

A study of clinical profile of vasculotoxic snake bite

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Abstract

Snake bite is one of the major causes of hospitalization of patients in all over India. We have nonpoisonous and poisonous snake bites. Commonly encountered poisonous bite snakes are Cobra, Russell's viper, Saw Scaled Viper, and Krait. It is a fact that it causes of heavy morbidity and mortality.

Aims: To study the Clinical Profile of Vasculotoxic Snake Bite

Materials and Methods: This is retrospective study conducted between May 2021 to May 2022 at a tertiary health care center of South India.

Result: A total of 350 patients were studied in our hospital. Out of 350, 200 patients were of vasculotoxic snake bite and remaining 150 patients were of non-poisonous, mixed poisonous and neuroparalytic snake bite.

Conclusion: Snake bite is a common life-threatening emergency in the study area. Delay in hospitalization is associated with poor prognosis and increased mortality rate due to consumptive coagulopathy, renal failure. Unusual complications like disseminated intravascular coagulation (DIC) were observed in present study.

Keywords: poisonous bite, vasculotoxic bite, acute kidney injury

Introduction

In India, common poisonous snakes are Cobra, Russell's viper, Saw Scaled Viper, and Krait¹. World mortality from snake bite is estimated as 50,000 to 1, 00,000 annually and the greatest number of reported snake bite death occurring in Indian subcontinent is 10,000 to 15,000 annually². World Health Organization (WHO 1963) reports 40,000 annual deaths in tropical countries. Largest numbers of deaths reported in India are from Bengal, Uttar Pradesh, Tamil Nadu, Bihar, and Maharashtra³. It is a fact that in spite of heavy morbidity and mortality, very little attention is paid by the clinicians to this occupational hazard.

Materials and methods

The present descriptive observational study is carried out in medicine wards of tertiary care hospital of, South India during May 2021 to May 2022. A total of 200 cases of vasculotoxic snake bite were admitted in medicine wards during the study period. After obtaining consent, data was collected on pre-designed, pretested, and structured questionnaire by interviewing the study subjects who were hospitalized during the study period. A detailed

information regarding demographic and epidemiological parameters such as age, sex, residence, occupation, site of bite and place of bite, type of snake if identified, etc., was obtained. Time interval to reach the health facility after snake bite and first aid received if any was asked to them. Thorough clinical examination was carried out in each case.

Inclusion criteria

1. Confirmed snake bite.
2. Confirmed vasculotoxicity by 20 minutes whole blood clot time.
3. Admitted and treated at our institute

Exclusion criteria

1. Uncertain snake bite
2. Neuroparalytic bite, dry bite and mixed feature bites
3. Non admitted and other institute treated cases.

Results

Table 1: Age-wise prevalence of poisonous snake bites

Age	Number of cases	Percentage
18-30	40	20
31-50	140	70
51-60	16	08
Above 60	4	02

Table 2: Occupational incidence of snake bites

Occupation	Number of patients	Percentage
Farmer	80	40
Housewives	20	10
Students	18	09
Manual labourers	58	29
Salaried	24	12

Table 3: Sex incidence of snake bites

Gender	Number of cases	Percentage
Male	148	74

Female	52	26
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Table 4: Incidence of snake bite with reference to site of bite

Bite site	Number of patients	Percentage
Upper limb	42	21
Lower limb	152	76
Trunk	5	2.5
Face	1	0.5

Table 5: Relation of time with snake bite

Bite timing	Number of patients	Percentage
Morning	42	21
Afternoon	6	03
Evening	94	47
Night	58	29

Table 6: Seasonal incidence of snake bite

Season	Number of patients	Percentage
Summer	66	33
Spring	104	52
Winter	30	15

Table 7: Incidence of symptomatology in vasculotoxic snake bite

Symptoms	Number of patients	Percentage
Pain on bite site	200	100
Swelling	200	100
Active bleeding	180	90
Vomiting	88	44
Pain abdomen	120	60
Reduced urination	48	24
Back pain	74	37

Table 8: Incidence of signs in vasculotoxic snake bite

Signs	Number of patients	Percentage
Local	200	200

tenderness		
Local edema	200	200
Acute abdomen	58	29
Tachycardia	98	49
Anuria/oliguria	48	24
Hematuria	48	24

Table 9: Incidence of various complications in vasculotoxic snake bite.

Complications	Number of patients	Percentage
Local tissue necrosis	68	34
Acute kidney injury	48	24
Anti-snake venom reaction	178	69
Thrombocytopenia	56	28
Altered coagulation profile	102	51

Table 10: Incidence of management of vasculotoxic snake bite

Management	Number of patients	Percentage
Medical	200	100
Surgical	68	34
Hemodialysis	12	6

Table 11: Incidence of outcome of vasculotoxic snake bite

Outcome	Number of cases	Percentage
Mortality	14	7
Recovery	186	93

Discussion

Age-wise prevalence of poisonous snake bites

In our study 70 percent of cases were in the age group of 31-50 years of age. The probable reason being more time spent in outdoor activities. Our study correlates with the study done by study of Russel *et al.*⁴, where maximum

numbers of cases of snake bite were seen in fourth and fifth decade of age group. Very few cases were seen in above 70 age group.

Occupational incidence of snake bites

The prevalence in farmers was 40 percent, manual labourers 29 percent, salaried individuals 12 percent, housewives 10 percent and students 9 percent. The individuals working in external environmental stuff had more risk of vasculotoxic snake bite. Our study correlates with the study done by Bhat *et al.*⁵, where maximum numbers of cases of snake bite were seen in farmers

Sex incidence of snake bites

In our study 74 percent of cases with snake bite were males while twenty six percent were female. Our study correlates with the study done by Ahuja and Singh⁶, where maximum numbers of cases of snake bite were seen in males.

Incidence of snake bite with reference to site of bite

In our study 76 percent of cases had snake bite on lower limb and 21 percent of cases had bite on upper limb. Snake bite on trunk was seen in 2.5 percent of cases and bite on face seen in 0.5 percent of cases. Lower limb being easy approachable site maximum involvement was seen. Similar findings were seen in study done by Reid⁷ who also mentions that most of the bites in tropical countries are on lower extremities because the victims are bitten by treading on or near the snake, while in non-tropical countries most bites are on fingers and hands because the victim deliberately handles the snake.

Relation of time with snake bite

In our study various timings of snake bite were noted and the results were as follows. Maximum numbers of snake were occurred at evening timing which was 47 percent. In morning time bite was seen in 21 percent cases. Evening time bite was seen in 47 percent and afternoon

timing bite was seen in only 3 percent. These findings suggest snakes prefer cold temperature to roam out. Similar findings were seen in study done by Virmani and Dutt⁸.

Seasonal incidence of snake bite

We had tried to understand the seasonal variation of snake bite cases. In spring season bite was seen in 52 percent and 33 percent of bite seen in summer. The percentage of bite was 15 in winter season. Humid atmosphere appears to be more suitable for the snakes for outing leading to bite. similar findings were seen in study done by Saini et al⁹.

Incidence of symptomatology in vasculotoxic snake bite

Pain on bite site and Swelling on bite site were the most common symptom seen in this patient. Active bite site bleeding was seen in 90 percent of cases. Pain abdomen was seen in 60 percent of cases, and vomiting was seen in 44 percent of cases. back pain was seen in 37 percent, reduced urination was seen in 24 percent of cases. Vasculotoxic effect of snake venom seems to be the reason of all above mentioned symptoms. Back pain, vomiting, pain abdomen and reduced urine can be attributed to acute kidney injury in these cases. Similar findings were seen in study done by study conducted by George Watt et al¹⁰.

Incidence of signs in vasculotoxic snake bite

In our study the commonest sign was local tenderness and swelling. tachycardia was seen in 49 percent of cases and 29 percent of cases had acute abdomen. Anuria cum oliguria and hematuria was seen in 24 percent of cases. Banerjee also noted similar findings in his study¹¹.

Incidence of various complications in vasculotoxic snake bite

The commonest complication seen in these cases were anti snake venom reaction in 69 percent. altered coagulation profile in 51 percent, thrombocytopenia in 28 percent, local tissue necrosis was seen in 34 percent of cases. Saini et al⁹ also reported 8 cases of ARF and 7 cases recovered with conservative treatment. Corkill¹² describes similar things in his study

Incidence of management of vasculotoxic snake bite

In our study all the patients were initially treated with medical management. They all were treated with injection anti snake venom. Surgical management was needed in 34 percent of cases. These were the patient with tissue necrosis and compartment syndrome who were treated with debridement and fasciotomy wherever required. in 64 cases with acute injury only six percent of cases were treated with hemodialysis.

Incidence of outcome of vasculotoxic snake bite

In our study mortality was seen in 7 cases and 186 patients have recovered completely. Mortality was seen in cases with severe acute renal failure. Similar findings were seen in patients with vasculotoxic snake bite in the study done by Kalantari S, et.al¹³. Coagulopathy is a clinically significant issue responsible for bleeding and fatal diseases. Snake venom forms fibrin venom causes unstable fibrin polymer vulnerable to fibrinolysis and phagocytosis by the reticuloendothelial system. As a result, venom leads to different types of coagulopathies, from defibrinating, thrombocytopenia to DIC.

Conclusion

Middle aged, farmers, and males were at more risk of vasculotoxic snake bite. spring season and evening and night time risk of snake bite is higher. The burden of vasculotoxic is high in our country but timely management with anti-snake venom, wound debridement and preciously dealed acute renal failure is lifesaving.

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