

## **Title: An Ironic Electrolyte Imbalance: A Hyperkalemic Emergency in Primary Hyperaldosteronism**

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**Introduction:** Hyperkalemia is a common medical emergency that can lead to life-threatening complications, including muscle weakness, paralysis, and worst arrhythmias due to cardiac membrane instability. Primary hyperaldosteronism is a disorder where excess aldosteronism promote intravascular volume expansion and renal loss of serum potassium. When treated, however, patients' electrolyte imbalance overcompensates and can presents with hyperkalemia. We present case of a patient with primary hyperaldosteronism who presents with an atypical medication-induced hyperkalemic emergency.

**Case:** A 52-year-old female with a past medical history of primary hyperaldosteronism, hypertension, and PTSD presented with 3 days of emesis and diarrhea. With history of hypokalemia and her GI losses, she tripled her home doses of lisinopril 25 mg, spironolactone 25 mg, and potassium-chloride 20 mg the morning of her admission. Her main symptoms during admission day were generalized muscle weakness, fatigue, and anxiety. She denied chest pain or palpitations. Admission vitals included a BP 159/98, pulse 97 beats per minute, and a respiratory rate 16 breaths per minute. Physical exam was significant for bilateral lower extremity pain, abdominal pain, and back pain. Otherwise, no pertinent findings on cardiovascular physical exam. Admission labs confirmed a potassium of 9.5 mEq/L, a bicarbonate of 19 mEq/L, and a creatinine of 4.07 mg/dL (baseline 1.3 mg/dL). Patient was diagnosed with drug-induced hyperkalemic emergency complicated by a Type 4 renal tubular acidosis. Her electrocardiogram demonstrated new-onset peaked T waves, a prolonged PR interval, and a normal QTc interval. In the ED and ICU, she received multiple injections of calcium gluconate for cardiac stabilization, aggressive IV fluids, and sodium zirconium cyclosilicate. She was further shifted with IV insulin, IV sodium bicarbonate, and albuterol nebulizers. Her potassium levels and creatinine level had slowly down trended to baseline over the next 3 days without urgent hemodialysis. Home lisinopril, spironolactone, and potassium chloride were discontinued until nephrology follow up. Most importantly, patient was counseled on adherence to medication and was discharged in stable condition.

**Discussion:** Hyperkalemia is an important complication following medical treatment of primary hyperaldosteronism. Surgically and medically treated patients with primary hyperaldosteronism have been studied to develop hyperkalemia more likely when older and have a poorer renal function. Inpatient hospital mortality rates for hospitalized hyperkalemic patients are around 14%, 4.5 times higher than patients with normal potassium levels. In critically ill-patients, there is an estimated 3.0-fold higher mortality risk in patients with a potassium >6.5. Therefore, rapid recognition and action is indicated for hyperkalemic emergencies. More importantly, it is imperative to educate patients not only on adherence to medications prescribed but on the dangers of overdose.