

ABSTRACT

Introduction

Trauma patients are especially vulnerable to developing Acute kidney injury (AKI). This is due to a complex interplay of physiological derangements and therapeutic interventions. The presence of this condition in intensive care and trauma units correlates with elevated mortality rates and prolonged ICU and hospital stays.

Objectives

To describe incidence, risk factors, outcome associated with acute kidney injury in trauma patients presented to Intensive Care Units; National Hospital Sri Lanka

Methods

Descriptive cross sectional study design was applied in Trauma Intensive Care Unit in National Hospital Sri Lanka from May 2023 to September 2023. Patients admitted to ICU in selected tertiary care hospital in Sri Lanka was considered as study population. Patients aged more than 18 years were included for the study and patients transferred from other hospitals or other Intensive care units were excluded from the study. Sample size was 200 and none probability convenient sample size sampling Technique was applied. Interviewer administered data extraction sheet was used as study instrument. Bed head tickets and patient record sheets were reviewed during the study implementation process. Data analysis was facilitated by SPSS version 28.0.

Results

The study participants were within the age range of 19 to 81(mean=45.41;SD=13.74). A male predominance was seen among the participants(n=118; 59%). 45% of participants had diabetes mellitus(n=90). Hypertension was seen among 30.5%(n=61). Cardiac disease was seen in 27%(n=54). The most commonly seen comorbidity in this study was diabetes mellitus. Four types of traumatic injuries were observed. Most participants presented following RTAs(n=59;29.5%). Least incidence was seen in accidental falls(n=37;18.5%). A higher amount of patients received blood products(n=96;48%). Majority of patients experience at least one critical event during

ICU stay. 59.5% experience critical hypotension(n=119), while critical hypoxia was experienced by 52.5%(n=105). 86 individuals received NSAIDs(43%), while 89 received aminoglycosides(44.5%). Incidence of AKI in the trauma ICU study population was 31%(n=63). Diabetes mellitus (OR=8.19) and cardiac abnormalities (OR=3.06) were significantly associated with AKI risk during ICU stay. Usage of NSAIDs(OR=5.2) and Aminoglycosides(OR=2.12) were significantly associated with AKI risk. Blood transfusion was found to be significantly associated with AKI risk. However blood product transfusion, having an even of critical hypotension or critical hypoxia were not found to be significantly associated with AKI risk. High injury severity scores were significantly associated with AKI risk($t=10.13$; $p<0.001$). Injury Severity Score have been found to have significant predictability on getting an AKI during the ICU stay(AUC = 0.862; $p < 0.001$).

Conclusions and Recommendations

Among patients who admit to trauma intensive care units, 31% developed Acute Kidney Injury during ICU stay. A risk association with acute kidney injuries was demonstrated with blood transfusion and administration of Aminoglycosides and NSAIDs during ICU stay. By using the on-admission injury severity score of patients, it is possible to predict occurrence of acute kidney injury during ICU stay.

Attention should be paid on modifying clinical management protocols practiced in trauma ICUs, by predicting acute kidney injuries and targeting primary prevention. Attention should be paid on developing new predictive models by integrating clinical and pathological parameters which associate with acute kidney injury.

Key word: Acute Kidney Injury, Trauma, Intensive care units