

An Outpatient Anesthetic Approach to Hypokalemic Periodic Paralysis

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Introduction

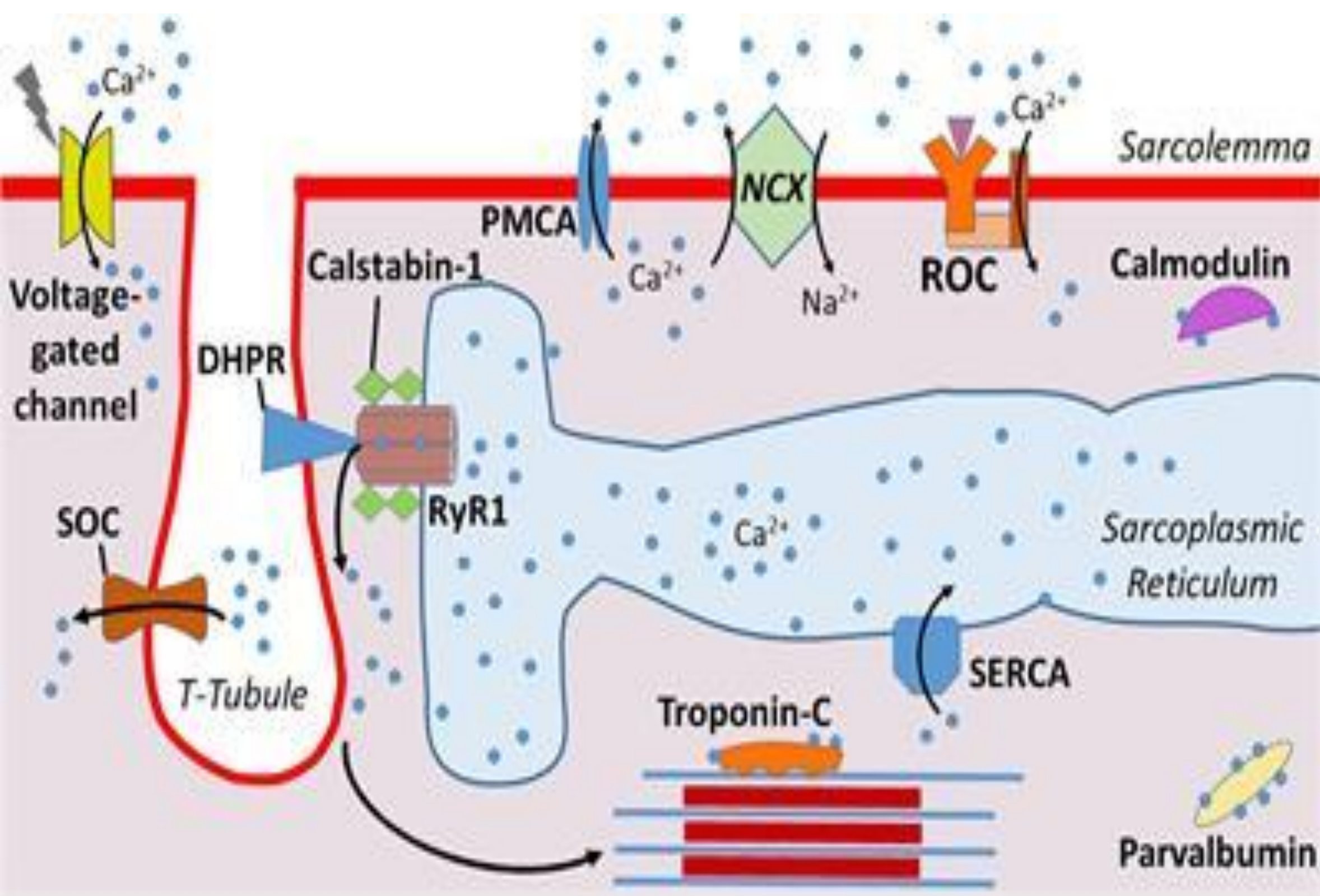
Hypokalemic periodic paralysis (HKPP) is a rare autosomal dominant disorder characterized by episodes of varying muscle weakness in the setting of low potassium. Mutations to ion channels, specifically the dihydropyridine-sensitive calcium channel ^(2,3) are the main cause. This mutation allows anomalous current leakage with influx of potassium into muscle cells rendering them unexcitable ^(1,2). The resultant hypokalemia is not a result of total body depletion but rather a large intracellular sequestration of potassium that can manifest as muscle flaccidity and weakness to seizure activity. Given its low prevalence, HKPP can present as a diagnostic challenge as it is not well known. We present this case to highlight the management of a patient with known HKPP and the use of neuraxial anesthesia as an effective and safe treatment option in the outpatient setting.

Case

A 44-year-old female with hypokalemic periodic paralysis (HKPP), presented for right knee arthroscopy and chondroplasty. Her HKPP was managed with eplerenone and KCl daily. She described episodic history of seizure-like activity with postictal recorded potassium levels as low as 2.2 mEq/L. Medical history included 30 pack-year tobacco use, hypertension, and gastroesophageal reflux; these were managed with nebivolol and omeprazole. Her anesthetic history was notable for PONV. Exam was notable for class II obesity.

Spinal was placed in the preoperative area at L3-4 with 2.5 ml of 2% mepivacaine after anxiolysis with 2 mg midazolam. Surgical sensory and motor block were confirmed. Sedation was maintained with propofol infusion and ketamine. She had spontaneous ventilation throughout the case and remained hemodynamically stable. Before discharge she received fentanyl and ondansetron. In PACU, there were no signs of muscle weakness or seizure-like activity, with a postop potassium of 3.5 mEq/L.

Diagnosis and Treatment



Anesthetic Considerations For Patients with Hypokalemic Periodic Paralysis

Key Takeaways	Details
Pre-operative evaluation	For patients with known diagnosis, obtain information about baseline potassium and previous episodes
Personalized Anesthetic Approach	Avoidance of triggers including dextrose, hypothermia and depolarizing agents (ex. succinylcholine). Consider neuraxial intervention when possible.
Post-operative Evaluation	Obtain post-operative electrolytes, evaluate patients' seizure risk and for other hypokalemia sequela (muscle spasms, arrhythmias, excessive thirst, numbness and tingling)

Discussion

To safely manage our patient, a thorough pre-operative history and evaluation aided in our subsequent management. Anxiolysis followed by spinal and sedation resulted in a safe anesthetic. Depolarizing agents, hypothermia and dextrose containing fluids were avoided. Our management strategy ensured a stable perioperative course and same day discharge without hypokalemia or seizure. Postoperative assessment of potassium was reassuring to the patient and care team, and she was instructed to resume her oral medications upon discharge.

Conclusion

- The patient with hypokalemic periodic paralysis was managed successfully using a neuraxial anesthetic approach, allowing for a safe and smooth outpatient procedure.
- Anesthetic plan tailored to avoid hypokalemia triggers (like depolarizing agents, hypothermia, and dextrose fluids) maintained perioperative stability.
- The patient’s stable recovery highlights the effectiveness of this approach, ensuring prompt discharge without complications.
- This case underscores the importance of individualized anesthetic management for rare conditions, positioning neuraxial anesthesia as a viable, safe option for outpatient surgeries.
- This approach may serve as a model for similar cases, optimizing patient outcomes

References

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