Clinical and Laboratory Predictors of Acute Kidney Injury Following Russell's Viper Bite

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Background: Snake bite has been a common occupational hazard worldwide, especially in rural areas. Acute kidney injury (AKI) following Russell’s viper bites, is a common medical emergency encountered in our daily hospital practice. Russell’s viper bite has been a common health problem in Magway region which is located in the central Myanmar.

Objective: This study was performed to determine the clinical and laboratory predictors of acute kidney injury following Russell’s viper bite.

Methods: This hospital based prospective study was done in Magway Regional Hospital for one year period (from January 2015 to December 2015). All Russell’s viper bite patients who were taken to hospital within 48 hours of bites were included in this study. To determine the predictors of AKI following Russell’s viper bite, multivariate linear regression analysis with 95% confidence interval (CI) was done. Analyses were performed by SPSS (20th version for Windows).

Results: Out of 212 Russell’s viper bite cases, 113 (53.30%) developed AKI. As per Chi-square test, the following factors were found to be associated with development of AKI following Russell’s viper bite: bite-to-needle time (p<0.000), moderate to severe cellulitis (p<0.000), regional lymph node tenderness (p<0.000), spontaneous bleeding manifestations (p<0.000), repeated vomiting (p<0.000), hypotension or shock (p<0.000), leucocytosis (p<0.000), thrombocytopenia (p<0.000), non-clotted blood (p<0.000), prolonged PT (p<0.000), prolonged APTT (p<0.000), and significant albuminuria (p<0.000). Among the clinical and laboratory parameters entered into multivariate analysis, moderate to severe cellulitis (OR 3.718, p=0.001), bleeding manifestations (OR 6.553, p = 0.002), repeated vomiting (OR 2.541, p=0.010), hypotension or shock (OR 4.046, p=0.014), thrombocytopenia (OR 0.209, p=0.019), non-clotted 20WBCT (OR 3.682, p=0.026), and significant albuminuria (OR 26.426, p<0.000) were identified as independent predictors of AKI following Russell’s viper bite.

Conclusion: AKI occurs in 53.3% of Russell’s viper bite victims. Factors associated with development of AKI in Russell’s viper bite are cellulitis, regional lymph node tenderness, spontaneous bleeding manifestations, repeated vomiting, hypotension or shock, leucocytosis, thrombocytopenia, 20WBCT, prothrombin time, APTT, and significant albuminuria. Among the clinical and laboratory parameters, moderate to severe cellulitis, bleeding manifestations, repeated vomiting, hypotension or shock, thrombocytopenia, non-clotted blood, and significant albuminuria are identified as independent predictors of AKI following Russell’s viper bite.

Keywords: Acute kidney injury, Russell’s viper bite, AKI