potassium replacement, and spironolactone, her rhabdomyolysis resolved in 10 days (CPK from 1,753 to 72U/L, Figure 2). Since the patient refused surgery for left side adrenal tumor, she continued receiving medical therapy: her blood pressure was around 130/85mmHg

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Received 03-05-12, Revised 16-06-12, Accepted 01-07-12

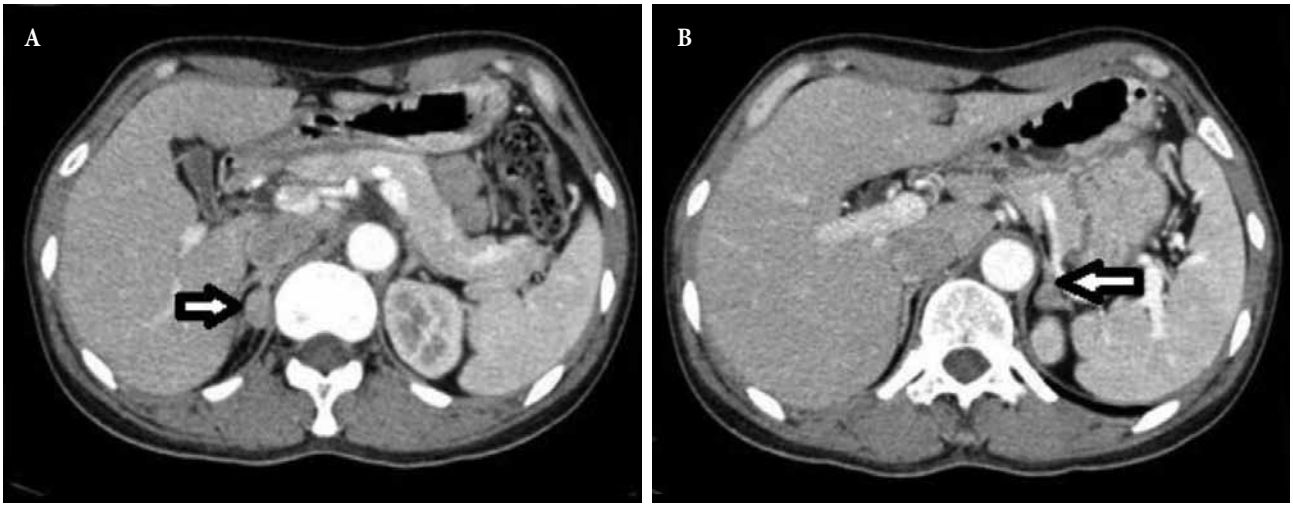

Figure 1. Adrenal CT with contrast medium showing bilateral adrenal tumors. (A) Right adrenal tumor measuring 2.29cm in diameter (arrow). (B) Left adrenal tumor measuring 0.92cm in diameter (arrow).

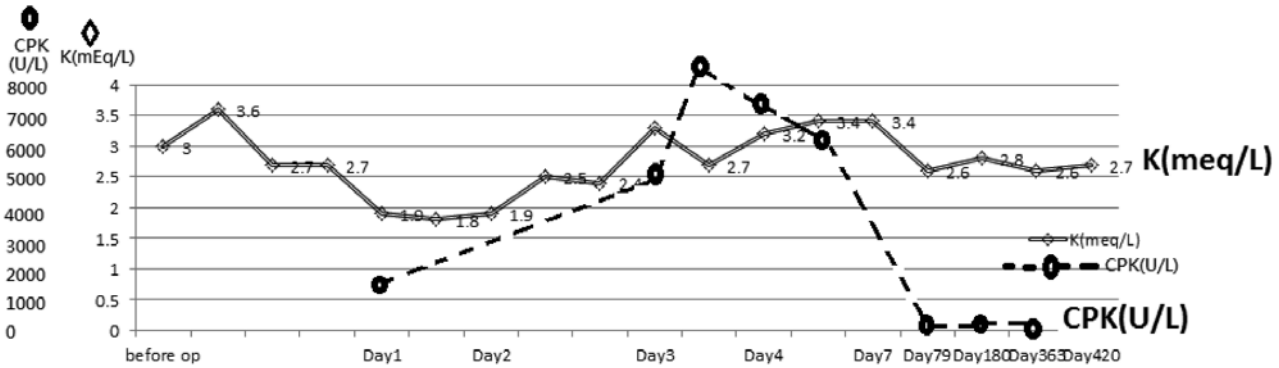

Figure 2. Serum CPK and potassium level two years after laparoscopic right adrenalectomy. (O: CPK level (U/L); ◊: potassium level (mEq/L).

and her potassium was normal.

Few cases have been reported of primary aldosteronism being related to hypokalemic rhabdomyolysis, and in these cases the potassium levels were all under 2.0mEq/L, except one (2.1mEq/L) in Goto's report.[3-5] We concluded that patients with severe hypokalemia (potassium level below 2mEq/L) are at high risk for hypokalemic rhabdomyolysis. Mineralocorticoid antagonist is the standard medical treatment for patients with primary aldosteronism. Anti-hypertensive agents therapy such as aldosterone receptor blocker, angiotensin-converting enzyme inhibitors, and calcium channel blockers are the alternative mode of surgical treatment of an aldosterone-producing adrenal tumor.

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