

Epidemiological study of snake bite cases in paediatric department of teaching hospital of Bahraich

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Abstract

Snakebite poisoning is a global burden and yet neglected in many developing countries. It is a cause of preventable mortality. This study was done in the Department of Pediatrics of a teaching hospital of Bahraich. Cases admitted between November 2021 to November 2022 were included in the study. A total of 39 cases were recorded. A data abstraction form was used to extract data from the treatment records of the patients. Highest percentage of snake bite victims (41%) were in the age group of 6-10 years. Maximum cases of snake bite occurred during July to September (53.8%). Antisnake venom was given to 33 victims. ICU admission was required in 12.8% of the cases.

Keywords: ICU, Antisnake, Snakebite.

Introduction

Living snakes are found on every continent except Antarctica and on most islands. Every year millions of

people die globally by snakebite poisoning. There are about 3500 species of snakes in the world but only about 350 species are venomous. In India 330 snake species exist, of these 70 are venomous [1]. Snakebite poisoning is a cause of preventable mortality. Snakebite envenoming is also included in the WHO list of Neglected Tropical Diseases (NTDs)[2] In 2019, the World Health Organization (WHO) set a target to halve the number of deaths and cases of snakebite envenoming by 2030.[3]

In 2019, 63,400 people died globally from snakebites, which was equal to an age-standardized mortality rate (ASMR) of 0.8 deaths (0.5–1.0) per 100,000. India had the greatest number of deaths in 2019, equal to an ASMR of 4.0 per 100,000 (2.3—5.0)[4].

India had 1.2 million snakebite deaths (average 58,000/year) from 2000 to 2019. Over a quarter deaths

occurred in children < 15 years. Most of the cases of snakebites occur in the rural areas [5].

In India, the highest numbers of deaths by snakebite are reported by the state of Uttar Pradesh followed by Madhya Pradesh and Rajasthan [6].

Most snakebite are from non-venomous snakes, simply because they outnumber the venomous snakes. The victims of snakebites are mainly of the rural population, who are bitten during field work and when sleeping outdoors [7].

Snake bite is a neglected disease that afflicts the most impoverished inhabitants of the rural areas in the tropical developing countries [8].

Snake bite is most common in school age children, adolescent and young adults. Most of the cases are accidental in nature. 3% of all deaths in children of ages 5–14 years occur because of snake bite. Ninety-seven per cent of the victims of snake bite die in rural areas with a survival rate of 3%, among the 97% deaths around 77% are outside health care facilities [9].

Not much information is available on epidemiology of snakebite especially from the rural areas of India because the illiterate people from rural areas believe more in black magic and traditional healers. That is why they don't reach the hospital on time.

Material and Methods

A retrospective, record based, descriptive study was conducted in the teaching hospital of Bahraich.

Study Population: All the children less than 18 yrs, who reported to the Department of Paediatrics during the study period.

Study Unit: Child less than 18 yrs of age

Study Duration: November 2021 to November 2022

Sample Size: 39

This retrospective, descriptive study was carried out in the pediatric department of Maharaja Suhel Dev Autonomous State Medical College and Maharishi balark hospital of Bahraich, India. The records of snakebite victims from November 2021 to November 2022 were obtained from the medical records department of the Medical College. All the patients of the pediatric age group who had presented with alleged history of snake bite were registered for the study.

A data extraction form was prepared. Data was extracted from treatment record of cases of snake bite admitted to the Department of Paediatrics.

Detailed information was collected using the data extraction form which included details of sociodemographic characteristics, seasonal trend of occurrence of snake bite, Time of bite, place of bite, site of bite, interval between snakebite and hospital admission.

Cure rate, case fatality rate and patients who left against medical advice were calculated.

Results

A total of 39 cases of snake bite came to the pediatric ward during the study period.

Table 1 describes the sociodemographic profile of the study population.

Age Group: The highest percentage of snake bite victims (41%) were in the age group of 6-10 years followed by 11-15 years (36%). Least number of cases occurred in under 5 children.

Education: Majority of the children were educated up to the Primary level.

Domicile: 76.9% of the cases were from the rural areas and 23.1% belonged to the urban areas.

Location: Maximum percentage of bites took place in outdoor location (53.8%) and 46.2% of the bites occurred in indoor location.

Seasonal Variation: Maximum cases of snake bite occurred during July to September (53.8%) and minimum during January to March (7.7%).

Table 1: Socio-Demographic Profile of Study Population.

	Total 39 (%)
Age group (yrs)	
0-5	9 (23%)
6-10	16 (41%)
11-15	14 (36%)
EDUCATION STATUS	
Illiterate	10 (2.6%)
Primary	23 (58.9%)
Secondary	6 (15.4%)
DOMICILE	
Rural	30 (76.9%)
Urban	9 (23.1%)
LOCATION	
Indoor	18 (46.2%)
Outdoor	21 (53.8%)
SEASONAL VARIATION	
Jan to March	3 (7.7%)
April to June	9 (23.1%)
July to September	21 (53.8%)
October to December	6 (15.4%)

Table 2: Distribution of Study Population According To The Site And Time Of Bite.

	TOTAL (39)
SITE OF BITE	
Lower Limb	22 (56.4%)
Upper Limb	11 (28.2%)

Head & Neck	3 (7.7%)
Others	3 (7.7%)
TIME OF BITE	
00:01- 6:00	5 (12.8%)
06:01- 12:00	9 (23.1)
12:01- 18:00	11 (28.2%)
18:01- 24:00	14 (35.9%)

Lower limbs were the most common site of bite (56.4%) followed by upper limb (28.2%). Head and neck were bitten in 7.7% of the cases and another 7.7% of the bites affected the rest of the body.

Majority of the bites occurred during the dark hours of the day i.e. between 18:00 hrs and 24:00 hrs (35.9%) followed by between 12:00 hrs and 18:00 hrs (28.2%)

Table 3: Distribution of Study Population According To the Interval between Snakebite and Admission, Treatment, Hospital Stay and Final Outcome.

	TOTAL (%)
Interval Between Snakebite And Hospital Admission (in hrs.)	
0-6	20 (51.3%)
7-12	9 (23.1%)
13-18	4 (10.3%)
19-24	4 (10.3%)
>24	2 (5.1%)
TREATMENT	
ASV given	33 (84.6%)
ASV not given	6 (15.4%)
HOSPITAL STAY (days)	
<2	19 (48.7%)
2-4	15 (38.5%)
>4	5 (12.8%)
FINAL OUTCOME	
Cured	32 (82%)

Expired	3 (7.7%)
Leave against medical advice	4 (10.3%)
ICU ADMISSION	
Required	5 (12.8%)
Not required	34 (87.2%)

Interval Between Snakebite And Hospital Admission

Majority of the cases (51.3%) reached hospital within 6 hours of snake bite followed by 23.1% of the cases which took 7-12 hours. Only 5.1% of the cases took longer than 24 hours in reaching the hospital.

Treatment: Almost all the cases (84.6%) were given anti snake venom. Only the cases of non-poisonous snake bite (15.4%) were not given anti snake venom.

Duration of Hospital Stay: Majority of the cases required less than 2 days of admission (48.7%). 12.8% of the cases required more than 4 days of hospital admission.

Final Outcome: Out of the total cases of snake bite, majority (80%) of them were cured, 7.7% of the cases expired and 10.3% took leave against medical advice.

ICU ADMISSION: ICU admission was required in 12.8% of the cases and 87.2% of the cases did not require ICU admission.

Discussion

In this study the highest percentage of snake bite victims (41%) were in the age group of 6-10 years. Least number of cases occurred in under 5 children as they are less involved in outdoor activities and mostly confined indoors. Similar to our findings, Suganthi Vet al (2018)[10], also found the common age group affected to be 5-10 years (59%) and Vinayak Y et al (2013)[11] study also revealed the same findings.

EDUCATION: Majority of the children were educated upto the Primary level.

Domicile: 76.9% of the cases were from the rural areas and 23.1% belonged to the urban areas. Similar were the findings by MeryemEssafti et al (2022)[12] and Halesha B.R et al (2013)[8] where the latter reported 81.1% victims from the rural areas.

Location: Maximum percentage of bites took place in outdoor location (53.8%) and 46.2% of the bites occurred in indoor location. Similar findings were reported by other studies as well.

Seasonal Variation: Maximum cases of snake bite occurred during July to September (53.8%). Study by Vinayak Y et al (2013) also showed the same findings. Kumaravel KS et al (2016)[13] witnessed maximum cases of snake bite during the period of October-January In concordance with earlier studies, lower limbs were the most common site of bite (56.4%) as they are the most approachable part for snakes. Similar were the findings by Meryem Essafti et al (2022) who reported 80% of the bites in the lower limbs and Kumaravel KS et al (2016) reporting about 68% of snake bites in the lower limbs.

As seen in our study, majority of the bites occurred during the dark hours of the day i.e. between 18:00 hrs and 24:00 hrs (35.9%) as the visibility is extremely poor at that time. Similar findings were reported by other studies. In contrast to our study MeryemEssafti et al (2022) and Halesha B.R (2013)⁸ revealed maximum bites occurring during the daytime.

Interval between Snakebite and Hospital Admission Majority of the cases (51.3%) reached hospital within 6 hours of snake bite. Suganthi V et al (2018) and Vinayak Y et al (2013) also reported similar findings. In contrast Kumaravel KS et al (2016) study showed maximum cases reached the hospital after 6 hours of snake bite.

Treatment: Almost all the cases (84.6%) were given anti snake venom. Only the cases of non-poisonous

snake bite (15.4%) were not given anti snake venom. Suganthi V et al (2018) study revealed only 55.6% of the cases receiving anti snake venom.

DURATION OF HOSPITAL STAY: Majority of the cases required less than 2 days of admission (48.7%). 12.8% of the cases required more than 4 days of hospital admission. Study by N Sharma et al (2005)[7] revealed mean duration of hospital stay to be 8 days

Final Outcome: In our study majority (80%) of them were cured, 7.7% of the cases expired. Similarly, Meryem E et al (2022) reported 6.7% mortality and N Sharma et al (2005) reported a case fatality rate of 3.5%

ICU Admission: ICU admission was required in 12.8% of the cases and 87.2% of the cases did not require ICU admission.

Conclusion

Outcome of the treatment of snakebite victims mainly depends upon the timely admission to the hospital. So there should be awareness to avoid folk remedies and go to the higher centre. The medical staff of the rural centres must be trained to identify venomous bites and give them first aid and immediately refer them to the nearest higher centre. In this way a high percentage of the mortalities can be reduced.

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