

Bilateral parotid swelling in viper bite: further evidence for a poor prognosis

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DESCRIPTION

A male patient in his 40s was admitted to our facility 8 hours following a Russel's viper (*Daboia russelii*) bite over the dorsum of the left foot. He was referred to our hospital from a primary health-care centre after receiving 10 vials of antivenom (ASV). On admission, he complained of progressive local swelling which had crossed the proximal ankle and knee joint. A 20 min whole blood clotting test done at bedside was positive. Based on these findings, another 20 vials of ASV were given. Basic blood parameters on admission revealed neutrophilic leucocytosis (total leucocyte count of $22.6 \times 10^9/L$; neutrophil 78%, lymphocyte 19%), slightly raised urea (15.7 mmol/L, reference range 2.1–8.5), creatinine (133 $\mu\text{mol/L}$, reference range 59–104), a deranged prothrombin time (17 s, reference range 11.0–13.5) and activated partial thromboplastin time (45 s, reference range 30–40). Intravenous antibiotics (meropenem 1 g three times a day and metronidazole 500 mg three times a day) were started.

On the second day of admission, he developed bilateral painful parotid swelling and subconjunctival haemorrhage (figure 1) Ultrasonography of the parotids confirmed enlargement. The other salivary glands were normal on examination. On enquiry, the patient confirmed that there was no such swelling in the past. From day 3, the patient had developed haematuria, oliguria and rising urea/creatinine levels. Haemodialysis was initiated for oliguric acute kidney injury (AKI). There was further derangement of his coagulation profile, for which 8 units of fresh frozen plasma was administered. However, in spite of our best efforts, the patient

died on day 4 of admission secondary to sepsis, AKI and disseminated intravascular coagulation.

Snakebite remains one of the most neglected tropical ailments in the low-income countries. The common venomous snake species found in India include spectacled cobra (*Naja naja*), common krait (*Bungarus caeruleus*), Russell's viper (*Daboia russelii*) and saw-scaled viper (*Echis carinatus*).¹ ASV available in India is polyvalent in nature (it is effective against all the four common venomous snake species, namely, Russell's viper, common cobra, common krait and saw-scaled viper).² ASV should only be given by intravenous route, with the physician at the bedside for the first few minutes of infusion to look for any reaction. Each vial of ASV should to be dissolved in 10 mL of distilled water and added to an infusion medium (normal saline) to run over 30 min. Epinephrine should always be kept in hands before administration of ASV. Total required dose in case of venomous bite will be 10–25 vials (each vial neutralises about 6 mg of Russell's viper venom). Russell's viper bite is usually associated with painful local swelling and haemostatic abnormalities.³ A significant proportion of the patients develop acute renal failure, hypopituitarism, cardiovascular complications such as myocardial infarction and ventricular tachycardia, and neurological manifestations such as cerebrovascular accident.^{3,4}

Capillary leak syndrome (CLS) is an under-recognised complication following Russell's viper envenomation; it is clinically characterised by conjunctival chemosis, parotid swelling, hypoalbuminaemia, haemoconcentration and hypotension.⁵ The main mechanism of CLS in viper bite is generalised systemic vascular endothelial damage by some of the protein components of the viper venom; another proposed mechanism is cytokine activation by venom. CLS may develop even after adequate doses of ASV administration, and it has a very high mortality rate (more than 50%).

Development of parotid gland swelling is an exceedingly rare clinical sign of viper bite.^{4,6,7} There are very few reports in the literature citing bilateral parotid swelling as a presenting feature of snake bite. The exact mechanism remains ambiguous, but it can be attributed to CLS as described previously. Parotid swelling has been linked with poor prognostic outcome as seen in our case.⁴

We seek to highlight bilateral parotid swelling as a rare and poor prognostic sign in viper snake bite. However, more research is needed to delineate the pathophysiology and to establish this as a prognostic indicator of viper bite.



Figure 1 Bilateral parotid swelling on the second day of admission following Russel's viper (*Daboia russelii*) bite.



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Learning points

- ▶ Bilateral parotid swelling is considered as a rare and poor prognostic sign in viper snake bite.
- ▶ It is imperative that both clinicians and nursing staff are well acquainted with this entity to detect it at an earlier stage in view of its prognostic importance.
- ▶ In low-income countries such as India, where snake bite remains an important public health hazard with high morbidity and mortality, a clinician must be vigilant in identifying these signs to initiate aggressive treatment and resuscitation efforts immediately.

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

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