Recurrent hypokalemia in the setting of chronic hypertension – more than meets the eye

Ashley Chapman, DO; Eddie Needham, MD
Allopathic Family Medicine Residency, Winter Park

Introduction

Hypertension is a common presentation in the primary care setting. Uniquely the term hypertension describes both the finding (high blood pressure) and the diagnosis (Primary Hypertension, Secondary Hypertension, etc). The most common cause of high blood pressure is Primary Hypertension, also called benign hypertension. Generally, the diagnosis does not require further investigation, beyond evaluation for end-organ harms and determining goals of care.

Despite the ubiquitous occurrence of primary hypertension, about 10% of high blood pressure is due to secondary hypertension. Epidemiologically, this is a classification of a group of disparate diagnosis that result in high blood pressure as a secondary phenomenon. As the etiology of secondary hypertension often carry harmful sequalae, it is important to recognize and investigate sources when they occur. Persistent hypokalemia is one such red flag that should trigger further inquiry.

Discussion - Treatment

-**Medical therapy**: Mineralocorticoid receptor blockade with spironolactone or eplerenone, dietary sodium restriction <100 mEq/day, ideal BMI, avoid alcohol

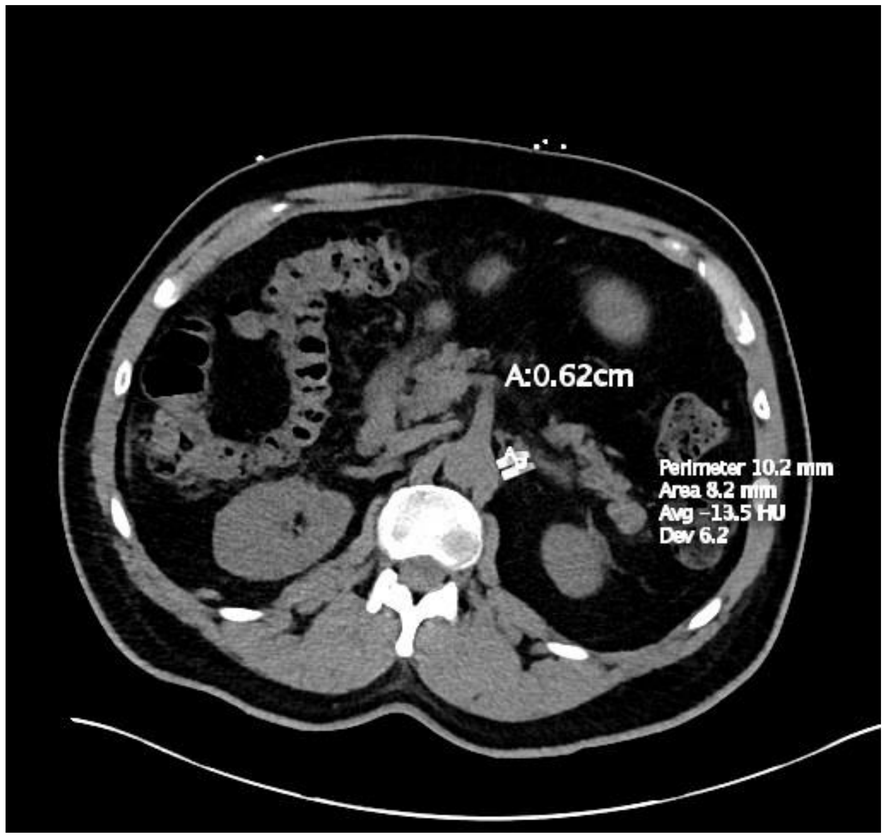
-**Surgical therapy**: for unilateral adenoma only: laparoscopic adrenalectomy

Case Report

The patient is a 58 year old male with a past medical history of difficult to control hypertension despite treatment with three or four agents, who presented to the hospital with chest tightness, weakness, and dizziness. The patient was found to have severe hypokalemia with a value of 2.4 mmol/L.

Chart review revealed patient had a history of prior admissions for similar symptoms and hypokalemic episodes in the past. Prior workup was started which revealed plasma aldosterone concentration (PAC) of 12.7 ng/dL, and plasma renin activity (PRA) of 0.3 ng/mL, giving a PAC/PRA ratio of 42.33. As levels >20 are suspicious for primary aldosteronism, we decided to perform a CT abdomen with and without contrast, which revealed a 6mm fat-containing low-density lesion in the left adrenal gland, consistent with an adrenal adenoma. CT image of adenoma is shown below.

The patient was diagnosed with primary aldosteronism secondary to adrenal adenoma, and general surgery was consulted for assessment of adrenalectomy. At the time of writing patient has been lost to follow-up during the COVID19 pandemic, despite many attempts at communication.

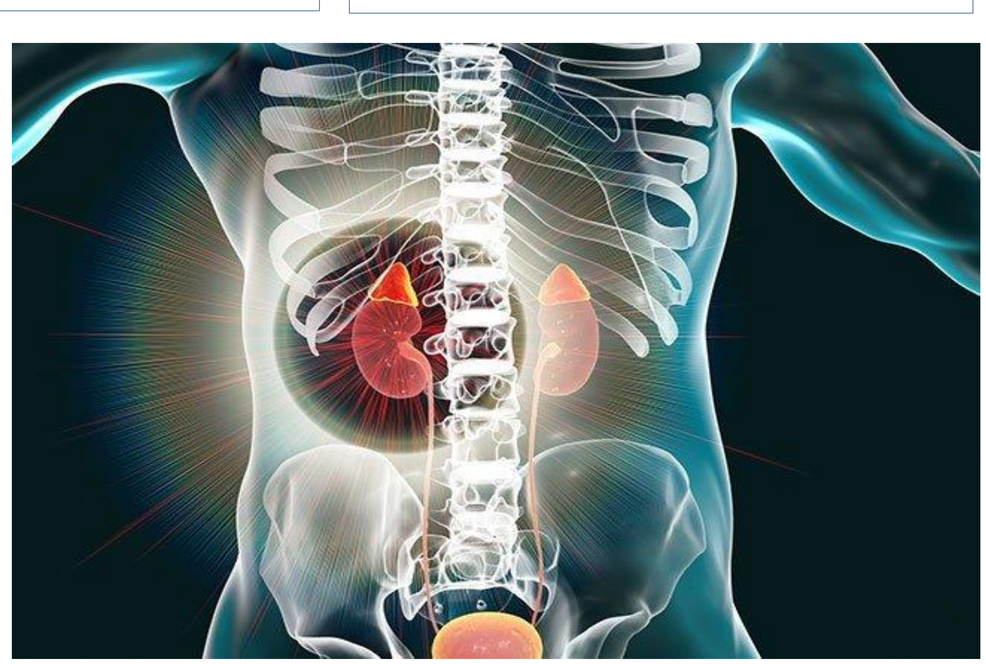


Discussion – Workup and diagnosis

-**Initial**: Rule out interfering drugs, esp. mineralocorticoid receptor antagonists (spironolactone, etc), but also ACE inhibitors, ARBs, and direct renin inhibitors

-**Lab testing**: Morning (8am) paired random PAC (aldosterone) and PRA (renin). PAC/PRA ratio >20 is considered suspicious for primary aldosteronism. Rule out other causes of HTN/hypoK combination with: ACTH, cortisol, plasma metanephrines

-**Imaging**: Once primary aldosteronism confirmed, distinguish unilateral adenoma from bilateral adrenal hyperplasia with adrenal CT and/or adrenal vein sampling



References

William F Young, Jr, MD; Lynette K Nieman, MD; George L Bakris, MD; Kathryn A Martin, MD. Diagnosis of primary aldosterosim. In: UpToDate, Aug 31, 2020.
William F. Young, Jr, MD; Lynette K. Nieman, MD; Kathryn A Martin, MD. Treatment of primary aldosteronism. In: UpToDate, Aug 25, 2020.