



CLINICAL PROFILE AND OUTCOME OF SNAKE BITE PATIENTS ADMITTED AT TERTIARY CARE HOSPITAL IN INDIA

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ABSTRACT

Background: Snake bite is a major medical and public health problem in India. A high incidence of snake bite envenomation has been reported from rural India, many times the incidence is underestimated due to lack of epidemiological information.

Objective: The present study aimed to analyse the clinical profile and outcome of snake bite cases admitted in a tertiary care teaching hospital.

Materials and Methods: This descriptive, cross-sectional, single-center study was carried out in Dr V M Govt Medical College and Hospital, Solapur, Maharashtra, India between October 2019 to September 2021 on 84 patients who were bitten with snakes and admitted in Dr. V M Govt Medical College and Hospital Solapur between the study duration. Inclusion criteria was composed of all cases of snake bite of age group of more than 12yrs of both gender and the patients or their legally accepted representatives consenting for the study. Whereas, exclusion criteria were composed of patients not consenting for study. A detailed information about demographic parameters such as age of patient, gender distribution and site of bite were collected. A thorough clinical examination was carried out in each case. All poisonous snake bite with signs of envenomation were treated with anti-snake venom. The collected data was entered in Microsoft Excel to maintain the quality of data. The data was tabulated and analyzed by using Statistical Package for the Social Sciences (version 24). The data was analyzed and percentages were calculated.

Result: 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%). Incidence of snake bite is common among both males and females (50%). Our study showed local swelling and local pain at bite site to be the most common (53.57%) manifestation. The ptosis (34.52%) was the commonest sign observed in snake bites. Vasculotoxic bite was found in 42 (50%) patients. In present study, 71 (84.50%) patients were given ASV. Mortality was found in 5 (5.95%) patients.

Conclusion: Snake bite is a life-threatening emergency. The key in minimizing mortality and severe morbidity is aggressive management of sick patient and timely as well as judicious administration of anti snake venom. The serious clinical features of snake bite warrant early referral and management in tertiary care centers.

Keywords: Snake Bite; Anti-snake venom; Tertiary care hospital; India

INTRODUCTION

Snake-bite is an acute life-threatening, time limiting medical emergency and an under-recognized major public health concern in India especially in rural areas.¹ Snake-bite occurs frequently among rural people, especially those working in the fields. Most houses in rural areas of India are made of mud and have many crevices where rodents flourish.²

In India, it is believed that 200,000 people are bitten by snakes and about 15,000–30,000 cases/year prove fatal. Snakebite deaths are reported in India are from Bengal, Uttar Pradesh (UP), Tamil Nadu, Bihar, and Maharashtra. India has the highest incidence of snakebite-resulted mortality, ranging from 13,000 to 50,000 cases annually.³ Attributes for such a high mortality due to snakebite are scarcity of anti-snake venoms (ASV), difficulties with rapid access to health centers, poor health services, and traditional treatments. Since complications of snakebite develop rapidly and irreversibly, medical intervention must be prompt and appropriate. The only effective measure to prevent or reverse most of the manifestations of venomous snake-bite is timely administration of anti-snake venom (ASV) with or without adjunctive treatment as necessary in each case.⁴

To the best of our knowledge, there are less observational studies related towards clinical profile and outcome of snake bite cases admitted in a tertiary care teaching hospital among Indian population.

In view of the above, a descriptive, cross-sectional, single-center study was carried out at Dr.V M Govt Medical College and Hospital Solapur, Maharashtra, India between October 2019 to September 2021 on 84 patients who were bitten with snakes and admitted in Dr.V M Govt Medical College and Hospital Solapur between the study duration.

METHOD

This descriptive, cross-sectional, single-center study was carried out in Dr.V M Govt Medical College and Hospital Solapur, Maharashtra, India between October 2019 to September 2021 on 84 patients who were bitten with snakes and admitted in Dr.V M Govt Medical College and Hospital Solapur between the study duration. Inclusion criteria was composed of all cases of snake bite of age group of more than 12yrs of both gender and the patients or their legally accepted representatives consenting for the study. Whereas, exclusion criteria were composed of patients not consenting for study.

A detailed information about demographic parameters such as age of patient, gender distribution and site of bite were collected. A thorough clinical examination was carried out in each case. All poisonous snake bite was with signs of envenomation were treated with anti-snake venom. The collected data was entered in Microsoft Excel to maintain the quality of data. The data was tabulated and analyzed by using Statistical Package for the Social Sciences (version 24). The data was analyzed and percentages were calculated.

RESULTS

Table 1: Distribution of Cases of Snake Bite According to Age

Sr.No	Age range	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
mean±SD		35.45±14.7	

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%).

Table 2: Distribution of Cases of Snake Bite according to Gender

Sr.No	Gender	Frequency	Percentage (%)
1	Female	42	50
2	Male	42	50
Total		84	100

From the above table 2, the incidence of snake bite is common among both males and females (50%).

Table No.3: Distribution of Cases of Snake Bite according to different clinical profile

Sr.No	Clinical Profile	Total cases n (%)	Hypothyroid state (%)
Presenting Symptoms			
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
Clinical signs			
1	Ptosis	29	34.52
2	Ophthalmoplegia	13	15.47
3	Palatal Weakness	10	11.09
4	Blister and Blebs	2	2.38
Systemic manifestations			
1	Vasculotoxic	42	50.00
2	Neurotoxic	29	34.5
3	Asymptomatic	13	15.50
Bite sites			
1	Lower Limb	47	55.95
2	Upper Limb	36	42.85
3	Face	1	1.19

From the above table 3, it was observed that local swelling and local pain at bite site to be the most common (53.57%) manifestation. The ptosis (34.52%) was the commonest sign observed in snake bites. Vasculotoxic bite was found in 42 (50%) patients and lower limb was the most common bite site (55.95%).

Table No.4: Distribution of Cases of Snake Bite According to ASV Dose / Vial (Given/Not Given)

Sr.No	ASV	Frequency	Percentage (%)
1	Given	71	84.50
2	Not given	13	15.5
mean±SD		22.91±16.57	

From the above table 4, it was observed that, 71 (84.50%) patients were given ASV.

Table No.5: Distribution of Cases of Snake Bite According to Treatment Given

Sr.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

From the above table 5, it was observed that 84.50% of patients received ASV, followed by Antibiotics, Analgesics and others.

Table No.6: Distribution of Cases of Snake Bite According to Outcome

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

From the above table 6, it was observed that mortality was found in 5 (5.95%) patients. Whereas, 94.05% patients were discharged after administration of ASV.

DISCUSSION

Total out of 84 patients presented with history of snake bite in Dr.V M Govt Medical College and Hospital Solapur has been analyzed in systematic way.

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%)⁵ and Nigam P et al (83.3%)⁶. 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%),⁷ Chattopadhyay S et al in West Bengal (60%)⁸ and Lima ACSF et al in Amapa (30%)⁹. 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%)¹⁰ and Chew KS et al in Malaysia (34%),¹¹ 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 al¹⁰ which showed an equal ratio of bites among both the genders. Contrary to our study, a study conducted by by Sawai Y and Honma M showed (66.10%)⁵ males, (33.90%) female and Nigam P et al⁶ showed (73.80%) male, (26.20%) female.

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%)¹², Bubalo P et al (87%)¹³ and Yakuba AS (2019)¹⁴ et al (78%). Contrary to our study, a studies done by Currie BJ showed regional lymphadenitis (77%),¹⁵ Harris JB et al showed bleeding from the bite site (86%)¹⁶ and Singh J et al showed abdominal pain (91%)¹⁷ to be the common symptoms in envenomed cases. In present study, ptosis (34.52%) was the commonest sign observed in snake bites. Similar to our study, study conducted by Sarangi A et al showed (80%)¹⁸ and (85%) in Nigam P⁶ et al study showed ptosis commonest sign. 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 majority were vasculotoxic snake bites, similar to our study, a study conducted by Shoukat AR and Indikar MA¹⁹ showed 46.66% vasculotoxic bite. 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. In present study, majority of bite occurred in lower limb (55.95%). Similar to our study, a study conducted by Kalantri S (2006)¹² et al 66% bites were on lower limbs. In a study conducted by Lima ACSF et al⁹ showed 68%,

Rahman R et al¹⁰ showed 71%, Kulkarni ML and Anees S et al²⁰ showed 79.9% bite on lower limb. Contrary to our study, Sharma (2005)²¹ et al showed 38% lower limb bites.

In present study, 71(84.50%) patients were given ASV. Average ASV dose was 22.91 Vials. Study conducted by Bawaskar HS²² revealed that 63.6% of patients admitted with poisonous bite received ASV. ASV neutralizes only circulating venom and no amount of ASV will neutralize or combine with venom once the venom is adsorbed to target organs. A study done by Williams DJ et al²³ in rural Papua New Guinea showed 88.9% of the cases to be receiving only a single vial which highlights the fact of a need for strengthening these rural health facilities in snake bite management, as majority of the cases consult these health care facilities first. A study done by Simpson ID²⁴ among doctors of India and Pakistan revealed a poor knowledge amongst doctors with respect to snake bite management and stressed a need for training to adequately prepare them to reduce the mortality.

In present study mortality was found in 5 (5.95%) patients. The mortality rates were depending on various circumstances and geographical factors in many studies. Mortality in the present study is consistent with the findings of Kulkarni ML and Anees S et al²⁰ (5.2%); Mahmood K et al²⁵ in Karachi (6.3%); and Acton HC and Knowles R²⁶ (7.9%). Low mortality was found by Habib AG et al²⁷ in Nigeria (1.4%) and Sharma N et al²¹ (3.5%) while slightly higher rates were seen in studies done by Kalantri S et al¹² in Central India (11%), and Sharma SK et al²⁸ in Nepal (14%). The lower mortality rates in our study might be due to the fact that it is a hospital based study, as many of the fatal outcome would have been missed. Higher rates in hospital based studies might be due to the lack of resources for the management of complications or victims arriving very late to the hospitals.

Limitation of the study: The result from a single center-based retrospective study with relatively smaller sample size is often not applicable when it comes to larger population. This remained the most important limitation of the present study. Another shortcoming of the study was the calculation of the exact bite-to-hospital time was not factored in during the present analysis.

CONCLUSION

Snakebite is a medical emergency in rural parts of India. There is an urgent need for case documentation and reporting of the snakebite incidence and determinants in rural areas of Maharashtra. In the present study we have attempted to report the hospital based cases of snake bite. Underreporting of snake bite occurrences have contributed to the variations in observed incidence. But, considering the heterogeneity of medical care and reporting and traditional cultural attitudes to snakes and snake bites, it seems likely that snake bite in rural areas is widely underreported. Community awareness regarding appropriate first aid, rapid transfer to health-care centers, and early initiation of ASV with proper supportive care hold to key to improve the mortality burden among the snakebite victims.

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Ethical approval: The study was approved by the Institutional Ethics Committee of Dr.V M Govt Medical College and Hospital Solapur.

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