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Clinical characteristics of acute kidney injury in patients with glyphosate surfactant herbicide intoxication

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Objectives: This study aimed to investigate the clinical characteristics of acute kidney injury (AKI) in patients with glyphosate surfactant herbicide (GlySH) intoxication.

Methods: From 2008 to 2019, 172 patients admitted to our hospital after GlySH poisoning. We evaluated the incidence, clinical characteristics, and severity of AKI based on the RIFLE classification.

Results: The patients included 117 men and 55 women with a mean age of 59 years (range, 22-101 years). Of the 172 patients, 68 had AKI during admission period. The incidence of AKI was 39.5%; of which, 21.5%, 11.0% and 6.9% were classified as Risk, Injury and Failure, respectively. Compared with patients in the non-AKI group, patients in the AKI group had lower serum bicarbonate level (17.9 ± 5.1 mmol/L vs. 21.0 ± 3.6 mmol/L, $p<0.01$) and higher serum total bilirubin levels (0.83 ± 0.70 vs. 0.64 ± 0.40 mg/dL, $p=0.034$). In comparison with patients of non-AKI group, patients with AKI experienced intubation (42.6% vs. 4.8%, $p<0.001$) and intensive care unit care (61.8 % vs. 23.2 %, $p<0.001$) more frequently. The mortality rate was higher in AKI group than in non-AKI group (19.1 % vs. 1.0 %, $p<0.001$). In multiple logistic regression analysis, hyperbilirubinemia and hypotension on admission were significant predictors of AKI.

Conclusions: Serum total bilirubin concentration and blood pressure on admission is useful predictors for the development of AKI in patients with GlySH intoxication.