

## Case Report

# Hypokalemic Paralysis during Pregnancy with Rhabdomyolysis — A Case Report

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Hypokalemic Paralysis in pregnancy is very rare and its aetiology may be congenital or acquired. Manifestations may range from numbness, weakness to complete Paralysis. We present a case of a 38-year-old Primigravida at 24 weeks of gestation presenting with acute pain in both lower limbs and progressive difficulty in walking. She had no other co-morbidities. On evaluation her lower limb doppler study was normal and serum potassium was low (2.1meq/l). Her total CK was elevated. So, a diagnosis of Hypokalemia in pregnancy with rhabdomyolysis subsequent to Hypokalemia was made. She was started on intravenous potassium replacement followed by oral supplements. She improved dramatically and discharged after 3 days. Hypokalemia should be suspected in any patient with muscular weakness and early recognition can prevent more serious complications like respiratory paralysis or fatal arrhythmias.

[J Indian Med Assoc 2025; 123(1): 68-9]

**Key words :** Hypokalemic Periodic Paralysis, Pregnancy, Familial, Paralysis, Rhabdomyolysis.

**H**ypokalemic Periodic Paralysis is a disorder of muscle in which voltage-gated ion channels (typically calcium or sodium and less frequently potassium) are mutated, resulting in abnormalities of sarcolemmal excitation. It typically first manifests in adolescence as bouts of mild to severe muscle weakness lasting for hours and sometimes days, triggered most commonly by exercise or high carbohydrate meals<sup>1</sup>. Hypokalemic paralysis during pregnancy is a rare manifestation. Here, we report a rare case of Hypokalemic Paralysis during pregnancy who presented with acute onset of lower limb pain with progressive difficulty in walking.

### CASE REPORT

A 38 years old elderly Primigravida at 24weeks of gestation attended our emergency obstetric unit with complaints of acute pain in both lower limbs and progressive difficulty in walking for 1 day. Pregnancy was spontaneous conception. She gave history of flight travel for 6 hours the previous day. She had history of high carbohydrate intake.

She did not give history of Vomiting or Diarrhea. There was no history of any drug intake for other ailments. She had no significant medical or surgical history.

**Examination** — On examination she was conscious and well oriented for time, place and person. She was

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**Received on :** 18/07/2022

**Accepted on :** 07/08/2023

#### Editor's Comment :

- Hypokalemic periodic paralysis has heterogeneous causes- both acquired and genetic.
- Early recognition of hypokalemic periodic paralysis in pregnancy is crucial to prevent serious complications.

haemodynamically stable. Her blood pressure was 120/70 mmHg. Her fetal growth was corresponding to 24 weeks. On CNS examination sensory system was intact and power of both lower limbs was 3/5 and upper limbs were normal. All reflexes were present. No calf muscle tenderness was present.

**Investigations** — With a suspicion of Deep Vein Thrombosis, lower limb doppler study was done and found to be normal. Neurologist opined to do serum electrolytes and MRI spine. Thyroid function test, serum magnesium and serum calcium were normal but serum potassium was low(2.1 meq/L), ECG showed U wave characteristic of hypokalemia. Her total Creatinine Kinase (CK) was very much elevated (3999 U/L) and CK-MB was marginally increased (69 IU/L), urine spot potassium was 11mmol/L and there was no metabolic acidosis or alkalosis. Patient was diagnosed with Hypokalemic paralysis in pregnancy with hypokalemic induced rhabdomyolysis as CK levels were elevated.

**Treatment** — With physician consultation she was started on intravenous potassium infusion (30meq in 500ml ringer lactate over 12 hours) for 2 days and was also started on oral supplementation. Patient responded well and was able to walk by 3<sup>rd</sup> day of starting treatment. Patient's serum potassium levels came back to normal (3.5meq/L) and was discharged . Her rest of the antepartum period was uneventful.

### DISCUSSION

The aetiology of Hypokalemic Paralysis may be varied, ranging from congenital to acquired causes<sup>1</sup>. A careful past

history elicitation regarding the age of onset, repeated episodes of weakness, precipitating factors like exercise, carbohydrate load, increased salt intake etc, may be helpful to make a diagnosis of congenital cause<sup>2,3</sup>. History of any other members in the family suffering from similar condition will help us to diagnose familial conditions like Familial Hypokalemic Periodic Paralysis (FHPP), Thyrotoxic Periodic Paralysis and Anderson Tawill Syndrome<sup>4,5</sup>. There are two distinct forms of muscle involvement observed in Hypokalemic Paralysis - Paralytic episodes and Myopathy. Paralytic is more common compared to myopathy and both together are very rare. Hypokalemia can occur in pregnancy due to excessive vomiting causing imbalance of fluids and electrolytes, resulting in potassium loss<sup>6</sup>. Symptoms of Hypokalemia can be fatigue, muscle pain, muscle weakness, abnormal heart rhythms, abdominal cramps. Extremely low levels of potassium can cause temporary paralysis. The index case had history of high carbohydrate intake.

The probable mechanism by which hypokalemia causes rhabdomyolysis is that it causes vasoconstriction, ischemia, necrosis and rhabdomyolysis.<sup>7</sup> Rhabdomyolysis is a potentially life-threatening syndrome resulting from the breakdown of skeletal muscle fibers. An increased predilection for hypokalemia-induced rhabdomyolysis has been reported in pregnancy with unknown pathophysiology<sup>8</sup>. In our present case as CK total was very high, she was diagnosed to have Hypokalemic Paralysis in pregnancy with hypokalemia induced rhabdomyolysis. Rhabdomyolysis was the cause for her acute onset of pain. Probable trigger might be her high carbohydrate intake.

Maitri Kulkarni has reported a case where use of steroids in a pre-eclamptic women induced Hypokalemic Paralysis.<sup>9</sup> Ukaonu reported hypokalemic myopathy in pregnancy caused by clay ingestion<sup>10</sup>. Hypokalemia-induced rhabdomyolysis as a result of distal renal tubular acidosis in a pregnant woman has been reported by Srisuttayasathien<sup>11</sup>. Frappaola reported familial Hypokalemic Periodic Paralysis in pregnancy<sup>12</sup>. Hernandez, *et al* (2009) reported 2 cases - a case of quadriplegia and another case requiring ventilatory support, later diagnosed as Bartter Syndrome<sup>13</sup>. Hence, any case with Hypokalemic Paralysis should be considered as high risk pregnancy and should be monitored.

Treatment includes correction of Hypokalemia and treating the precipitating cause like hydration, correction of the metabolic acidosis with alkali therapy in patients with renal tubular acidosis and potassium supplementation<sup>11</sup>. In our patient she was advised low carbohydrate diet with potassium supplementation.

### CONCLUSIONS

The heterogeneity of the causes for Hypokalemia makes it more difficult to diagnose. Whatever may be the cause of Hypokalemic Paralysis, the condition is easily reversible with potassium administration. Hypokalemia

should be suspected in any patient with muscular weakness and early recognition of this condition can prevent more serious complications like respiratory Paralysis or fatal Arrhythmias.

### ACKNOWLEDEMENT

We thank the faculties of Department of Neurology, SRM Medical College Hospital and Research Centre, for helping us to manage this patient.

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