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Factors Associated with Acute Kidney Injury in Multiple Trauma Patients with Rhabdomyolysis

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Abstract : Introduction: Rhabdomyolysis is a syndrome characterized by muscle necrosis and the release of intracellular muscle constituents into the circulation. Acute kidney injury is a potential complication of severe rhabdomyolysis and the prognosis is substantially worse if renal failure develops. We try to identify the factors that were predictive of AKI in severe trauma patients with rhabdomyolysis. Methods: This retrospective study was conducted at the emergency department of a level I trauma center. Patients enrolled that initial creatine phosphokinase (CPK) levels were higher than 1000 IU with acute multiple trauma, and more than 18 years older from Oct. 2012 to June 2016. We collected demographic data (age, gender, length of hospital day, and patients' outcome), laboratory data (ABGA, lactate, hemoglobin. hematocrit, platelet, LDH, myoglobin, liver enzyme, and BUN/Cr), and clinical data (Injury Mechanism, RTS, ISS, AIS, and TRISS). The data were compared and analyzed between AKI and Non-AKI group. Statistical analyses were performed using IMB SPSS 20.0 statistics for Window. Results: Three hundred sixty-four patients were enrolled that AKI group were ninety-six and non-AKI group were two hundred sixty-eight. The base excess (HCO3), AST/ALT, LDH, and myoglobin in AKI group were significantly higher than non-AKI group from laboratory data ($p \leq 0.05$). The injury severity score (ISS), revised Trauma Score (RTS), Abbreviated Injury Scale 3 and 4 (AIS 3 and 4) were showed significant results in clinical data. The patterns of CPK level were increased from first and second day, but slightly decreased from third day in both group. Seven patients had received hemodialysis treatment despite the bleeding risk and were survived in AKI group. Conclusion: We recommend that HCO3, CPK, LDH, and myoglobin should be checked and be concerned about ISS, RTS, AIS with injury mechanism at the early stage of treatment in the emergency department.

Keywords : acute kidney injury, emergencies, multiple trauma, rhabdomyolysis
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