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Venom Recurrence in Russell's viper (*Daboia Russelii*) Envenoming in Sri Lanka

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Abstract

Objectives: Russell's viper (*Daboia russelii*) envenoming is a leading cause of snakebite- induced deaths in Asia. Recurrence of venom detected by enzyme immunoassay (EIA) in the circulation after antivenom treatment has been documented in Russell's viper (RV) envenoming. However, recurrence of clinical effects of envenoming (e.g. coagulopathy) does not appear to occur with venom recurrence. The aim of this study was to compare the recovery of coagulopathy in RV envenomed patients with venom recurrence and those without recurrence.

Method: Cases of RV envenoming were included from a prospective cohort study of snakebite patients presenting to the Chilaw hospital in central west Sri Lanka. RV venom concentrations were analysed by RV venom specific EIA in serial serum samples collected at least up to 24 hours after antivenom treatment. Serial citrated plasma samples were collected and analysed for fibrinogen concentrations by standard coagulometric method on a Behring coagulation system. All patients were treated with Indian polyvalent antivenoms (manufactured by VINS Bioproducts or BHARAT serum and vaccines limited). RV venom recurrence patients were defined as those with an increase in RV venom concentration after an initial decrease in venom concentration in the first post-antivenom sample. Recovery of fibrinogen concentrations, number of antivenom doses administrated and length of hospital stay were compared in recurrence and non-recurrence patients.

Results: There were 17 patients in recurrence group (12/17 males, median age 38 years) and 18 in non-recurrence group (14/18 males, median age 39 years). All patients developed coagulopathy with low fibrinogen concentrations. Fibrinogen concentrations increased after antivenom in both the recurrence and non-recurrence patients and there was no subsequent decrease in fibrinogen concentrations when there was venom recurrence. The median length of hospital stay was 2 and 3 days in the recurrence and non-recurrence patients respectively. Median doses of administered antivenom were equal for both groups.

Conclusions: Recurrence of RV venom was not associated with recurrence of coagulopathy, higher doses of antivenom treatment or longer hospital stay. Further work is required to determine if the detection of venom recurrence is due to the venom specific EIA detecting both venom-antivenom complexes as well as free venom.