

# The effect of plasmapheresis on treating disseminated intravascular coagulation (DIC) caused by Hemiscorpius lepturus (Gadim) sting

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## Abstract

**Introduction:** The highest mortality from scorpion stings in Iran is due to the stings of a particular type of scorpion known as Hemiscorpius lepturus (H. lepturus, Gadim in local language). The present study aimed at investigating the use of plasmapheresis to treat severe cases of H. lepturus stings.

**Method:** This pilot study was a randomized clinical trial conducted from June 2015 to June 2016 in Razi hospital of Ahvaz, Iran. Twenty-nine patients who had been stung by H. lepturus and admitted to ICU because of disseminated intravascular coagulation (DIC) were randomly assigned into control (15 patients, supportive treatments) and plasmapheresis (14 patients, supportive treatments + plasmapheresis) groups, and the patient outcomes were compared between the two groups.

**Findings:** The highest mortality from scorpion stings in Iran is due to the stings of a particular type of scorpion known as Hemiscorpius lepturus (H. lepturus, Gadim in local language). The present study aimed at investigating the use of plasmapheresis to treat severe cases of H. lepturus stings. This pilot study was a randomized clinical trial conducted in Iran. Twenty-nine patients who had been stung by H. lepturus and admitted to ICU because of disseminated intravascular coagulation (DIC) were randomly assigned into control and plasmapheresis groups, and the patient outcomes were compared between the two groups. Eighteen patients were female. Eighteen patients were female (62%), and the mean of patient age was  $24 \pm 7$ . Most of the sting cases had occurred in the torso (15 patients, 52%). Only 10 patients

expired, whereas 10 patients (34%) experienced recovery with or without complications. There was no significant difference between the two groups in terms of the demographic and sting features. In the plasmapheresis group, hemoglobin level was significantly lower, while the PT and INR were measurably higher. In total, the plasmapheresis group experienced 29 sessions of treatment. Overall, 19 patients expired, whereas 10 patients experienced recovery with or without complications. The rate of recovery was significantly higher in the plasmapheresis group compared with controls, with eight patients in the plasmapheresis group surviving compared with two in the control group. The duration of hospitalization was higher in the plasmapheresis group. A comparison of the dead and recovered patients' features indicated that the dead patients arrived in the hospital significantly later than the recovered ones, and they also had lower platelet counts. The findings of this small-scale pilot study show that using plasmapheresis in treating DIC in patients stung by H. lepturus can prevent death and encourage recovery. The duration of hospitalization was higher in the plasmapheresis group ( $p < .001$ ). A comparison of the dead and recovered patients' features indicated that the dead patients arrived in the hospital significantly later than the recovered ones, and they also had lower platelet counts.

**Conclusions:** The findings of this small-scale pilot study show that using plasmapheresis in treating DIC in patients stung by H. lepturus can prevent death and encourage recovery. However, prior to using plasmapheresis as a routine treatment for severe cases of people stung by this scorpion or other similar ones, further controlled studies with a larger sample size are needed.

**Note:** This work is partly presented at 14th International Conference on Pharmacology and Toxicology during on July 18-19, 2019 held at Zurich, Switzerland