

## From fang to fight: a case series on clinical outcomes and management of snakebite envenomation

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**Background:** Snakebite envenomation remains a life-threatening emergency in rural and resource-limited settings, where delayed presentation, limited access to antivenom, and fragmented referral systems contribute to morbidity and mortality. In the Philippines, cobra envenomation commonly results in neurotoxic manifestations requiring urgent intervention.

**Methods:** We present a case series of four patients with neurotoxic snakebite envenomation treated with purified cobra antivenom (PCAV) at the emergency department of a tertiary referral hospital in Northern Luzon in 2024. Data were retrospectively reviewed, including demographics, clinical presentation, timing of referral, antivenom administration, supportive management, and outcomes.

**Results:** Among 193 emergency department consultations for snakebite, 28 patients required admission, and four received antivenom. Patients included one pediatric case, two adult males, and one elderly patient with multiple comorbidities. All patients presented with neurotoxic features such as ptosis, dysarthria, dysphagia, or altered sensorium. Two patients required endotracheal intubation and mechanical ventilation, including one who suffered cardiac arrest during interfacility transfer. Antivenom administration ranged from two to six vials due to limited supply. Despite this, all patients demonstrated clinical improvement following antivenom therapy and supportive care. No patient developed permanent neurological deficits, and all were discharged in stable condition.

**Conclusion:** Favorable clinical outcomes in neurotoxic snakebite envenomation are achievable even in rural and resource-limited settings through early recognition, timely antivenom administration, and appropriate supportive emergency care. However, system-level challenges such as delayed referrals, uncoordinated interfacility transfers, and limited antivenom availability continue to pose significant barriers. Strengthening referral networks, improving coordination between healthcare facilities, and ensuring reliable access to antivenom are essential steps toward reducing preventable morbidity and mortality in rural communities.

**Keywords:** snakebite envenomation, antivenom, emergency department, toxicology, rural healthcare, referral systems