Rhabdomyolysis Associated with Nephrogenic Diabetes Insipidus

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Objective
Diabetes insipidus (DI) presents with hypernatremia and hyperosmolality in individuals with an impaired thirst mechanism or no free access to water. Hyperosmolality¹ is associated with rhabdomyolysis which cause serum creatine kinase (CPK) elevation and myoglobinuria. Fluid resuscitation is the mainstay of the treatment to prevent life-threatening complications including acute hyperkalemia and acute kidney injury.

We present herein a first human case of nephrogenic DI who presented with rhabdomyolysis.

Case Presentation
A 74-year old man with multiple comorbidities along with an unknown type of DI was transferred to our hospital for fever and cough. Upon arrival, he was in a respiratory distress and lethargic. His vitals reported as a blood pressure of 127/49 mmHg and a heart rate of 101 beats per minute. Temperature was 104 F rectally. Respiratory rate was 29 per minute; oxygen (O2) saturation was 88% which improved to 92% with supplemental O2. Fluid resuscitation with normal saline and empiric antibiotics started for the treatment of severe sepsis. Serum CPK was 1927 U/L which trended up to 2240 U/L despite normal kidney function.

Despite switching to hypotonic maintenance fluid, serum sodium rose up to 170 mEq/L and persisted around the range of 160-170 mEq/L. Serum CPK was 1927 U/L which trended up to 2240 U/L despite normal kidney function. There was no history of trauma or fall or the use of statin or other drugs which induce rhabdomyolysis. He was diagnosed with nephrogenic DI, given sub-optimal response to desmopressin administration, started on thiazide. Later he was weaned from BiPAP and allowed to eat and drink. Serum osmolality was back to 291 uosm/kg and CPK to 90 U/L.

Discussion
Hypernatremia and hyperosmolality are significant predisposing factors for rhabdomyolysis. Nephrogenic DI should be considered in differentials of non-traumatic rhabdomyolysis along with other hyperosmolar states including severe dehydration, diabetic nonketotic hyperosmolar coma and central DI².

Conclusion
Serum CPK levels should be monitored closely to prevent complications.

References
1. Nontraumatic rhabdomyolysis: an unusual complication of diabetic hyperosmolar nonketotic (HONK) state. Gangopadhyay KK, Ryder RE.