Elevated potassium in hemolyzed sample in pediatric patients: repeat or don’t repeat?

BY GRETCHEN COLBENSON, MD; RYAN CULLEN; JEFF LOUIE, MD; AND RAHUL KAILA, MD

Background

Despite best efforts, hemolyzed samples causing hyperkalemia, termed “pseudohyperkalemia” occur in approximately 3% of blood draws. Redrawing samples increases length of stay, subjects the child to a secondary painful procedure, and is likely a cause for patients and families to become dissatisfied.

Objective

Determine if pseudohyperkalemia occurring among healthy children should be repeated.

Methods

We performed a five-year retrospective chart review of all patients with hyperkalemia secondary to hemolysis. Inclusion criteria included all pediatric patients birth to 18 years of age who were seen 2011-2016 and had a hemolyzed potassium level greater than 5.5 mEq/dl. We compared previously healthy patients to patients with known chronic medical conditions.

Results

A total of 236 children were captured with any degree of hemolysis. Age ranged from 3 days to 17.9 years. Median age was 1.3 years with an initial mean hemolyzed potassium level of 6.5 ranging from 5.4 to 12.6 mmol/L. Results are shown in Figure 1. Of the 236 children with hemolysis, 150 or 63.6% were healthy and 92 or 61.3% of these had a repeat potassium. Two children (2.1% percent of those with repeat potassium) had true hyperkalemia and both had abnormal BUN and creatinine.

Conclusion

In our small sample, it appeared that children without underlying conditions and the following diagnoses: focal segmental glomerulonephritis, chronic renal failure, DKA, and carnitine deficiency. With the exception of the child with carnitine deficiency, each patient with true hyperkalemia had an elevated BUN and creatinine.

Gretchen Colbenson, MD, is a first-year internal medicine resident at Mayo Clinic. Ryan Cullen is a third-year medical student at University of Minnesota. Jeff Louie, MD, is assistant professor in the Department of Pediatrics, Division of Pediatric Emergency Medicine, University of Minnesota Medical School. Rahul Kaila, MD, is assistant professor in the Department of Pediatrics, Division of Pediatric Emergency Medicine, University of Minnesota Medical School.