CASE REPORT

A Rare Case of Medial Medullary Syndrome Following Neuroparalytic Snakebite: A Case Report

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Abstract

Neuroparalytic snake envenomation is a commonly reported emergency in India and other tropical countries. We report a young male with no prior comorbidities, who presented with acute quadriparesis with bulbar involvement following snake bite. He was intubated in the emergency department (ED) for airway protection and was treated with polyvalent anti-snake venom (ASV) and shifted to medical intensive care unit (ICU), where he was treated supportively and gradually weaned off from ventilator after successful spontaneous breathing trial (SBT). Postextubation he was diagnosed to have hypoglossal palsy, and subsequently was re-intubated in view of suspected aspiration. A diffusion weighted magnetic resonance imaging (DW-MRI) revealed bilateral medial medullary infarct. MR-Angiogram revealed no abnormalities. All other causes for young stroke were ruled out. He underwent percutaneous tracheostomy and was treated with antiplatelets, statin, neurorehabilitation. He was later discharged home with good neck holding and limb power of 4/5 in all four limbs. This rare case reaffirms that acute stroke in a young individual from a tropical country should rise the suspicion of snake envenomation after ruling out other causes, among the treating acute care physicians.

Keywords: Case report, Hypoglossal nerve palsy, Infarction, Medial medullary syndrome, Snakebite, Tracheostomy.

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Case Description

An 18-year-old male patient who was otherwise well presented to us with an alleged history of a snakebite. He presented with acute onset quadriparesis and bilateral ptosis. He was intubated in the Emergency Department (ED) for airway protection and was treated with polyvalent anti-snake venom (ASV), and tetanus toxoid. His bite site local reaction was minimal, and he had no bleeding manifestations. He was subsequently transferred to the medical intensive care unit. His vital signs were all within normal limits. A complete neurological examination including sensory system involvement was limited by the fact that the patient was intubated and mechanically ventilated. His biochemical parameters including coagulogram chest X-ray, electrocardiogram, and two-dimensional (2D) echocardiogram, revealed no abnormalities. His symptoms improved following ASV administration. He was extubated on day 4 after a successful spontaneous breathing trial. Postextubation, he was unable to speak or protrude his tongue. A vocal cord assessment was done, which revealed normal mobile vocal cords and no injury. A possibility of hypoglossal nerve palsy was made. He had desaturated the next day, requiring reintubation and mechanical ventilation. A bedside chest X-ray revealed possible aspiration pneumonia, and he was treated with appropriate antibiotics.

Diffusion-weighted magnetic resonance imaging (DW-MRI) confirmed the diagnosis of bilateral medial medullary infarction (Figs 1 and 2). MR-angiogram revealed no abnormalities. The final diagnosis of medial medullary syndrome following a neuroparalytic snakebite was made. He remained afebrile, and blood culture and endotracheal aspirate were sterile. Percutaneous tracheostomy was done on day 11 in anticipation of the need for prolonged ventilation. He was treated with antiplatelets, statins, deep vein thrombosis prophylaxis, and neuro-rehabilitation. After 4 weeks, he was successfully weaned off from the ventilator, mobilized out of bed, and discharged to home. At the time of discharge, he had good neck holding and limb power of 4/5 in all four limbs with good hand grip and deep tendon reflexes were 1+ in upper limbs and 2+ in lower limbs bilaterally. Pinprick perception, proprioception, and vibration sensations were normal symmetrically, and there was no bowel or bladder involvement.

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Differential Diagnosis

- Hypercoagulable state.
- Patent foramen ovale.
- Atrial fibrillation with a proximal source of thrombi.
- Neuro-Behçet syndrome.
- Neurosyphilis.

Discussion

Ischemic infarct following snake envenomation is very rare.[1] Most of the reported cases of cerebrovascular accidents after

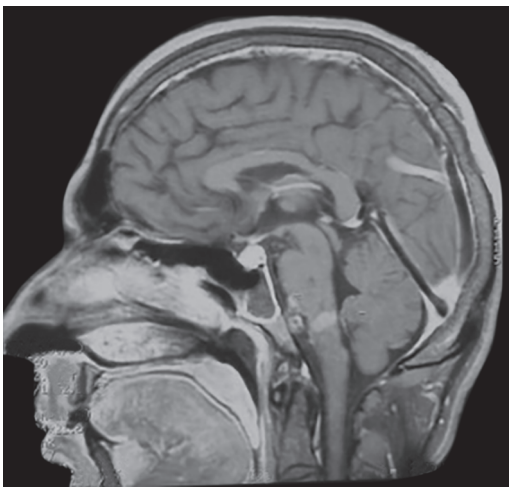

Fig. 1: An MRI of the sagittal section showing medullary infarction

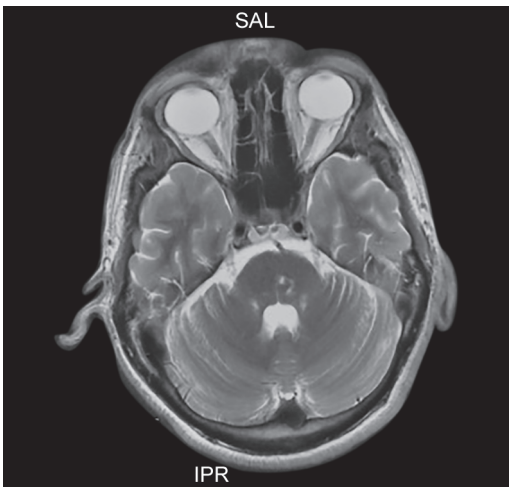

Fig. 2: An MRI of the axial section

snake envenomation are due to viperine bites, of which most are hemorrhagic strokes and very rarely ischemic strokes.[2] This is the first reported case of neuroparalytic snakebite resulting in a bilateral medial medullary infarct. We were not able to ascertain the subtype of the snake, but the syndromic presentation was that of a krait bite.

The patient is a teenager with no apparent risk factors for ischemic stroke. He was also worked up for procoagulant workup, including protein C, protein S deficiencies, factor V Leiden mutation, hyperhomocysteinemia, anti-phospholipid syndrome, etc., all of which came negative. He did not have any episodes of atrial fibrillation. His 2D echocardiogram revealed no abnormalities. He was also worked up for neuro-Behçet syndrome and syphilis, both of which came back negative.

The medial medullary syndrome is caused by an infarction of vertebral arteries and/or paramedian branches of the anterior spinal artery, commonly resulting in damage to the lateral corticospinal tract, medial lemniscus, and hypoglossal nerve.[3]

His clinical syndrome of snakebite with acute quadriparesis with bulbar involvement, bilateral XII th cranial nerve palsy, and MRI evidence of bilateral medullary infarct (Figs 1 and 2) in the absence of other risk factors for stroke strongly suggest Krait bite as the etiology for the infarct. It could have resulted from the procoagulant and platelet aggregating effects of the snake venom or the toxin-induced vasculitis that could have resulted in the vessel occlusion due to microthrombi.[4] Hypotension as a cause for infarction was not considered as his blood pressure recordings from admission to discharge were all within normal limits, and there were no watershed infarcts on neuroimaging.

Conclusion

This case report affirms that though extremely rare, ischemic stroke in young males from rural areas in tropical countries with no risk factors for stroke should raise the suspicion of snake envenomation among treating acute care physicians, and all efforts should be made to recognize and treat the patient promptly.

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References

1. Paul G, Paul BS, Puri S. Snake bite and stroke: our experience of two cases. Indian J Crit Care Med 2014;18(4):257–258. DOI: 10.4103/0972-5229.130585
2. Sahoo AK, Sriramka B. Acute reversible ischemic stroke after snake bite. Indian J Crit Care Med 2018;22(8):611–612. DOI: 10.4103/ijccm.IJCCM_455_17
3. Siddik AB, Gupta V. Medial Medullary Syndrome. StatPearls. Treasure Island (FL): StatPearls Publishing; 2022.
4. Mosquera A, Idrovo LA, Tafur A, et al. Stroke following Bothrops spp. snakebite. Neurology 2003;60(10):1577–1580. DOI: 10.1212/01.wnl.0000061614.52580.a1