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**Neurocognitive dysfunction and post-traumatic stress disorder in victims of venomous snake bites in North India**

**Navneet Sharma<sup>1</sup>, Sushil Kumar<sup>1</sup>, Sanjay Jain<sup>1</sup>, Adarsh Kohli<sup>2</sup>**

<sup>1</sup>*Departments of Internal Medicine Postgraduate Institute of Medical Education & Research, Chandigarh, India*

<sup>2</sup>*Departments of Psychiatry, Postgraduate Institute of Medical Education & Research, Chandigarh, India*

**Objectives:** Snake bites are a common cause of considerable morbidity and mortality in developing countries. This study evaluated victims of venomous snake bites for neurocognitive dysfunction and post-traumatic stress disorder (PTSD).

**Methods:** Prospective study from 1<sup>st</sup> March 2012 to 31<sup>st</sup> October 2013 from the Medical Emergency of Nehru Hospital, Postgraduate Institute of Medical Education & Research, Chandigarh, India. Testing for neurocognitive function; Trail A – Trail making test A, Trail B – Trail making test B, MMSE – Mini Mental Status Examination, PGIMS – PGI Memory Scale, BVMG – Bender Visual Motor Gestalt test just before hospital discharge and at 3 months follow-up. Evaluation for post-traumatic stress disorder at 3 months follow-up was also carried out.

**Results:** Of 48 patients of venomous snake bites, the male female ratio was 2:1 in our study. The mean age of the entire cohort was 29.67±11.9 years (range=12-65 years). Forty three cases had neuro-paralytic snake bite and 5 were hemotoxic (Viperine) snake bites. 27 patients of neuro-paralytic snake bites required mechanical ventilation for a mean duration 4.56 days (range=1-11 days). Three cases of Neuro-paralytic snake envenomation on mechanical ventilation developed ventilator acquired pneumonia (*Escherichia coli* in 2 and *Acinetobacter baumannii* in 1). Two patients with hemotoxic snake envenomation developed acute renal failure needing renal replacement therapy. Local cellulitis at the site of snake bite was observed in 5 patients requiring antibiotic therapy with amoxicillin-clavulanate. Twenty four cases received 20 vials (200 ml) of reconstituted anti-snake venom each and the other 24 got 10 vials (100 ml) each. Testing for neurocognitive function just before hospital discharge showed significant deficits in tests for attention, executive function, memory and perceptual motor skills. For comparison, 25 historical controls from a previous study conducted by Psychiatry department were taken for all four cognitive scales (Trail A, Trail B, PGIMS & BVMG). Twenty six cases returned for follow-up visits 3 months after discharge. Although performance in all quarters of neurocognition improved, yet, significant deficits continued to persist in relation to the frontal and temporal lobe functioning of the brain. Evaluation of these 26 cases for Posttraumatic Stress Disorder (PTSD Symptom Score) disclosed that this condition had developed in 6 of our study subjects.



**Conclusion:** Victims of venomous snake bites suffered from considerable neurocognitive dysfunction that continued to persist for 3 months after discharge from hospital. PTSD developed in a quarter of our follow-up snake bite victims. Thus, screening for neurocognitive dysfunction and PTSD should be carried out in all victims of venomous snake bites. National programs on snake bites should also include an advisory to evaluate victims of venomous snake bites for persistent neurocognitive dysfunction and PTSD at follow-up so that effective treatment strategies can be implemented.