

Case Report

Electrical Injuries and High Levels of Serum Creatine Phosphokinase Activity

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Introduction

Musculoskeletal system is the most affected system by the electrical shock. Serum Creatine Phosphokinase Activity (CPK) is an important biochemical marker and can be very high level in muscle damages due to electrical injuries.

Case Report

A 35-year-old male presented to emergency department with electrical shock. He was conscious, cooperative and oriented. Blood pressure was 125/65mmHg, heart rate was 55 beats per minute and respiratory rate was 20 breaths/min. The entry wounds (cutaneous burns) were observed in palmar aspect of both hands and the exit wounds in both feet. He had macroscopic hematuria but two-three red blood cells per high power field (RBC/HPF) were present on the microscopic urinalysis. Chest radiography and electrocardiographic examination was normal. The patient was hospitalized and monitored. White blood cell count was $15.9 \times 10^3/\mu\text{L}$ (normal range; $4-10 \times 10^3/\mu\text{L}$). Serum CPK activity levels were elevated above the assay limits at the beginning. After tenfold dilution, serum CPK levels were found to be 4200U/L. Other biochemical parameters were within normal limits. Intravenous fluid therapy was administered to the patient to provide urine output of 2ml/kg –per hour. Four flacon sodium bicarbonate (NaHCO_3)/1000cc serum physiologic (SF, 0.9 %) were administered for hydration and alkalinization of urine. Intravenous fluid and NaHCO_3 treatment was continued until the urinary pH approaches 6.5. On the sixth day of the admission, serum CPK activity level was within the normal reference range.

Abstract

Musculoskeletal system is the most affected system by the electrical shock. We aimed to present a patient who has very high level of serum CPK activity and myoglobinuria due to electrical shock.

Keywords: Electrical shock; CPK; Myoglobinuri

Discussion

Rhabdomyolysis is a syndrome caused by skeletal muscle damage. These injuries are led to the leakage of intracellular contents into plasma. Vigorous exercise, muscle crushing, trauma and severe infections are the most common reasons [1-3]. Electrical shock is another reason which can cause severe muscle damage. These patients can be asymptomatic or sometimes sudden death can occur. Musculoskeletal system is the most affected system. Serum CPK levels is an important biochemical marker in patient follow-up and its serum activity can increase to very high levels. Acute renal failure can also be observed approximately 0-67% due to severe muscle damage [1]. Myoglobinuria can also occur and lead to brownish color of urine. CPK levels should be evaluated in patients acute myoglobinuric renal insufficiency patient due to Rhabdomyolysis.

Conclusion

Early diagnosis is very important in preventing complications and to ensure appropriate treatment.

References

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