Open Journal of
Clinical & Medical
Case Reports

Volume 7 (2021)
Issue 04

ISSN: 2379-1039

Anti-snake venom induced anaphylaxis reaction

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Abstract

In India, anti-snake venom reactions can be seen in 5.6 to 56% of recipients and 10-15% of reactions were moderate to severe. The deaths due to ASV reactions are mistakenly attributed to envenomation. This report presents a case of severe anaphylaxis reaction to anti snake venom. There is an emergency to improve the design, quality, and quantity of anti-snake venoms production in the interests to reduce morbidity and mortality associated with ASV reaction.

Keywords

Anti snake venom; ASV; anaphylaxis; adrenaline; adverse drug reaction.

Introduction

Anti-snake venom is the essential treatment for snakebite envenomation even though it is associated with extensive adverse reactions. It can cause both acute (pyrogenic and/or anaphylactic) and delayed (serum sickness) [1].

Anaphylaxis is an acute systemic allergic reaction which includes one or more organ system, resulting from the sudden release of chemical mediators by mast cells and basophils that may occur due to the exposure of anaphylactic trigger i.e., drug, food or Hymenoptera sting and it can be life threatening which requires special care and should be monitored closely [2,3].

Anaphylaxis reaction usually affects the cardiovascular, cutaneous, respiratory, and gastrointestinal systems. 80-90% of cases involve skin or mucous membranes. A majority of the patients begins to itch and develops urticaria, dry cough, fever, nausea, vomiting, abdominal colic, tachycardia, erythema, pruritus, or angioedema [4].

Case Presentation

A 30 year old female patient was admitted to hospital with alleged history of snake bite to right little toe at her agricultural field with complaint of pain and itching at the site of bite and she had a progressive swelling of the foot (Figure 1). She had no history of any bleeding manifestation, drooping of eyelid, difficulty in breathing, giddiness and headache. On examination her pulse rate was 80bpm, blood pressure was 100/60 mmHg and respiratory rate of 18cpm and in systemic evaluation she was conscious and oriented, pupils equally reactive to light.

The investigations were as follows: Neutrophils 87% and other hemogram was normal, Prothrombin Time (PT) 25.7 seconds, INR 1.7 and Activated Partial Thromboplastin Time (APTT) 52 seconds, bleeding time/clotting time, random blood sugar, platelets count, liver function test, kidney function test with serum electrolytes were found to be normal.

Patient was diagnosed with snake envenomation due to Rattlesnake (belongs to Viperidae family) and had complaints of one episode of vomiting. She was initially treated with inj. TT 0.5ml stat, inj. Hydrocortisone, inj. Augmentin 1.2g, inj. Ondansetron Tab. Tramodol+acetaminophen. And next day, she was treated with ASV polyvalent lyophilized serum injection manufactured by Bharat Serums and Vaccines Limited (ambernath, India), which neutralizes the subsequent venomes (Common krait, *Bungarus caeruleus;* Cobra, *Naja naja;* Saw-scaled viper, *Echis carinatus* ; Russell's viper, *Vipera russell*). 10 vials of ASV were administered in 500ml Dextrose (5%) at over 45 mins and monitored for every 10 mins. After 25 mins of administration of ASV it was stopped because she developed itching all over the body, restarted after 25 mins and second dose of hydrocortisone 100mg was given. And the same scenario was observed after 25 mins, ASV was stopped and restarted after 15 mins. She was developed hypotension soon after 15 mins of second re-administration of ASV. exactly After 2 hours of ASV, she was developed severe Anaphylaxis reactions (hypotension- 80/50 mmHg, Heart rate- 51bpm, headache) and ASV was stopped and adrenaline 0.5cc injection was given through IM after 10 mins 0.5cc adrenaline was given through SC, and then her blood pressure was increased to 170/110mmHg and heart rate was 76bpm. Only 75% of ASV has been transfused. The coagulation abnormality was corrected as observed by a repeat 20WBCT done at 6 hours.

Discussion

According to "Trends in snakebite deaths in India from 2000 to 2019 in a nationally representative mortality study" In India it has been estimated that 1.2 million deaths (average 58,000/year) due to snake bite from past two decades [5]. Antivenom should be given by considering risk benefit ratio. It is recommended when a patient develops one or more of the following manifestations.

- **Haemostatic abnormalities**: Spontaneous systemic bleeding, coagulopathy
- **Neurotoxic signs:** Ptosis, external ophthalmoplegia, paralysis
- **Cardiovascular abnormalities:** Hypotension, shock, cardiac arrhythmia, abnormal ECG

- **Acute kidney injury**: Anuria/oliguria/, increasing blood urea/creatinine

- **Haemoglobinuria/myoglobinuria**: Dark brown urine, intravascular haemolysis or generalized rhabdomyolysis

- **Local swelling** Including more than half of the bitten limb within 48 hr of the bite Swelling after bites on the digits (toes and especially fingers) and enlarged tender lymph node draining the bitten limb.[6]

As per the recommendation of ASV the patient had fang mark, prolonged coagulopathy, local swelling, pain and itching at the site of snake bite.

Antivenom reactions: A wide proportion of patients develop reactions, either early (within a few hours) or late (5 days or more) after being given anti-snake venom. In India, these antivenoms cause reactions in 5.6 to 56% of recipients, 10-15% of which are moderate to severe.[6] This patient has developed early anaphylactic reactions include itching, hypotension, headache, vomiting and decreased heart rate. Similar result was found in the study 'Anti-snake venom: use and adverse reaction in a snake bite study clinic in Bangladesh' by MR Amin et al. [7].

Figure 1: Showing the patient had swollen foot.

Management of ASV reactions: Initially the patient treated with hydrocortisone 100mg for itching. For severe Anaphylaxis reactions (hypotension and bradycardia) ASV was stopped and adrenaline 0.5cc injection was administered through IM after 10 mins 0.5cc adrenaline was administered through SC. This patient received appropriate treatment as recommended in the WHO Guidelines for the management of snake-bites [6].

Conclusion

we reported this case because clinicians must be aware of these ADRs to prevent and monitor fatal anaphylaxis reactions caused by ASV. As a duty of clinical pharmacist, we identified the adverse drug reaction of ASV and immediately reported to doctor and then patient was monitored closely. Patient was provided with Alert Card by the department of pharmacy practice to avoid similar situation in future.

Acknowledgements

Authors are thankful to the Principal, SAC College of Pharmacy, Adi Chunchanagiri University, B. G. Nagara and Adichunchanagiri Hospital and Research Centre, B. G. Nagara for their support and encouragement.

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Manuscript Information: Received: January 28, 2021; Accepted: April 19, 2021; Published: April 30, 2021

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Citation: Sathish kumar BP, Apoorva S, Tanushree BM, Praveen P. Anti-snake venom induced anaphylaxis reaction. Open J Clin Med Case Rep. 2021; 1742.