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Case Report

Hypokalemic periodic paralysis: an unusual presentation

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ABSTRACT

Hypokalaemia Periodic paralysis is a heterogeneous group of muscle disorder with episodic, short-lived, and hypo-reflexic skeletal muscle weakness, without loss of consciousness and with or without myotonia but without sensory deficit. We report a rare autoimmune disorder in a 23year male patient who had presented with complaints of weakness of both lower limbs since 1 day which is of sudden onset. He was unable to move limbs or walk or climb up stairs. Based on symptoms and laboratory investigations he was diagnosed with Hypokalaemia Periodic Paralysis. Therapy was primarily started with potassium supplements.

Keywords: Hypokalaemia Periodic Paralysis, Potassium Chloride, Hypotonic

INTRODUCTION

Hypokalemic periodic paralysis is a heterogeneous group of muscle disorders with episodic, short-lived, and hypo-reflexic skeletal muscle weakness, without loss of consciousness and with or without myotonia but without sensory deficit. Muscle strength is normal in between the attacks of primary or familial periodic paralysis.[1] Hypokalemic periodic paralysis incidence is[1] case per 100,000 populations being congenital disorder which occurs at birth and also passes down through families as an autosomal dominant form.[2] Early in the course of disease, in primary or familial periodic paralysis, muscle strength is normal in between the attacks. After many years of these attacks, weakness develops and may be progressive. These disorders are amenable to treatment and progressive weakness can be prevented or even reversed.[3] Weakness ranges from slight weakness of an isolated muscle group to severe weakness. Frequently attacks begin in the early morning, followed with strenuous exercise or a high carbohydrate meal. Serum potassium level decrease transiently below normal. A random urine potassium-creatinine ratio (K/C) less than 1.5 which is indicative of poor intake, potassium shift and gastrointestinal loss into the cells. Treatment is often necessary for sudden attacks of hypokalemic periodic paralysis. Prophylactic treatment is necessary when attacks are frequent.[4]

CASE REPORT

A 23 year old male patient presented with weakness of both lower limbs since one day which is of sudden onset without any history of loose stools, diarrhea, breathlessness, trauma, diplopia, paresthesia or deviation of angle of mouth. On examination limbs are hypotonic and he is unable to walk or climb up stairs. He was afebrile, blood pressure 100/60mmHg, respiratory rate 18 cpm, and pulse was 100 bpm. Examination of the lungs and abdomen found to be unremarkable. Neurological examination revealed symmetrical flaccid muscle weakness of all extremities which involved the proximal and distal muscles and included the hips and shoulders without sensory. Laboratory investigations showed Hemoglobin – 13.7gm%, PCV – 38%, WBC – 14,800 cells/cumm, RBC – 5.6 millions/cumm, Platelets – 2.5

lakhs/cumm, MCV – 78fl, MCH – 28pg, MCHC – 35%, Differential count – Neutrophils: 86%, Lymphocytes: 10%, Eosinophils: 1%, Monocytes: 3%, ESR – 5mm/1st hr, Sodium – 136mmol/lit, Potassium – 2.7mmol/lit, Total bilirubin – 0.7mg/dl, Direct bilirubin – 0.1mg/dl, Indirect bilirubin – 0.6mg/dl, AST – 28 IU/L, ALT – 53 IU/L, ALP – 89U/L, Serum proteins – 5.9g/dl, Albumin – 3.5g/dl, Globulin – 2.4g/dl, Albumin: Globulin ratio – 1.5, Serum urea – 30mg/dl, Serum creatinine – 0.9mg/dl, ECG had shown inversion of V1 and V2. Based on these investigations he was diagnosed with Hypokalemic periodic paralysis. He was prescribed with Inj. Potassium chloride, Syp. Potklor 5ml, Tab. Pantop 40mg, Inj. Optineuron one amp in 100ml NS, Cap. Becosules, and Tab. Ultracet BD. Later on his potassium level was increased to 4.2 mmol/lit.

DISCUSSION

Hypokalemic periodic paralysis is an inherited disorder which causes occasional episodes of muscle weakness. It is characterized by flaccid muscle weakness occurring at irregular intervals.[1] Periodic paralysis can be divided into primary and secondary disorders. Primary periodic paralysis is a hereditary disorder associated with decreased potassium levels during attacks and sometimes presents with myotonia whereas secondary paralysis is less common that occurs due to mutations in CACNA1S and SCNA4 as it is a rare, autosomal dominant channelopathy.[5] Weakness ranges from slight weakness of an isolated muscle group to severe weakness. Frequently attacks begin in the early morning, followed with strenuous exercise or a high carbohydrate meal. Mild attacks occur frequently and involve a particular group of muscles, and partial, unilateral, or monomelic.[2] These attacks are infrequent and intermittent initially but may increase in frequency until attacks occur almost daily which progresses to permanent muscle weakness. Serum potassium level decreases transiently below normal. ECG may show abnormalities like sinus bradycardia and sometimes evidence of hypokalemia such as flattening of T waves, U waves in leads II, V 2, V 3, and V 4, and ST-segment depression.[3] Clinical presentations of this patient was weakness of both lower limbs since one day which is of sudden onset and was either unable to move limbs or walk or climb up stairs. Treatment primarily focuses on preventing further attacks and relieving acute symptoms. Potassium supplements should be given as primary therapy. As prophylaxis acetazolamide or dichlorphenamide can be given as a first line therapy. Potassium-sparing diuretics like triamterene and spironolactone are given as second-line drugs for those who do not respond to carbonic anhydrase inhibitors.[6]

CONCLUSIONS

Hypokalemic periodic paralysis is an autosomal dominant disorder which runs through families with occasional episodes of muscle weakness. Oral and intravenous potassium supplementation can be given and progressive improvement in weakness can be seen. If hypokalemic periodic paralysis was failed to diagnose it results in fatal outcomes like respiratory failure and cardiac arrhythmias.

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