

ISOPROPYL ALCOHOL INGESTION PRESENTING AS PSEUDO-RENAL FAILURE DUE TO ACETONE INTERFERENCE

Mahathi Adla, Julio Gonzalez-Paoli, Stephen Rifkin; University of South Florida, Tampa, FL

A 29 year old Caucasian male was admitted with altered mental status and acute renal failure with a serum creatinine of 2.2 mg/dL (utilizing a colorimetric assay) and a BUN of 7 mg/dL. Urinalysis was only positive for ketones. Serum osmolality was 375mos/kg with a calculated osmolar gap of 85mos/kg. He denied any ingestions. Past medical history was significant for similar multiple admissions with altered mental status, acute renal insufficiency, both of which would spontaneously resolve. Previous evaluations had failed to delineate the etiology of his acute renal failure. A relatively simultaneous serum creatinine measurement done during the present admission using a blood gas analyzer, revealed a serum creatinine of 0.8mg/dl. An isopropyl alcohol level came back elevated at 100 mg/dL.

Acute renal failure due to isopropyl alcohol ingestion is rare. IPA ingestion can present as “pseudo” renal failure due to a spurious elevation of serum creatinine. This is attributed to acetone interference with the colorimetric assay for serum creatinine. Most auto analyzer systems use the Jaffe-alkaline-picric acid reaction. However, there are many substances which react with picric acid, thus leading to an apparent increase in the serum creatinine concentration. Most interfering substances cause only minor elevations in the serum creatinine level. However, acetoacetate causes substantial interference, with levels of about 500 mg/dL over-estimating the serum creatinine by 3.5 mg/dl. In addition, acetone levels greater than 40 mg/dL can also spuriously overestimate serum creatinine level. When an arterial sample from our patient was tested using a blood gas analyzer (Stat Profile Critical care Xpress), a normal serum creatinine concentration was found since it utilizes an enzymatic assay, thus avoiding the interferences affecting the colorimetric method. The results are obtained in 30 seconds to 2 minutes and offer the fastest method to confirm suspicions of a falsely elevated serum creatinine, thus preventing the patient being misdiagnosed as having acute renal failure.