ABSTRACT BOOK ABSTRACTS



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TROPICAL DERMATOLOGY

TUMESCENT EPINEPHRINE ANESTHESIA: A NOVEL APPROACH FOR FIELD TREATMENT OF NAJA NAJA SNAKE ENVENOMATION

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Introduction: Snakebites are a potentially fatal yet often overlooked global health problem. The WHO has designated snake envenomation as a Neglected Tropical Disease, acknowledging the five million snakebites that result in ~100,000 deaths/year. There is a need for an effective pre-hospital snakebite treatment that prolongs survival. We propose a novel use of a well-established dermatologic technique, tumescent anesthesia, as this therapy.

Objective: We hypothesize that promptly injecting a large volume of dilute tumescent epinephrine at the site of snake envenomation will produce local capillary vasoconstriction, delays systemic absorption of neurotoxic venom, and prolong survival. In this study, we develop a murine model for envenomation and test a rescue therapy consisting of tumescent infiltration of dilute epinephrine.

Materials and methods: A murine model of for neurotoxic envenomation was developed as a pilot study using lidocaine as a surrogate for neurotoxic snake venom. A rescue treatment consisted of a tumescent infiltration of dilute epinephrine in saline. Mice were dosed with neurotoxic Naja naja cobra venom and then treated with tumescent epinephrine. The main end-point was survival time.

Results: In the pilot study, two sets of mice received a lethal dosage (LD50) of subcutaneous lidocaine. None of the untreated controls survived. In the set that received tumescent epinephrine immediately after lidocaine, 80% survived. In the Naja naja venom study, two sets of mice received LD50 doses of Naja naja venom. Among the untreated controls 50% survived. In the set rescued with tumescent epinephrine immediately after LD50 venom, 94% survived (P = 0.0039). Following LD100 doses of Naja naja venom, all animals died, however survival was significantly prolonged (p < 0.0001) by immediate tumescent epinephrine rescue.





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Conclusions: Subcutaneous tumescent epinephrine is a new potential pre-hospital treatment for snake envenomation that delays systemic absorption of subcutaneous neurotoxic venom, prolongs survival time, and improves survival rates.



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