

# Unusual cause of Rhabdomyolysis secondary to physical Violence

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## Abstract:

Rhabdomyolysis as a complication of blunt force trauma may result in life-threatening acute kidney injury (AKI). We illustrate a case of middle aged male who sustained blunt force injury in a street brawl in his community presenting with decreased and high colored urine; further evaluation revealed acute renal failure two days after the said incident. He received three consecutive sessions of hemodialysis and was discharged 4 days after admission with increasing urine output and renal recovery. At follow-up ten days later, his renal functions had recovered with serum creatinine returning to normal levels.

**Key Words:** acute kidney injury; blunt injury; rhabdomyolysis

## Introduction:

Rhabdomyolysis is a syndrome that occurs from crush injuries to skeletal muscle. The disruption of skeletal muscle integrity leads to direct release of intracellular muscle components including myoglobin, creatine kinase (CK), aldolase and lactate dehydrogenase. Although rhabdomyolysis is most often caused by direct traumatic muscle injury, the condition can be the result of drugs, severe exertion, prolonged bed rest, high temperature induced states like neuroleptic malignant syndrome (NMS) and malignant hyperthermia [1]. Clinically, rhabdomyolysis presents by a triad of symptoms: myalgia, weakness and myoglobinuria manifested by the classical description of tea coloured urine. An elevated creatinine kinase (CK) is the most sensitive laboratory test for evaluating muscle injury (assuming there is no concurrent cardiac or brain damage). Correlation in CK levels with severity of muscle damage and or renal failure have had mixed results, though it is generally believed AKI occurs when CK that levels > 5000IU/L. Blunt injuries and crush injuries are common causes of trauma-induced rhabdomyolysis. High voltage electrical injuries such as lightning or electrocution are rare causes of rhabdomyolysis. We present a case of AKI secondary to rhabdomyolysis due to blunt force trauma sustained in a street fight with subsequent complete renal recovery.

## Case Report:

A 43 yr old healthy male, with no previous medical history employed as a truck driver presented to the emergency department two days after sustaining several body blows in a street brawl at his hometown with h/o abdominal distension, constipation and decreased and dark colored urine. Patient c/o aches and pains all over the body due to blunt injuries sustained during the fight, however denied vomiting or hematuria. He had suffered a soft tissue injury to left parietal region which was investigated by CT brain and did not reveal any fractures or intracranial pathology. On examination, he was conscious but slightly drowsy with Glasgow coma scale 13/15. Blood pressure was 160/100mm of Hg, HR 88/min, RR 25/min. Physical examination showed left sided scalp soft tissue swelling, grazed abrasions on legs and back. Ultrasound abdomen showed normal sized kidneys with no other intrabdominal pathology. His laboratory investigations are shown in table 1. He underwent 3 consecutive sessions of hemodialysis after placement of right sided femoral vein temporary hemodialysis catheter. From Day 3, urine output showed gradual improvement, though serum creatinine levels still lagged behind clinical improvement. He was discharged on Day 5 with serum creatinine of 8.1mg/dl. One week later, he was completely asymptomatic and creatinine had reduced to 2mg/dl. On day 14, renal functions had returned to normal (serum creatinine 1.0mg/dl).

Parameter	Day 1	Day 3	Day 5	Day 7
Hemoglobin(gm/dl)	11.2	10.9	9.8	10.0
Blood urea (mg/dl)	112	65		63
Serum creatinine (mg/dl)	10.9	10.3		2.0
Serum CPK (IU/L)	535	-	-	-
SGPT/AST (IU/L)	60	-	-	-
Serum calcium(mg/dl)	7.2	-	-	8.3
Serum albumin (mg/dl)	3.1	-	-	3.8

**Table1:** Laboratory values during hospitalization

## Discussion:

Rhabdomyolysis is a common cause for oliguric acute renal failure and can be traumatic or non traumatic. Rhabdomyolysis has specific clinical and laboratory parameters [3,4], but still requires high level of suspicion so that the diagnosis is not missed. Patients with obvious muscle/ crush injuries have localised /diffuse pain, fatigue, nausea, vomiting, tachycardia and red/brownish urine. High levels of creatinine phosphokinase (CPK) with values 5 to 10 times upper of normal is the most specific test for rhabdomyolysis. Presence of myoglobin in the urine is the most definitive marker for rhabdomyolysis however urine myoglobin levels disappear after 6-8 hrs and only very early testing can pick this up. MRI of affected muscles can diagnose muscular tears/ edema better than CT [5]. We were not able to do this in our patient due to financial limitations on the part of the patient.

AKI is the most commonly recognized systemic complication of rhabdomyolysis is said to occur in 10-55% of cases with rhabdomyolysis [6]. Cardiac complications like arrhythmias, metabolic acidosis, disseminated intravascular coagulation (DIC) and compartmental syndrome are other possible complications of rhabdomyolysis [7]. To establish the diagnosis of rhabdomyolysis as the sole cause of AKI in patients with a vague history it is important for the treating unit to exclude other possible causes of renal pathology, history of substance or alcohol abuse, seizure history and other co-morbidities. CPK levels in this patient was 3 times the normal, however this may have been due to delayed testing (>48hrs). This case emphasizes the importance of bearing in mind the possibility of rhabdomyolysis in patient with unexplained renal compromise. The occurrence of a serious medical complication like acute

kidney injury as a direct consequences of the physical violence may also have medicolegal implications.

## Conflict of interest:

None

## Financial disclosures:

Nil

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