

Original article

Study of clinical presentation and outcome of patients with snake bites at tertiary care hospital in rural population

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ABSTRACT:

Background: In a country like India with its predominant rural setup it is not possible to carry out all investigations, hence a practical approach must be adopted based on clinical observations and follow-up. This study was taken up to evaluate the clinical profile and outcome of snake bite victims.

Subjects were interviewed according to the proforma given in annexure in the mother tongue of the patient or the language the patient best understands.

Methodology: All patients of snake bite who were admitted in Dr. Vitthalrao Vikhe Patil PRH Loni were included in the study. Data of study was collected, and detailed history & clinical examination was done.

Results: In present study, Thrombocytopenia 20 (23.8%) was most common complication followed by respiratory paralysis 14 (16.6%), ASV anaphylaxis 13 (15.4%), acute kidney injury 9 (10.7%), Hematuria 3 (3.57%), Hypotension 3 (3.57%), Coma 3 (3.57%), DIC 3 (3.57%) and Compartment Syndrome 1 (1.19%).

Conclusion: From this work, we conclude that, snake bite though preventable in principles, remains to be one of the common medical emergencies being more frequent in rural agricultural and farm workers. Most common age group is 20-40 years. Males and females are equally prone to the bites. Most common symptom in our study was local pain and local swelling. In our study ptosis was the commonest sign and thrombocytopenia was commonest complication.

Key words: Snake bite, Clinical profile, Snake bite outcome

Introduction:

Snake bite is a major public health problem throughout the world, more so in tropical and subtropical countries. In a predominantly agricultural country like India with its rich flora and fauna, the encounter between man and snake is frequent occurrence. With rapid urbanization and deforestation, the incidence of snake bite is high and forms a significant group of hospital

admissions.¹ Despite the high prevalence; there are not many studies about the incidence of snake bite in this part of the world. Most of the statistics quoted are a decade old or hospital records predominate more seriously envenomed patients.ⁱ To remedy the deficiency in reliable snake bite data, it is already declared that snake bites should be made a specific notifiable disease in all countries in Southeast Asian Region.²

The increased mortality and morbidity in tropical countries is attributed to scarcity of anti-snake venoms, minimum access and poor quality of health care services.² People in countries like India prefer traditional healers rather than trained doctors, mainly because of ignorance and monetary issues as a result of which 77% of snake bite victims in rural areas die outside the health care setup.² Snake bites can cause severe complications like shock systemic bleeding, respiratory muscles paralysis, acute renal failure and necrosis of tissues at the site of bite. Snakes from the family Viperiadae and elapidaeae known to cause more severe consequences. Since complications of snakebite develop rapidly and irreversibly, medical interventions must be prompt and appropriate. Even though deaths due to snake bite can be prevented, the mortality continues to be high because of lack of knowledge among doctors regarding the management of snake bite cases, this along with delay in conventional treatment, lack of anti-snake venom and lack of facilities of tracheal intubation and ventilation by bag-valve mask in neurotoxic cases have been major factors for death due to snake bites.²

Advent of immune diagnosis has drastically changed the outlook of diagnosis and management of snake bites in western countries.² In a country like India with its predominant rural setup it is not possible to carry out all investigations, hence a practical approach has to be adopted based on clinical and laboratory investigations. This study was taken up to evaluate the clinical profile and outcome of snake bite victims presenting to Dr.Vitthalrao Vikhe Patil Pravara Rural Hospital, Loni, India.

Aims & objectives:

To study clinical presentation and outcome of snake bite cases at PRH LONI

Materials & method:

Present study was carried out as a Descriptive cross-sectional study at PRH, Loni to assess the clinical profile of patients with snakebite. A total of n=84 individuals were included in our study. This includes all the cases of snake bite of age group of more than 12 years admitted in PRH, Loni Data obtained in history, clinical examination and follow-up performed were entered in excel sheet and subjected to appropriate study analysis by using SPSS software.

Subjects were interviewed according to the proforma given in annexure in the mother tongue of the patient or the language the patient best understands.

All patients of snake bite who were admitted in Dr.Vitthalrao Vikhe Patil PRH Loni were included in the study. Data of study was collected, and detailed history & clinical examination was done.

The data was coded and entered Microsoft Excel spreadsheet. Analysis was done using SPSS version 20 (IBM SPSS Statistics Inc., Chicago, Illinois, USA) Windows software program. Descriptive statistics included computation of percentages, means and standard deviations. The repeated measure ANOVA used for quantitative data comparison of all clinical indicators. Level of significance was set at $P \leq 0.05$.

Results:

Present study was carried out at PRH, Loni to assess the clinical profile of patients with snakebite. A total of 84 individuals were included in our study. This includes all the cases of snake bite of age group of more than 12 years admitted in PRH, Loni. The results of the study are as shown in tables below.

TABLE NO. 1: DISTRIBUTION OF CASES OF SNAKE BITE ACCORDING TO AGE.

S.No.	Age	Frequency	Percentage
1)	12-19	16	19.0%
2)	20-29	20	23.8%
3)	30-39	26	31.0%
4)	40-49	6	7.1%
5)	50-59	12	14.3%
6)	>60	4	4.8%
	Total	84	100.0%
	Mean±SD	35.45±14.74 (13-70)	

TABLE NO. 2: DISTRIBUTION OF CASES OF SNAKE BITE ACCORDING TO GENDER

S.No.	Gender	Frequency	Percentage
1)	Female	42	50.0%
2)	Male	42	50.0%
	Total	84	100.0%

TABLE NO. 3: DISTRIBUTION OF CASES OF SNAKE BITE ACCORDING TO PRESENTING SYMPTOMS.

S.No.	Symptoms	Frequency	Percentage
1)	Local Swelling (Bite site)	45	53.57%
2)	Local Pain (Bite site)	45	53.57%
3)	Drooping Of Eyelids	29	34.52%
4)	Abdomen Pain	29	34.52%
5)	Vomiting	29	34.52%
6)	Difficulty in Breathing	13	15.47%
7)	Dysphagia	10	11.09%
8)	Bleeding Tendencies	6	7.14%
9)	Unconsciousness	3	3.57%
10)	Double Vision	1	1.19%

TABLE NO. 4: DISTRIBUTION OF CASES OF SNAKE BITE ACCORDING TO SIGNS.

Sr. No.	Signs	Frequency	Percentage
1)	Ptosis	29	34.52%
2)	Ophthalmoplegia	13	15.47%
3)	Palatal Weakness	10	11.09%
4)	Blister and Blebs	2	2.38%

TABLE NO. 5: DISTRIBUTION OF CASES OF SNAKE BITE ACCORDING TO BITE TYPES.

S.No.	Bite Type	Frequency	Percentage
1)	Vasculotoxic	42	50.00%
2)	Neurotoxic	29	34.5%
3)	Asymptomatic	13	15.50%
	Total	84	100.0%

TABLE NO. 6: DISTRIBUTION OF CASES OF SNAKE BITE ACCORDING TO BITE SITES.

S.No.	Bite site	Frequency	Percentage
1)	Lower Limb	47	55.95%
2)	Upper Limb	36	42.85%
3)	Face	1	1.19%

TABLE NO. 7: DISTRIBUTION OF MEAN OF GENERAL EXAMINATION FINDING OF SNAKE BITE CASES

S.No.	General Examination	Mean	Std. Deviation
1)	Pulse(per minute)	88.02	16.07
2)	SBP (mmHg)	124.95	23.39
3)	DBP (mmHg)	81.85	11.808
4)	SBC (Single Breath Count)	22.37	8.703

TABLE NO. 8: DISTRIBUTION OF CASES OF SNAKE BITE ACCORDING TO DURATION OF ONSET OF SYMPTOMS.

	Frequency	%
>15 hrs	41	48.8
10-15 hrs	20	23.8
5-10 hrs	15	17.8
< 5 hrs	8	9.52

TABLE NO. 9: DISTRIBUTION OF CASES OF SNAKE BITE ACCORDING TO COMPLICATIONS.

S.No.	Complications	Frequency	Percentage
1)	Thrombocytopenia	20	23.80%
2)	Respiratory Paralysis	14	16.60%
3)	ASV Anaphylaxis	13	15.40%
4)	Acute Kidney Injury	9	10.7%
5)	Hematuria	3	3.57%
6)	Hypotension	3	3.57%
7)	Coma	3	3.57%
8)	DIC	3	3.57%
9)	Compartment Syndrome	1	1.19%

TABLE NO. 10: DISTRIBUTION OF CASES OF SNAKE BITE ACCORDING TO TREATMENT GIVEN.

S.No.	Treatment Given	Frequency	Percentage
1)	Before ASV (Injection-Adrenaline)	71	84.50%
2)	Antibiotics	45	53.57%
3)	Analgesics	45	53.57%
4)	Neostigmine	29	34.5%
5)	Mechanical Ventilation	14	16.60%
6)	Blood & its products Transfusion	11	13.09%
7)	Hemodialysis	7	8.33%
8)	Antihypertensive	4	4.76%
9)	Inotropes	3	3.57%
10)	Fasciotomy	1	1.19%

TABLE NO. 11: DISTRIBUTION OF CASES OF SNAKE BITE ACCORDING TO OUTCOME.

S.No.		Frequency	Percentage
1)	Discharge	79	94.05%
2)	Death	5	5.95%
	Total	84	100.0%

Discussion:

A total of 84 cases were included in the study with patients or their legally accepted representatives consenting for the study and all cases of snake bite belonging to age group of more than 12yrs of both gender was included.

Snakebite is one of the major medical emergency and hazard to life and health of people in the predominantly agricultural country like India. Every year worldwide, snakebite envenomation leads to more than 100,000 deaths and causes permanent disability or disfigurement in about 400,000 cases.² South Asia is the most affected Region due to snakebite envenomation,² and India contributes to 50 per cent of the estimated deaths due to venomous snakebites globally. In India, highest number of deaths due to snakebites has been reported in Uttar Pradesh, Andhra Pradesh, Bihar, Tamil Nadu, West Bengal and Maharashtra.³

In present study total 84 cases with snake bite were included. Snake bite was observed in all age groups. The maximum number of patients were present in the age group up to 40 years (73.8%). Similar to our study, a study conducted by Sawai Y and Honma M (70.28%)⁴ and Nigam P et al (83.3%).⁵

This is because; people belonging to this age group are prone for snake bite because of occupational activities. A similar result was also found by Brunda G et al in Andhra Pradesh (71%),⁶ Chattopadhyay S et al in West Bengal (60%)⁷ and Lima ACSF et al in Amapa (30%).⁸ Contrary to our study, a study conducted by younger age group

(<20yrs) were shown to be more commonly involved in studies done by Rahman R et al in Bangladesh (46%)⁹ and Chew KS et al in Malaysia (34%),¹⁰ which might be due to the problem of child labour, children being taken to the field and bites occurring while playing in the field. In present study incidence of snake bite is common among both males and females (50%). Similar to our study, a study conducted by Rahman R et al which showed an equal ratio of bites among both the genders.⁸ Contrary to our study, a study conducted by Sawai Y and Honma M showed (66.10%)⁴ male, (33.90%) female and Nigam P et al showed (73.80%) male, (26.20%) female.⁵

In the present study showed local swelling and local pain at bite site to be the most common (53.57%) manifestation among the envenomed cases which was similar to the results of studies done by Kalantri S et al (85%)¹¹ and Bubalo P et al (87%)¹² Contrary to our study, a studies done by Currie BJ showed regional lymphadenitis (77%),¹³ Harris JB et al showed bleeding from the bite site (86%)¹³ and Singh J et al showed abdominal pain (91%)¹⁵ to be the common symptoms in envenomed cases. In present study, ptosis (34.52%) was the commonest sign observed in snake bites. Like our study, study conducted by Sarangi A et al showed (80%)¹⁶ and (85%) in Nigam P et al study showed ptosis commonest sign.⁵ In the present study, neurotoxic bite was found in 29 (34.5%) patients and vasculotoxic bite was found in 42 (50%) patients. Among poisonous snake bites, in present study 34.5% showed neurotoxic bite. Similar to our

study conducted in South East Asia Region showed 27.3% neurotoxic bite.¹⁷

In present study, majority of bite occurred in lower limb (55.95%). Similar to our study, a study conducted by Kalantri S (2006)¹¹ et al 66% bites were on lower limbs. In a study conducted by Lima ACSF et al showed 68%,⁸ Rahman R et al⁹ showed 71%, Kulkarni ML and Anees S et al¹⁸ showed 79.9% bite on lower limb. Contrary to our study, Sharma (2005) et al showed 38% lower limb bites. In present study, bites occurring at upper limb were 42.85%. Similar to our study, in a study conducted by Sharma (2005) et al¹⁹ showed 47% and Tan HH showed 50% upper limb bites.²⁰

Contrary to this study, Kalantri S (2006)¹¹ et al showed upper limb bites 34%, Bubalo P et al showed 53.5% upper limb bites respectively.¹² In present study we observed that the time delay from the bite till the admission was the highest for the longest referral pathway of consulting a traditional health practitioner and a peripheral health institution before reaching the tertiary hospital was more than 15 hrs (48.8%), which was seen also in study done by Sloan DJ (2007) et al at KwaZulu Natal where the time delay was more than 12 hrs.²¹ The fact that longer the pathway leading to longer time delays cannot be underestimated especially when the intermediate referrals are of no particular benefit to the victim.²²

Conclusion

From this work, we conclude that, snake bite though preventable in principles, remains to be one of the common medical emergencies being more frequent in rural agricultural and farm workers. Most common age group is 20-40 years. Males and females are equally prone to the bites. Most common symptom in our study was local pain and local swelling. In our study ptosis was the commonest sign and thrombocytopenia was commonest complication. Bite was more common

on lower limb as compared to upper limb and ASV given as early as possible. Overall mortality due to snake bite in our study was only 5 cases. Still majority of the patients do not seek medical attention immediately. Most of them visit traditional healers. Thus, there is a need for giving health education regarding the snakebites, their toxic effects, effectiveness of hospitalization, ASV therapy in bites and prevention of snakebite by appropriate measures. This will reduce the incidence and complications of snakebites.

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