



STUDY OF CLINICAL PROFILE OF SNAKE BITE IN CHILDREN BELOW 12 YEARS OF AGE IN RURAL AREA.

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ABSTRACT

Among the 25 children studied, 14 (56%) were males and 11(44%) were females. The most commonly affected age group was >10years (40%), followed by 1-5 years (32%), 6-10 years (28%), and least affected group was infant aged less than 1 year (0%). The foot was the most common site of bite (56%), followed by the hand (36%) and other sites (23%). Local manifestations included pain, swelling at the bite site in 18 patients (72%) and Bleeding in 5 patients (20%). Generalized symptoms such as Gastrointestinal symptoms (Nausea, Vomiting) Were observed in 3 patients (12%), while blurred vision, Dizziness and difficulty in breathing was noted in 2 patients (8%). Most common systemic Sign was Prolonged clotting time seen in 18 patients (72%) followed by local pain and swelling in 15 patients (60 %) and lymphadenopathy in 3 patients (12%), absent gag reflex/respiratory distress in 2 patient (8%). Asymptomatic presentations was seen in 6 patients (24%). Laboratory investigations revealed WBCT >20 minutes in 18 patients (72%), leukocytosis in 15 patients (60%) and raised PT INR in 10 patients (40%). Electrocardiography and chest radiography were normal in all patients. All children received anti-snake venom (100%), Injection atropine & neostigmine was administered to 2 patients (8%) and Inj. vitamin K was given to 4 patients (16%). Complications such as cellulitis were observed in 8 patients (32%) and respiratory failure was observed in 2 patients (8%). There was no morbidity or mortality.

KEYWORDS : Snake Bite, Anti-Snake Venom, Atropine, Neostigmine

INTRODUCTION

Snake envenomation remains a major public health problem in tropical and subtropical countries, particularly in rural parts of India. Children are especially vulnerable due to their lower body mass and outdoor activities, which predispose them to a higher risk of systemic toxicity and rapid deterioration. Snake bite is an important cause of morbidity and mortality in children, Early recognition and timely management with antivenom and supportive care are critical in reducing mortality and long-term complications.

Epidemiology and Important Species

The "Big Four" venomous snakes of medical importance in India are:

1. Indian cobra – neurotoxic effects
2. Common krait – neurotoxic effect
3. Russell's viper – hemotoxic effect
4. Saw-scaled viper – hemotoxic effect

Bites are common in peri-domestic and agricultural settings, with higher incidence during monsoon and harvest seasons when human-snake contact increases.

Venom and Pathophysiology

Snake venom is a complex mixture of proteins, enzymes, and toxins with diverse effects depending on the species:

- Ø Neurotoxic venom (cobra, krait): blocks neuromuscular transmission leading to ptosis, ophthalmoplegia, respiratory muscle paralysis, and respiratory failure.
- Ø Hemotoxic venom (Russell's viper, saw-scaled viper): damages vascular endothelium and coagulation pathways, causing disseminated intravascular coagulation, spontaneous bleeding, hematuria, and acute kidney injury.

- Ø Cytotoxic venom: causes severe local tissue necrosis, cellulitis, abscess, and possible limb gangrene.

Aims and Objectives

Aim:

To study the clinical profile and outcomes of snake bite envenomation in children below 12 years of age in rural areas.

Objectives:

1. To describe the demographic and clinical presentation of pediatric snake bite cases.
2. To evaluate complications, management strategies and treatment outcomes.

MATERIAL AND METHODS

Study Design and Setting

This was a prospective observational study of children presenting with Snake bite. The study period was from February 2025 to December2025.

Study population

All 25 children aged 0–12 years who presented to the Emergency Department With a history of snake bite during the study period were considered for Inclusion.

Inclusion Criteria

- History of snake bite and clinical presentation consistent with snake envenomation.
- Age between 0-12 years.

Exclusion Criteria

- Scorpion sting
- Unknown bite
- Any other bite (centipede bite, honey bee sting)
- Children with age > 12 years

Data Collection

For each patient we collected demographic and clinical data using a standardized case-record form:

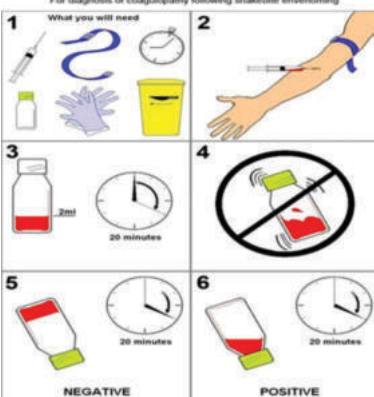
Demographics: age, sex, residence (rural).

Circumstances: date and time of bite, place (indoor/outdoor), site of bite, type of activity at time of bite, time elapsed from bite to hospital presentation.

Clinical Presentation:

- Local signs: pain, swelling, bleeding, cellulitis.
- Systemic features: vomiting, abdominal pain, dizziness, ptosis, difficulty in swallowing, respiratory distress.
- Neurological findings: cranial nerve palsy, paralysis, seizures, altered sensorium.
- Hematological findings: spontaneous bleeding, prolonged clotting time, gum bleeding.
- Vital signs and initial investigations on admission: heart rate, blood pressure, respiratory rate, SpO₂, capillary refill, ECG, chest X-ray, complete blood count, coagulation profile (clotting time, PT/INR, aPTT), serum electrolytes, renal function tests, liver function tests, urine analysis, and 20-minute whole blood clotting test (20WBCT).

20 Minute Whole Blood Clotting Test



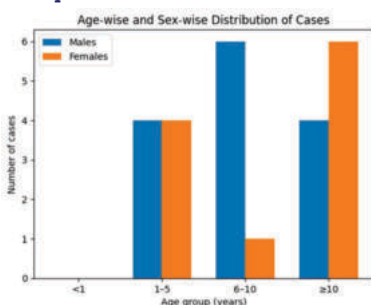
Management Details:

- Analgesia, tetanus prophylaxis.
- Anti-snake venom (ASV): indication, timing, route, dose, number of vials.
- Supportive care: IV fluids, blood transfusion, fresh frozen plasma/platelets, mechanical ventilation.

Outcomes:

- Duration of hospital stay.
- Need for ICU admission.
- Duration of ventilation.
- Complications: acute kidney injury, disseminated intravascular coagulation (DIC), sepsis, shock, gangrene, need for surgical intervention.
- Mortality

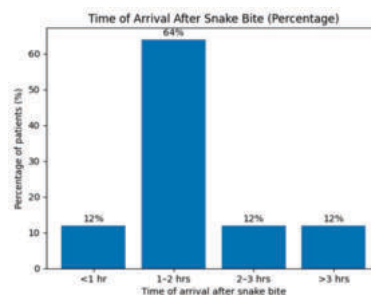
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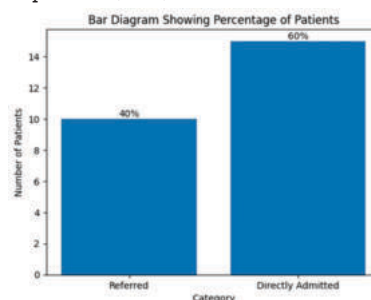
Observation and Discussion

The bar graph depicts the age-wise distribution of children with snake bite according to gender among a total of 25

patients. The highest proportion of cases was observed in the > 10 year age group, comprising 10 children (40%), of which 4 were males and 6 were females. This was followed by the 1-5 year age group with 8 children (32%), including 4 males and 4 females. The 6-10 year age group accounted for 7 cases (28%), predominantly males (6 males and 1 females). The least affected group was infants aged less than 1 year, with no cases (0%).

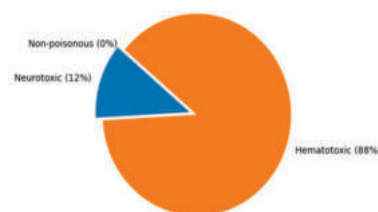


The majority of patients presented within 1–2 hours after snake bite (16/25; 64%). An equal proportion of patients presented within less than 1 hour and between 2–3 hours (3/25 each; 12%). Delayed presentation beyond 3 hours was observed in 3 patients (12%).

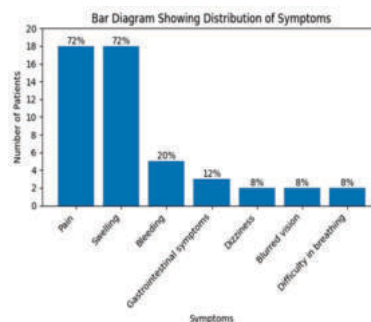


Out of a total of 25 patients, 15 patients (60%) were directly admitted without referral, while 10 patients (40%) were referred from other centers.

Pie Diagram Showing Distribution of Snakebite Types

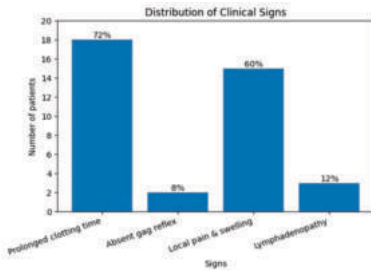


Out of a total of 25 snakebite patients, the majority were bitten by hematotoxic snakes, accounting for 22 cases (88%). Neurotoxic snakebites were comparatively less common, with 3 cases (12%). No non-poisonous snakebite cases were reported.

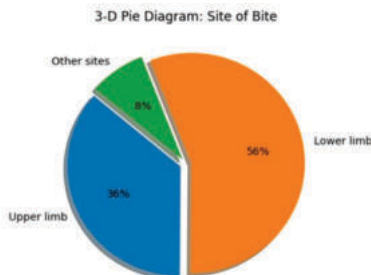


Among the 25 patients, the most common symptom was local pain and swelling at the bite site, observed in 18 patients (72%). Bleeding was noted in 5 patients (20%). A small proportion of children were asymptomatic (6; 24%). Systemic

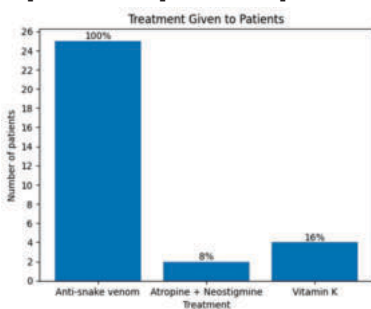
symptoms were uncommon, with blurred vision and dizziness seen in patients (8%) and gastrointestinal symptoms (nausea/vomiting/diarrhea) in 3 patients (12%). Overall, local manifestations predominated over systemic symptoms.



Among the 25 patients, clinical sign was local redness, swelling, or tenderness at the bite site, observed in 15 patients (60%). Prolonged clotting time was the most common systemic sign, present in 18 patients (72%). Lymphadenopathy was observed in 3 patients (12%). Breathlessness/respiratory distress and absent gag reflex were rare findings present in 2 patients (8%). Overall, local inflammatory signs and hematological involvement predominated, with severe systemic manifestations being uncommon.

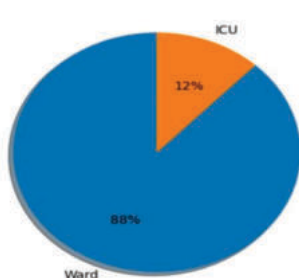


The foot was the most common site of snake bite, accounting for 14 cases (56%). This was followed by the hand in 9 patients (36%). Other sites of bite were observed in 2 patients (8%). Overall, bites predominantly involved exposed extremities.

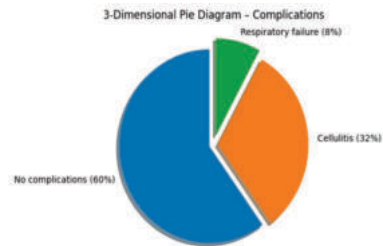


All 25 patients (100%) received anti-snake venom as part of the initial management. Inj. Vitamin K was given to 4 patients (16%). Inj. Atropine and inj. neostigmine was administered to 2 patients (8%), indicating its use in the majority of cases for autonomic and neurological symptom control. Overall, anti-snake venom formed the cornerstone of therapy, with inj. atropine and inj. neostigmine used as an important adjunct in selected patients.

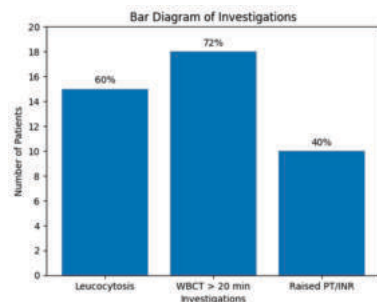
3D Pie Chart: Patient Distribution



Out of 25 patients, the majority were admitted to the general pediatric ward (22 patients; 88%). Only 3 patients (12%) required admission to the intensive care unit (ICU) and 2 patients required ventilator support. This indicates that most cases were managed successfully in the ward, with a smaller proportion necessitating intensive monitoring and care.



Complications were observed in a small proportion of patients. Cellulitis occurred in 8 out of 25 patients (32%). Respiratory failure was seen in 2 patients (8%) for which ventilator support was required. Overall, serious complications were uncommon in this cohort.



On investigation, chest X-ray and electrocardiography were normal in all 25 patients (100%). WBCT > 20 min was observed in 18 patients (72%) and leukocytosis was noted in 15 patients (60%), while raised PT/INR seen in 10 patients (40%). Overall, laboratory abnormalities were common, whereas radiological and ECG findings remained within normal limits.

CONCLUSION

Snake envenomation in the pediatric population predominantly affected males (14 patients; 56%) and children aged > 10 years (10 patients; 40%). Most patients presented early after the bite, with 16 children (64%) reaching the hospital within 1–2 hours.

Clinical manifestations were mainly local, with swelling and pain at the bite site observed in 18 patients each (72%), while systemic involvement was less frequent. Prolonged clotting time was the most common systemic sign, seen in 18 patients (72%). Other findings, such as lymphadenopathy and absence of the gag reflex, were comparatively less frequent.

On investigation, prolonged WBCT was the most common abnormal finding, observed in 18 patients (72%). Electrocardiography and chest radiography were normal in all patients.

Serious complications were uncommon. Cellulitis occurred in 8 patients (32%), and respiratory failure was observed in 2 patients (8%).

All 25 patients (100%) received anti-snake venom (ASV). Injection atropine and injection neostigmine were administered to 2 patients (8%), while injection vitamin K was given to 4 patients (16%).

The majority of children (22 patients; 88%) were successfully managed in the general pediatric ward. Three patients (12%) required intensive care unit admission, and 2 patients (8%) required ventilatory support.

Overall, early presentation and prompt protocol-based management were associated with favorable outcomes and low complication rates, emphasizing the importance of early recognition and timely treatment of pediatric snake envenomation in endemic regions.

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