

# RISK FACTORS FOR AKI AFTER TRAUMATIC RHABDOMIOLYSIS: A MULTIVARIATE REGRESSION ANALYSIS



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## Introduction

Despite that rhabdomyolysis has been associated with development of acute kidney injury (AKI) in many series in trauma patients, the exact relationship and the role of other associated risk factors has not been thoroughly investigated.

We retrospectively analyzed multiple risk factors in order to identify possible associations between clinical and laboratory variables, including the effect of sodium bicarbonate administration and the risk of developing AKI in subjects with traumatic rhabdomyolysis

## Objectives

**PRIMARY:** Identify the possible risk factors involved in the disturbances of the renal function in patients with extremities injury.

**SECONDARY:** Analyse the behavior of the level of CPK in relation with the renal disfunction in patients with extremities injury.

Determine the role of the administration of sodium bicarbonate solutions as a protection strategy in patients at risk for renal disfunction.

## Methods

Adult trauma patients, admitted to the ICU from 2011 to 2015, with measurements of CPK.

Demographics, CPK levels, trauma mechanism and severity, lactic acid and BD levels, fluid administration and balance, transfusions, use of IV contrast agents and administration of sodium bicarbonate were registered. The main outcome was the development of AKI at KDIGO score  $\geq 1$ . Definitive assessment of predictors independently associated with a positive AKI development was performed by multivariable logistic regressions (MLR) in a step-wise manner, retaining variables with a p-value  $< 0.1$ .

## Results

Three-hundred-fifteen patients were included. Median age was 28 years (IQR 22-41). Trauma mechanisms were penetrating (30.3%), blunt (54.5%) and explosion (15.2%). Median ISS was 21 (ICR 16-29). Median CPK in the first day was 1662 (IQR 770 - 4125.). AKI occurred in 75 subjects (23.8%). In univariate analysis a CPK  $>5000$  u/Lt showed a positive association with AKI risk (OR=2.78, 95%CI 1.29-4.3)

### INDEPENDENT RISK FACTORS FOR THE DEVELOPMENT OF AKI

Variable	O.R. (95% C.I.)	P
CPK $>5000$ u/Lt	2.64 (1.31- 5.33)	0.01
Age (Each 10 year)	1.30 (1.06 -1.59)	0.01
Lactate (mg/dL)	1.17 (1.03 - 1.33)	0.02
Thorax AIS	1.23 (1.04 -1.46)	0.02
Apache II	1.05 (1.01 -1.09)	0.02
Dobutamine administration	3.16 (1.01- 9.94)	0.05

Category	n	ICU length stay	Total length of stay	Mortality
Kdigo 0	240 (76.2%)	5 (3 – 10)	10 (6 – 18)	33 (18.9%)
Kdigo 1	44 (14.0%)	8 (4 – 18)	16.5 (7.5 – 27.5)	5 (11.4%)
Kdigo 2	18 (5.7%)	13.5 (4 – 16)	18.5 (6 – 26)	2 (11.1%)
Kdigo 3	13 (4.1%)	12 (4 – 33)	25 (8 – 44)	3 (23.1%)
Total	315 (100.0%)	6 (3 – 12)	11 (6 – 20)	43 (13.5%)

## Conclusions

Age, CPK level  $>5000$ u/Lt, severity of thoracic trauma, evidence of hypo-perfusion, higher APACHE-II score and dobutamine administration showed independent association with the risk of AKI.

The administration of  $\text{NaH}_2\text{CO}_3$  showed a non-significant increase of the risk.

## Bibliography

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