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REPEAT ANTI SNAKE VENOM AS INFUSION TO CORRECT COAGULOPATHY

Paediatrics

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ABSTRACT

Snakebite is an important cause of accidental death in India. Hemostatic abnormalities are indicative of viperine bite. Indian national guidelines suggest use of maximum 30 vials of Indian Polyvalent antiserum for hemotoxic envenomation and 20 vials for neurotoxic envenomation. Half-life of Indian ASV is 90 hours, so, it is not given prophylactically to prevent re- envenomation. If coagulation abnormality persists after giving maximum ASV, fresh frozen plasma can be considered. Here, we report a 4 Year old male child bitten by a Russel's Viper, where repeat ASV had to be given as a 24- hour infusion to correct the coagulopathy.

KEYWORDS:

Snake bite, Prolonged envenomation, Deranged coagulation profile, 24 Hour - ASV Infusion

INTRODUCTION

Snakebite is an important cause of accidental death in India. About 2, 00,000 snake bites are reported in India. Of these, 50,000 result in deaths.[1,2] Children are given the same dose of ASV as adults because the amount of venom injected by the snake is the same in both.[3] A small child is more vulnerable to a given volume of venom than a grown up individual because of smaller body surface area.[4] Haemostatic abnormalities are indicative of viperine bite.[3] Indian national guidelines suggest use of maximum 30 vials of Indian Polyvalent antiserum for hemotoxic envenomation and 20 vials for neurotoxic envenomation.[4] Half-life of Indian antisnake venom(ASV)is 90 hours, so, it is not given prophylactically to prevent re- envenomation.[3] If coagulation abnormality persists after giving maximum ASV, fresh frozen plasma can be considered.[3] Here, we report a case where repeat ASV had to be given as a 24- hour infusion to correct the coagulopathy.

CASE

A 4 Year old male child was bitten by a snake, identified as Russel's Viper, on the dorsal aspect of big toe of left foot, while playing outside his house. The child was brought to hospital within an hour of the bite. On examination, child was active, alert, weighing 15kg, with temperature of 98.6F, heart rate 120/min, blood pressure 90/62 mmHg, respiratory rate 38/min. Two fang marks were seen over the dorsal aspect of left big toe with swelling over site of bite, crossing the ankle joint. Site of the bite was black in colour (Fig 1). A single, tender inguinal lymph node was palpable, 0.5cm x 0.5cm in size on the left side. Other systems were clinically normal.

Initial investigations showedWhole blood clotting time(WBCT) >20 mins, TC -19,400; PT > 169, APTT > 249, INR – very high; Serum Creatinine – 0.4, Serum Urea – 29 mg/dl, Serum sodium – 137mEq/L, Serum potassium -4mEq/L, Serum chloride - 102.5mEq/l, Serum Calcium – 8.6mEq/L. Child was treated with 30 vials of Anti Snake Venom. Fresh Frozen Plasma was transfused on day 2. In view of persistently high Whole Blood Clotting Time, PT and APTT; additional 5 vials of ASV was given.

On day 4, local swelling started decreasing in size. As coagulation profile was still deranged, FFP was transfused on daily basis for the next 5 days and vitamin K was given. Child had no clinical signs of bleeding, was haemodynamically stable, but coagulation profile was still deranged- prolonged WBCT, PT and APTT. Child had received a total of 35 vials of Indian polyvalent ASV and 7 units of FFP transfusions. On 10th day, 4 vials of ASV were given as an infusion over 24 hours, following which PT was 15.2, APTT 28.8 and INR 1.7. Child was observed for the next 2 days, when PT was 11, APTT 29 and INR 1 and was discharged. 1 week after discharge, child was reviewed with PT, APTT values, which were again normal.

DISCUSSION

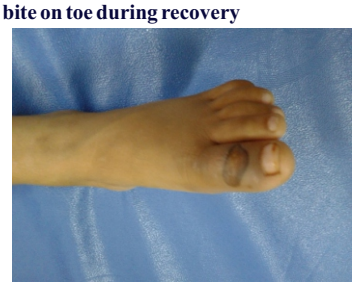
ASV is the mainstay of treatment for snake bite envenomation.[3] ASV can bind to venom molecule and neutralize it, when it is not bound, circulating in blood or lymph; not when it has already bound to the local tissue. Replacement of clotting factors by the liver helps to reverse coagulopathy. ASV cannot prevent local necrosis or swelling as the damage is done too quickly and venom is in the tissue, unreachable by ASV.[6]

In patients with viperine bites, after an initial response to ASV, signs of systemic envenomation may recur within 24-48 hrs, because of (1) continuous absorption of venom from the main site of bite, which is helped by improved blood supply (2) venom getting redistributed from the tissues into the vascular spaces because of treatment with ASV.[5] In hump nosed pit viper (Hypnale hypnale) envenomation, poisoning can take upto 3 weeks to resolve and ASV is ineffective against it.[3] Hypnale hypnale is found in western ghats of Kerala and Karnataka. However, this was not the case in our patient.

The total dose of ASV given to the patient can be reduced, if it is given as a continuous infusion, as compared to giving intermittent bolus dose, which is the current method being followed.[7] In viper bite with locally progressive damage, hemotoxic envenomation has to be considered if it continues to have WBCT >20 mins and prolonged PT, APTT even after administering maximum dose ASV and repeated FFP. In such cases, 24- hour ASV infusion may be beneficial. 24- hour ASV infusion helps to reduce the recurrence of coagulation dysfunction.[7]

The purpose of reporting this is to spread awareness regarding 24- hour repeat ASV infusion in cases where coagulation profile remains deranged despite maximum dose of ASV and repeated FFP administration.

Fig 1: Snake bite on toe during recovery



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