Case Report

Hypokalemic Periodic Paralysis a rare presentation: Case Report

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Abstract:
Hypokalemic periodic paralysis is one form of periodic paralysis, a rare group of disorders that can cause sudden onset of generalized weakness which is short lived without loss of consciousness & sensory function. Here we reported, A 20 year's male patient who had presented with the complaints of weakness of both lower limbs for one day which is on sudden onset. He was unable to move his limbs or walk or climbs upstairs & gradually he could not move his upper limbs also. Based on clinical symptoms, signs & laboratory investigations he was diagnosed as a case of Hypokalemic Periodic Paralysis. Therapy was started & he recovered soon.

Keywords: Hypokalemia, Periodic Paralysis, Sudden Limb Weakness

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Introduction:
Hypokalemia is defined as a deficiency of plasma potassium below 3.5 mEq/L. Bodies haemostatic mechanism try to keep potassium at 3.5-5 mEq/L by multiple mechanisms. Increased gastrointestinal & renal losses are the important causes[1]. Haemostatics of this cation is tightly regulated & achieved mainly via alteration in renal excretion [2,3,4].

Hypokalemic periodic paralysis is heterogenous group of muscle disorder with episodic, short lived & hypo reflexic skeletal muscle weakness without loss of consciousness & sensory deficit with or without myotonia, muscle power is normal in between the attack. The incidence is rare, 1 case per 1,00,000 population being congenital disorder which occurs at birth & also passes down through family as an autosomal dominant form [5].

Hypokalemic familial periodic paralysis is believed to be due to an increase in muscle membrane sodium permeability [3,6,7]. There are multiple factors that can trigger weakness or paralysis including acute stress, pain, anaesthesia, surgery, sterneous exercise, steroids, prolong rest, carbohydrate intake [8,9].

Although it is relatively uncommon yet potentially life threatening condition because of development of cardiac arrhythmia & arrest [2]. If correctly diagnosed & treated, it can be completely reversed. In an acute setting, it presents as muscular weakness & low serum potassium. Here we reported, a case of Hypokalemic Paralysis in a young male predominantly presents as acute quadriparesis without impairing brain function & sensory loss.

Case report:
A 20 years young boy came to the emergency department with the complaints of bilateral lower limb weakness for 1 day. According to his statement he was relatively well 2 days back. Initially he developed cramping pain involving both lower limbs after a heavy carbohydrate meal. When he woke up from sleep in next morning he developed difficulty in moving lower limbs.

After primary management in emergency department, he was sent to medicine ward where he was evaluated further. He had no history of trauma, drugs, vomiting, diarrhoea, fever preceding this event. He experienced such weakness 2 years back. Within next couple of hours he developed quadriparesis. After doing neurological examination it was found that he is alert, oriented & all cranial nerves are intact.

There was quadriparesis & muscle power in all four limbs were 2/5 without affecting sensory function & bowel, bladder involvement. Pulse & Blood Pressure & other vital signs were normal. All routine investigations including serum electrolytes & ECG were sent immediately. His serum potassium was 2.3 mEq/L (Hypokalemia) & there was U wave & flatten T wave in chest leads of ECG. He was given intravenous potassium as well as oral potassium supplement.

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Within next couple of hours his condition improved dramatically & his motor power of all four limbs regained & he could walk without any assistance. After the management of the case he was diagnosed as a case of Hypokalemic Periodic Paralysis.

Discussion:

Hypokalemic periodic paralysis is an inherited disorder that causes recurrent attack of muscle weakness leading to flaccid paralysis occurring at irregular intervals [1]. Periodic paralysis can be divided into primary & secondary disorders. Primary periodic paralysis is a hereditary disorder associated with decreased potassium level during attack. Sometimes presents with myotonia whereas secondary paralysis is less common that occurs due to mutation in CACNA1S & SCN4 as it is rare, autosomal dominant channelopathy [5].

Any weakness is a common, yet non-specific presentations of various neurological & non-neurological conditions while hypokalemic paralysis is an important cause of acute flaccid paralysis. There may be clinical difficulties like Guillain-Barre' Syndrome, Acute Transverse Myelitis, Polymyositis, Poliomyelitis that should be considered during diagnosis. This neurological diseases should be ruled out first by doing extensive neurological examination.

Sporadic cases are associated with numerous other condition including barium poisoning, hyperthyroidism, certain endocrinopathies & gastrointestinal potassium loss, excess carbohydrate intake, stress, exercise. Hypokalemic paralysis present as acute flaccid weakness with hypokalemia (Serum Potassium <3.5 mmol/l) without sensory signs facial, bulbar, autonomic, bladder & bowel involvement.

This condition is believed to be due to an increase in muscle membrane sodium permeability [6,7]. Although other channelopathies are also responsible for this disorder [8,9].

There are some precipitating factor that can trigger weakness or paralysis including acute stress, pain, anaesthesia, surgery, alcohol, sterneous exercise, steroid [10,11]. Attacks are typically precipitates by rest or sleep that occurred in our patient. We ruled out all neurological causes in our case by doing examination. Hyperthyroidism was also excluded by doing biochemical or thyroid function test. History, examination, some investigations including Serum Potassium and ECG could help us to reach the diagnosis of this case [10,12].

In one study among the Asian people Mohapatra et al found hypokalemic periodic paralysis is more prevalent in young Asian male patient where 24 hours urinary potassium was <20 mmol/L without any family history [10]. Most cases occur in summer & after waking up from sleep [13].

Juma MA et al. also found in their case series, the hypokalemic periodic paralysis is more common in young Asian patients mostly in summer season which is always associated with low serum potassium level [11]. They also found thyrotoxic periodic paralysis was the common cause [14,15].

Our case report is also co-related with this findings but for genetic confirmation we could not identify which channelopathies are responsible in our hospital settings.

Conclusion:

Clinicians should have higher degree of suspicion specially young adult presenting with flaccid paralysis. Immediate diagnosis & treatment will bring good prognosis. Patient need to be educated with regard to possibilities of recurrence & should be prescribed potassium supplements on discharge.

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