

Abstract Type : Poster

Abstract Submission No. : PO-1448

Opioid Overdose: An Overlooked Cause of Rhabdomyolysis-Associated Acute Kidney Injury

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Case Study: Background: Rhabdomyolysis is one of the known cause of acute kidney injury (AKI) especially acute tubular necrosis (ATN). Several medications are associated with rhabdomyolysis. Given current opioid epidemic, many complications from opioid more frequently occurs. We report a case of young man presenting with oliguric AKI secondary to opioid-induced rhabdomyolysis.

Case description: A 21-year-old healthy man presented with fatigue and generalized muscle pain 3 days. He denied any injury or other constitutional symptoms. Further history revealed an overuse of tramadol for 2 weeks (10 capsules of tramadol 50 mg/capsule per day) and the last dose was 2 days prior to admission. He was afebrile. BP was 142/90 mmHg and HR of 60/min. He had oliguric AKI with an elevated serum creatinine (SCr) of 7.92 mg/dL from an unknown baseline SCr. Urinalysis showed 3+ blood, 20-30 RBC/hpf, 5-10 WBC/hpf, 1 – 2 granular cast/lpf. Urine toxicology revealed negative for opioid and other toxic substances. Serum creatine phosphokinase (CPK) was 232,550 U/L(Figure 1). He was supportively treated for acute rhabdomyolysis with IV fluid which was complicated by volume overload requiring hemodialysis initiation.

Discussion: AKI with elevated CPK in our patient is consist with rhabdomyolysis-induced AKI. Late urine toxicology test beyond detectable window may explain undetectable urine opioid. High dose tramadol, one of the opioid analgesics, likely precipitates rhabdomyolysis from neuromuscular excitability as a result of serotonin syndrome. Generalized muscle pain can lead to immobilization partly contributing to rhabdomyolysis in this patient.

Conclusions: Although uncommonly associated with rhabdomyolysis, opioid has been increasing used especially among young healthy individual. Opioid epidemic remains one of the most important public health problems and opioid-induced rhabdomyolysis leading to AKI may even be more common nowadays. With high index of suspicion, toxicology screening are warranted for an initial assessment in population with higher risk for opioid toxicity

CPK and Cr level during hospital admission

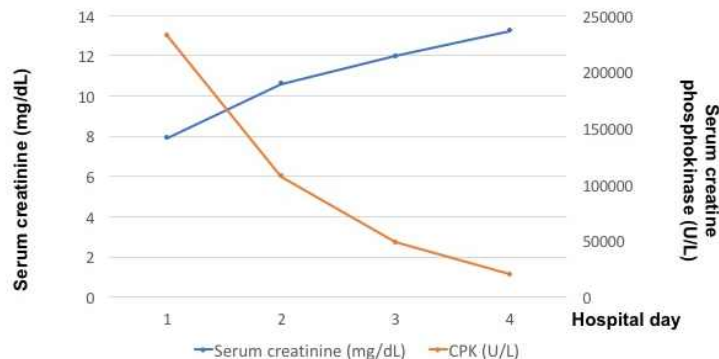


Figure 1: Clinical course during hospitalization