



Research Article

UNUSUAL CAUSE OF CHILHOOD STROKE

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ABSTRACT

Medullary Infarction following snake bite is very rare and unusual in children. Neurotoxic snake bite is well-known for its varied presentation as its venom contain various substances which affects various site in neurological system. Here we report a case of a girl child from rural area presented with bilateral ptosis, hemiparesis, bulbar palsy due to medullary infarction. Neurotoxic venom can be a cause for this presentation.

Key words:

Neurotoxicity, Medullary Infarction, Snake Bite.

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INTRODUCTION

Snake bite is one of the common life-threatening medical emergencies in Indian population particularly in rural and farming areas. India has the highest number of deaths due to snake bites.^{1,2} According to toxicity, they are categorized as haemotoxic, neurotoxic and myotoxic. Among the neurotoxic groups, the majority of bites are due to king cobra, common cobra and krait in India.² Snake venoms contain more than 20 different constituents, mainly proteins, including enzymes, non-enzymatic polypeptide toxins and nontoxic proteins.³ Clinical presentations of neurotoxicity are due to several constituents of venom that affects neuromuscular transmission (presynaptic and postsynaptic), coagulation cascade or both.⁴ Other neurological changes are related to hypotension, shock, hypoxia and other organ dysfunction.

Case Report

A 5 years old girl child from a rural village area of Hooghly came to our hospital in the late afternoon, with history of snake bite 6 to 8 hrs ago, following which she developed sudden onset weakness, drowsiness with drooling of saliva. She was referred from a rural hospital. She was apparently well that day morning, when she was playing outdoor she was bitten by snake and following which she rushed back home and was taken to a local hospital, where she developed sudden episode of weakness, drowsiness with frothing from mouth. There she was treated with AVS injection (10vials). As there was no improvement then she was referred to our hospital.

On general examination, Child had altered sensorium with drooling of saliva, Glasgow coma scale (GCS) was 10/15, Pulse and BP was normal. Pallor, cyanosis, clubbing, icterus, oedema were absent.

During respiratory system examination there were few bilateral crepitation on auscultation. Central nervous system examination showed generalized hypotonia, on painful stimulus there was slight movement of right upper limb and lower limbs. Both pupils were normal in size and reacting to light. Ptosis was present in both eyes. Deep tendon jerks were absent in all four limbs. On exposure no bite mark was found.

Provisional diagnosis of neurotoxic snake bite was made and the patient were treated with another 15 vials of AVS, neostigmine injection and antibiotics. Whole blood clotting time was less than 20min. Further she was investigated for Complete blood count, Renal function test, PT, APTT, INR and repeat WBCT <20min after 6hour. All test were within normal limit. On 2nd day there was improvement of drowsiness but still disoriented, disarticulation and drooling of saliva persist. On cranial nerve examinaion there was ptosis and involvement of IX, X cranial nerves, but no facial deviation/weakness. Motor examination shows there was right sided hemiparesis and jerks were brisk and power 3/5(both upper and lower limb of right side).

As alter sensorium and weakness was persisting and she was further investigated by CSF study, MRI brain. CSF study was normal and MRI Brain showed hyper intensity and diffusion restrict in left side of upper medulla (medullary infarction) (Fig-1). Further thrombotic profile (protein C, protein S, anti-thrombin 3, factor V Leidenmutation, lupus anticoagulant, APLA, ANA, Fibrinogen, D-Dimer, Homocysteine) were sent

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and reports were within normal range. 'CT Angiography of brain and neck vessels was normal.

Now on 5th day onwards she became conscious, power improved. Physiotherapy started for muscle weakness.

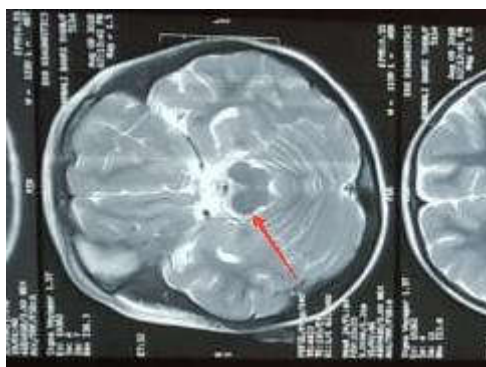


Fig 1

DISCUSSION

Snake bite is one common cause of morbidity and mortality in India. Common snakes are VIPER, COBRA, KRAIT. Various types of constituents causing various presentation in snake bite. Venom of viper contains metalloproteinases, serine proteases and C-type lentins having anticoagulant or procoagulant activity, may be either agonists or antagonists of platelet aggregation, which may lead to ischemic or hemorrhagic strokes. Phospholipase A₂, β -bungarotoxin and three-finger proteins (common in elapids) are potent neurotoxins affecting the neuromuscular transmission at either presynaptic or postsynaptic levels to inhibit peripheral nerve impulse causing muscle weakness. Presynaptic-acting β -neurotoxins inhibit the release of acetylcholine, and postsynaptic-acting α -neurotoxins cause a reversible blockage of acetylcholine receptors. Most snake venoms have multisystem effects on their victims.³ The common neurological manifestations are alteration in level of consciousness, paraesthesia, ptosis, ophthalmoplegia, limb, palatal, neck weakness, respiratory failure, drooling, hypotonia, delayed sensory neuropathy. Other less common complications include stroke (ischemic or hemorrhagic), hypoxic effect on the brain, GBS and cortical blindness.^{5,6}

Our patient presented within six (6) hours of bite with difficulty in swallowing secretions, ptosis, altered sensorium, unconsciousness followed by right side hemiparesis.

After extensive search there is only few reports (in adults) available about snake bite showing features of encephalopathy, brain haemorrhage, cerebral hypoxia, brainstem involvement.^{5,6} No reports in children about neurotoxic snake bite involving brainstem were found.

Gunchan Pal *et al* described two cases from India developing ischemic stroke.⁷ Another case report from India also showed leukoencephalopathy following snake bite.⁸ There also few case report of cerebral infraction following viper bite.⁹ But our extensive search fail to find any other case report of medullary infraction following neurotoxic snake bite.

MRI with diffusion and perfusion imaging provides information regarding brain lesions include vasogenic oedema, cytotoxic oedema, infarction, haemorrhage and demyelination.¹⁰

MRI Brain of our patient also show Infarction in brainstem involving mainly medulla. Direct effects of venom can be a cause for ischemic stroke (medullary infarction) in this child.

Key message

Stroke may be one of the rare presentation of neurotoxic snake bite. Each case of snake bite with altered sensorium, unconscious, weakness, other neurological symptoms imaging study should be done.

CONCLUSION

Though it is rare and unusual manifestation of snake bite, in spite of definite history of snake bitten presence of sudden onset of neurological symptoms (weaknesses, ptosis, altered sensorium etc.) neurotoxic snakebite should be kept in mind. Imaging study should be done in all case of snake bite presented with altered sensorium unconsciousness, hemiparesis and slow improvement of symptom by AVS. So more case can be diagnosed and early intervention can be done before irreversible hypoxic damage and that can result in better outcome.

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