Authors: Tijani AM, Kolli H, Johal S, Najam M, Bello FO, Paredes JM

Title: Severe Hypokalemia Secondary to Distal Renal Tubular Acidosis in a Hispanic Man

Abstract

Introduction

Renal tubular acidosis is a rare renal disorder that can cause severe electrolyte imbalances which can be life threatening.

Case

A 21-year-old man presented to the ED on account of generalized weakness and body aches of one day duration. He reported no past medical history other than a previous episode of similar symptoms with improvement after IV hydration and electrolytes replacements about 2 months prior. He was not taking any medications and denied vomiting, diarrhea nor any significant family history. He admitted to alcohol and marijuana use.

Physical examination was significant for reduced muscle power, tone, and reflexes in all extremities. He was unable to move his limbs against gravity. Admission laboratory findings revealed severe hypokalemia 1.1 mEq/L, metabolic acidosis with bicarbonate of 10.1 and EKG showed QT prolongation.

Patient received a total of about 200 mEq of potassium through a central line in 24 hours with serum level of 3.7mmol/l in addition to intravenous bicarbonates with a resolution of the presenting symptoms.

Discussion

The causes of hypokalemia are broad however a methodical approach can be helpful to rule out the many causes and narrow down the differential diagnosis. Distal RTA is caused by the inability of the distal renal tubule to secrete hydrogen ions due to the selective failure of activity or expression of the H+-ATPase.

Conclusion

This case underscores the importance of systematic approach to the evaluation of patients with hypokalemia to uncover the cause of the underlying disease before life threatening complications occur. Our patient remains under close follow up.

References:

Batlle D, Haque SK. Genetic causes and mechanisms of distal renal tubular acidosis. Nephrol Dial Transplant 2012; 27:3691.

Batlle DC, Hizon M, Cohen E, et al. The use of the urinary anion gap in the diagnosis of hyperchloremic metabolic acidosis. N Engl J Med 1988; 318:594.

Caruana RJ, Buckalew VM Jr. The syndrome of distal (type 1) renal tubular acidosis. Clinical and laboratory findings in 58 cases. Medicine (Baltimore) 1988; 67:84.

Rose BD, Post TW. Clinical Physiology of Acid-Base and Electrolyte Disorders, 5th ed, McGraw-Hill, New York 2001. p.612.

Rodríguez Soriano J. Renal tubular acidosis: the clinical entity. J Am Soc Nephrol 2002; 13:2160.

Sly WS, Whyte MP, Sundaram V, et al. Carbonic anhydrase II deficiency in 12 families with the autosomal recessive syndrome of osteopetrosis with renal tubular acidosis and cerebral calcification. N Engl J Med 1985; 313:139.