Easy to treat, Easy to miss: A case of periodic paralysis in the emergency department

First Author: Akash Patel

Classification: EM resident

Additional Authors: Dr. Laurence Dubensky

Affiliations: Aventura Hospital & Medical Center

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Mailing Address of First Author: 19501 W. Country Club Dr, #2606
Aventura, FL, 33180

Email Address of First Author: akashrajupatel@gmail.com

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By Dr. Akash Patel D.O., Dr. Laurence Dubensky M.D.

Introduction: Hypokalemic periodic paralysis (PP) is a relatively rare diagnosis that can be made and treated with a simple work-up in an emergency department. The pathogenesis is predominantly associated with calcium or sodium channel disorders[1]. However, there are cases linked to other genetic mutations and confounding factors such as hypothyroidism and renal tubular acidosis[2]. With an estimated prevalence of 1 in 100,000[3], hypokalemic PP presentations and symptoms can range in severity. An attack generally consists of sudden motor weakness and areflexia of extremities with preserved consciousness and bulbar functionality[4]. An attack is commonly, but not limited to, triggering events of vigorous exercise, stress, or high-carbohydrate meals[5]. Ultimately, the diagnosis can be simplified to the clinical presentation of weakness with findings of low potassium on lab work. The treatment involves potassium repletion and close follow-up to investigate triggering events[6].

Case: We have a 27-year-old male presenting to the department via ambulance at 3 AM for complaints of weakness and soreness to lower extremity. Patient reports he was out with his friends and developed a rapidly progressing soreness/weakness of the lower extremities. He had no other complaints at that time such as changes in vision, shortness of breath, chest pain, syncope, numbness, or tingling. He denies any recent trauma or injury. On the exam, he was unable to raise bilateral lower extremities against gravity, 2/5 strength in pedal dorisflexion and plantarflexion, areflexia of ankle and patella bilaterally, and minimal movement of toes with effort. Sharp and dull sensation were intact in the lower extremities. EKG showed sinus tachycardia with no acute T wave changes. He was found to have a potassium of 2.2, creatine kinase of 500, with all other values of the metabolic panel and blood counts within normal limits. No other imaging was obtained for evaluation.

Discussion: A young male presenting to the department at 3am with these symptoms can often be overlooked or subjected to excessive testing. A typical chief complaint of similar nature could warrant CT scans and a wider range of blood and drug studies. However, with a high index of suspicion, this unique medical phenomenon can easily be discovered while also reducing cost and radiation to young individuals in our community. Additionally, the timely diagnosis can prevent further complications that may arise from hypokalemia such as various myopathies. All in all, armed with this knowledge, a clinician can correctly identify and treat hypokalemic PP in any emergency room setting with access to basic laboratory capabilities. Fortunately, our patient above was admitted for further potassium replacement, discharged the same day with complete resolution of hypokalemia. He later walked out of the hospital with full functionality of all his extremities.

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