

Acute Kidney Injury in Critically Ill Trauma Patients

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BACKGROUND

Acute Kidney Injury (AKI) is a common complication in trauma with 24% of incidence in intensive care unit (ICU) and it is independently associated with increased morbidity and mortality, but also prolonged length of stay.

OBJECTIVES

The high incidence of AKI in trauma patients should lead to early identification of those at risk of AKI to establish a resuscitation strategy that aims at preventing AKI.

METHODS

Detailed data of trauma patients between May, 2017 and May, 2019 were retrieved from ICU medical records. In particular, patients' demographics, hemodynamic parameters, biochemical parameter and fluid balance, urinary output, sCr values at baseline, 24 hrs, 48 hrs, and 72 hrs. Short and long terms outcomes had been analysed.

RESULTS

Based on KDIGO criteria, 45 patients developed AKI (29.4%). 16 patients (10.5%) developed stage 1 AKI, 29 patients (19.9%) stage 2-3 AKI (Table).

Patients with elevated urinary biomarkers alone undergoing therapeutics interventions had 8.5% stage 2-3 AKI compared to 33% of patients with creatinine elevation only, and 50% of patients with both increased creatinine and AKI risk score. A number of 19 patients (23%) with urinary markers driven interventions progressed to higher stages of AKI, while 7 (8.5%) improved AKI stage.

Outcome	No AKI (N=29)	AKI stage 1 (N=16)	AKI stage 2-3 (N=29)	AKI (all patients) N=45
RRT	0	0	0	5 (11%)
Ventilation free days	1.8(2.1)	1.7(1.4)	2.0(2.5)	1.8(1.9)
MV length	5.9(9.3)	4.7(6.6)	7.4(10.1)	5.9(8.6)
ICU stay	7.7(9.3)	6.3(6.7)	9.4(9.8)	7.7(8.0)
Hospital stay	18.1(16.3)	19.3(15.6)	18.5(19.6)	19.1(17.3)
Renal recovery	NA	26(89%)	11(68.5%)	37(82.2%)
Survival over 24 hrs from ER arrival	108(100%)	29(100%)	16(100%)	45 (100%)

CONCLUSION

AKI is a frequent complication following trauma. Although the reduction of stage 2/3 AKI based on therapeutic interventions driven by elevated urinary biomarkers was observed in 8% of patients, the use of biomarkers represent an important tool for the early detection of patients at high risk of AKI behind the local ICU experience based on multidisciplinary team.

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