ORAL PRESENTATIONS

ID-O#014] Investigation of neurotoxic effects of Sri Lankan krait (*Bungarus ceylonicus*) venom and its neutralisation by Indian polyvalent anti-venoms in-vitro

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Background & Objective: Although Sri Lankan krait (*B. ceylonicus*) envenoming causes life-threatening paralysis, no specific antivenom is available. We aimed to assess the in-vitro neutralisation of the neurotoxicity of B. ceylonicus venom by Indian polyvalent antivenoms.

Methods: Pooled venom of B. ceylonicus, VINS (Batch No: 01AS21073) and BHARAT (Batch No: A05322003) brands of Indian polyvalent antivenom and in-vitro chick biventer cervicis neuromuscular preparation were used. Inhibition of indirect twitches and response to acetylcholine, carbachol and KCl were monitored for 3 h with and without antivenom. Minimum venom concentrations were determined at which the venom abolished indirect twitches with pre-synaptic and post-synaptic actions and were used for antivenom experiments. Antivenoms were added to the preparation 5 min before (prevention), 30 min after (reversal) and 90 min after (reversal) the addition of the venom. One-way ANOVA followed by Tukey's multiple comparison post-hoc tests (3-6 replicates) were used for analysis.

Results: Minimum concentrations of B. ceylonicus venom causing presynaptic and postsynaptic neurotoxicity were 0.03 µg/ml and 1 µg/ ml, respectively. In presynaptic neurotoxicity prevention experiments, neither the recommended nor the 10x concentration of VINS antivenom prevented neurotoxicity. BHARAT antivenom at the 10x concentration fully prevented pre-synaptic neurotoxicity, while the recommended concentration partially prevented (i.e. 30% twitch inhibition) pre- synaptic neurotoxicity. For postsynaptic experiments, VINS antivenom did not prevent neurotoxicity, whereas BHARAT partially prevented (i.e. 25% twitch inhibition), at the recommended concentrations. Postsynaptic experiments with 10x the recommended BHARAT antivenom concentration altered bath conditions and hence were not conducted. BHARAT antivenom added 30 min after the venom partially reversed the inhibition of indirect twitches (30%), but was unable to reverse neurotoxicity when added 90 min after the venom.

Conclusions: BHARAT antivenom fully neutralises the presynaptic neurotoxicity and partially neutralises the postsynaptic neurotoxicity caused by *B. ceylonicus* venom in-vitro.