Cobra envenomation in an elderly female mimicking brain death- A case report

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ABSTRACT

Snake bite envenomation is one of the most toxicology-related cause that can mimic brain death. This is a case report of 73-year-old elderly female, a hypertensive on treatment, who presented with chief complaints of cobra snake bite on the dorsum of right hand. On admission, patient had dyspnea, bilateral ptosis and ophthalmoplegia. In the next 10–15 min, her symptoms got worsened for which she was administered intravenous doses of atropine (2 mg), neostigmine (0.5 mg) and anti-snake venom. She developed respiratory arrest, hence was intubated and was started on mechanical ventilation. On assessment following 12 h post admission, the patient had Glasgow Coma Scale (GCS)-E1V1M1, with pupils bilateral 2.5 mm sluggishly reacting to light. After 36 h post admission, patient began to show signs of recovery. She began to blink her eyes, follow objects and attempted to move her limbs on command. On day 3, Patient was weaned off from the ventilator, extubated two days later and discharged home on Day 7. This case report highlights a unique presentation of cobra bite induced neuromuscular syndrome mimicking brain death in an elderly patient. Furthermore, the life-threatening presentation of cobra envenomation mandates the use of higher doses of Polyvalent snake antivenom (PSA) to reverse the neuromuscular toxicity. We should consider the role of anticholinesterase as an adjunctive therapy to PSA in severe cobra envenomation.

Keywords: Brainstem reflexes, intubation, mechanical ventilator, snake venom

Introduction

This is a special case of an elderly female patient who met with Cobra snake bite on the dorsum of hand [Figure 1] presenting with clinical features mimicking brain death. She showed signs of recovery after 36 h post hospital admission.

Patient and Observation

Patient information

A 73-year-old elderly female, who is a known case of hypertension on treatment, presented with chief complaints of snake bite on dorsum of right hand, around 1 h back, while working in her courtyard. She had complaints of breathlessness for 5 min. Patient and bystanders spotted the snake as cobra by its characteristic spectacle mark, killed and brought to the facility and the identity was confirmed by the primary care physician.

Clinical findings and diagnostic assessment

On examination, the patient was conscious well oriented in time, place and person, heart rate was regular with 100 beats per minute with blood pressure of 200 mm of Hg systolic and 110 mm of Hg diastolic, bilateral ptosis was present, eye movement restricted in all direction with Pupils Equal Round Reactive to Light and Accommodation (PERRLA), no focal neurological deficit, plantar bilateral flexor response. There was no neck stiffness. Chest was clear, air entry bilaterally equal with no adventitious sounds heard. Patient developed altered sensorium following the transient respiratory arrest before intubation and ventilation. On...
reassessment at 12 h post admission, she had Glasgow Coma Scale (GCS)-E1V1M1 and in view of low GCS score, neurology consultation was done. Neurological examination showed E1V1M1, pupils bilateral 2.5 mm sluggishly reacting to light, absent doll's eye movement, spontaneous respiration absent, Cold caloric test was negative and there was no response to tracheal suctioning. In short, patient had absence of all brainstem reflexes except the pupillary light reflexes. Computed tomography brain [Figure 2] done was normal. Electroencephalography showed excess beta fast activity. The laboratory blood and urine investigations were performed [Table 1].

**Therapeutic intervention**

In the next 10–15 min, the patient developed worsening of breathlessness for which she was treated with intravenous doses of atropine (2 mg), neostigmine (0.5 mg), anti-snake venom. She developed respiratory arrest, was intubated and started on mechanical ventilation. She was administered intravenous dose of piperacillin plus tazobactam (4.5 g 8th hourly) in view of cellulitis [Figure 3] at the site of snake bite. Cellulitis is an acute inflammatory condition of the dermis and subcutaneous tissue usually found complicating a wound following snake bite. In view of high blood pressure, patient was started on intravenous Nitroglycerine infusion (150 mcg/min). Cardiology consultation was done in view of high blood pressure, opined possibly due to autonomic instability secondary to neurotoxicity. Patient was treated with intravenous injection of metoprolol (5 mg) stat for two doses followed by oral tablet metoprolol (50 mg thrice daily). Patient developed hypotension following beta blocker administration which was treated with intravenous fluids and noradrenaline (0.1 mcg/kg/min). Echocardiography showed good left ventricular systolic function, no regional wall motion abnormality (RWMA) and left ventricular ejection fraction (LVEF) was 60%. Patient was continued on mechanical ventilator; a total of anti-snake venom 30 vials were given over 48 h. However, the patient continued to be in the same condition for the next 36 h. Apnea test was deferred due to presence of sluggish pupillary light reflex which indicated some preservation of brainstem function.

**Follow up and outcomes**

After 36 h post admission, the patient began to show signs of recovery. She started blinking her eyes, follow objects and attempted to move her limbs on command. Patient was weaned off from the ventilator, extubated two days later and discharged home on seventh day of admission. At the time of discharge, the patient was conscious oriented, no ptosis, Extraocular movements full, no focal neurological deficit, plantar bilateral flexor, no neck stiffness. The patient came for follow-up a week after discharge and was in good health.

**Discussion**

We present a case report of an elderly hypertensive patient who developed neuroparalytic syndrome following Indian cobra envenomation. The purpose of this report is to demonstrate the clinical trajectory and suggest the importance of judicious management patients with cobra bite. ALfaifi MS et al. from Saudi Arabia published similar case report of 57-year-old woman with diagnosis of neurotoxic paralytic syndrome with presentation as breathlessness, however, secondary to Arabian cobra bite envenomation (brainstem reflex was absent and GCS score of 3.11) Patient showed full neurological recovery after administration of Polyspecific Snake Antivenom (PSA) and anticholinesterases. John et al.[8] published a case report of 6-year-old girl with swelling of the left forearm and hand, flaccid quadriaparesis, internal and external ophthalmoplegia and was in respiratory failure with diagnosis of snake (unidentified) bite with severe envenomation and she was given anti snake venom therapy. About 36 h after ventilation, she showed improvement in finger movement and muscle power weaned off ventilator and extubated after 5 days. A case report by Dayal M. et al.[9] mentioned about snake (unidentified) bite in a 10-year-old comatose child with bilateral fixed dilated pupils and absent doll’s eye movement that was interpreted as brain death. There are few cases report of brain death like manifestation following
krait bite and sea snake bite. Feng Li et al. mentioned about 69-year-old man with deep coma presented after sea snake bite who recovered (off ventilator on day 20). A few similar case reports also mention of neuroparalytic brain death-like syndrome manifestation of krait envenomation.

Our case report emphasizes the need to consider the neuroparalytic syndrome-like manifestation of cobra bite envenomation by the primary care physician. This case report is limited by the fact that we did not perform full brain stem function tests (apnea test was not done). Furthermore, we did not measure the blood level for snake venom due lack of facility in our hospital.

**Key Messages**

We report the unique presentation of cobra snakebite in an elderly female masquerading as brain death. Primary care physicians and intensivists should consider the neuroparalytic manifestation of cobra bite envenomation as a differential diagnosis before the withdrawal of ventilatory support. As primary care physicians are the first point of patient contact, they must be aware of such presentation and should not be overzealous in declaring brain death. Nevertheless, an early diagnosis is vital for the management of cobra bite envenomation along with the administration of anti-snake venom and anticholinesterases.

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### Table 1: Laboratory results

| Parameter                        | Value            | Parameter                        | Value            |
|----------------------------------|------------------|----------------------------------|------------------|
| Total leucocyte count            | 21,900 cells/mm³ | Serum creatinine phosphokinase   | 220 IU/L         |
| Polymorphonuclear neutrophils (PMN) | 93%            | Serum bilirubin                  | Total- 1.8 g/dL. |
| Lymphocytes                      | 4%               | Serum alkaline phosphatase       | 2.9 mg/dL.      |
| Monocytes                        | 2%               | Total protein                    | 6.4 g/dL.       |
| Erythrocyte sedimentation rate (ESR) | 6 mm/hr         | SGOT (serum glutamic oxaloacetic transaminase) | 88 IU/L. |
| Platelet count                   | 77,000 cells/mm³ | SGPT (serum glutamic pyruvic transaminase) | 191 IU/L. |
| Alkaline phosphatase (ALP)       | 95 IU/L          | Serum creatinine                 | 1.7 mg/dL.      |
| Blood urea nitrogen (BUN)        | 43 mg/dL         | Fasting blood sugar (FBS)        | 90 mg/dL.       |
| Serum calcium                    | 7.8 mg/dL        | Serum Na+                        | 135 meq/L.      |
| Serum magnesium                  | 1.3 mg/dL        | Serum K+                         | 4.9 meq/L.      |
| Serum thyroid-stimulating hormone (TSH) | 4.87 mIU/L | | |
| Urine routine examination        |                  |                                  |                  |
|                                  | Pus cells, Red blood cells -10 to 12 cells/mm³, Granular cast positive | |

**Consent**

Written informed consent was obtained from the patient for publication of this case report.

**Declaration of patient consent**

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

**Financial support and sponsorship**

Nil.

**Conflicts of interest**

There are no conflicts of interest.
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