

A Study of Clinical and Demographic Profile of Subjects with Snake Bite in a Tertiary Care Centre, Mysuru

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A B S T R A C T

Introduction: Snake bite is a common medical emergency faced mainly by the rural populations in tropical and subtropical countries including India with heavy rainfall and humid climate. Incidence and frequency of snake bites varies across the different geographic regions with in the country depending on factors such as climate, ecology, biodiversity, distribution of snakes. The present study was undertaken to find out the clinical and demographical profile of subjects with snake bite.

Material and Methods: This study was done in KR hospital Mysuru, a tertiary care centre. 351 subjects with history of snake bite were included in the study after taking informed written consent. Snake bite was diagnosed with proper history taking and detailed examination for fang marks and local and systemic complications. Details were tabulated in to Microsoft excel software and analysis of data was done with SPSS software version 20.

Results: The present study included 351 subjects admitted with snake bite with a male to female ratio of 2.4 and an age mean of 38.9±12.54. Majority of the subjects were from Mysore (35.6%), and coolie workers and farmers (31.6%). 76 % had unknown snake bite, 13.6% had cobra bite and 6.3% had viper bite. 88% of the subjects reached hospital within 6 hours. 69.8% had snake bite on lower limb, 15.8% of subjects developed renal dysfunction.

Conclusion: Snake bite is a common medical emergency which is treatable and complications are preventable. It is more common among male farmers and coolie workers during the rainy season (July to September). Since majority of the bites are unknown, clinical examination for signs of envenomation is important to manage snake bites effectively. Delay in attending proper medical care because of poor knowledge about treatment and still prevailing myths and traditional methods leads to complications

Keywords: Snake Bite, Karnataka, Demographic Profile

INTRODUCTION

Snake bite is a common medical emergency faced mainly by the rural populations in tropical and subtropical countries including India with heavy rainfall and humid climate. WHO estimates the problem as 4,21,000 envenomation and 20,000 deaths per annum. The same report also suggest that the burden may be as high as 1,841,000 envenomation and 94,000 deaths globally. India is reported to have highest number of deaths due to snake bites in the world. World Health Organization (WHO) estimates place the number of bites to be 83,000 per annum with 11,000 deaths.¹

There are more than 2000 species of snakes in the world and about 300 species are found in India out of which 52 are venomous. There are about 236 species of snakes in India, most of which are nonpoisonous. However, there are 13 known species that are poisonous and of these four, namely common cobra (*Naja naja*), Russell's viper (*Daboia russelii*), saw-scaled

viper (*Echiscarinatus*) and common krait (*Bungarus caeruleus*) are highly venomous and believed to be responsible for most of the poisonous bites in India.²

Snakebite incidences and the associated mortality vary from region to region and depend upon the natural habitat of the venomous species of snake, the geographical region, probability of human beings coming in contact with snakes, knowledge of medical aid, appropriate medical facilities (especially availability of antivenoms), and the experience of the attending physician. This study was aimed at studying the clinical and demographic profile of subjects with snake bite in southern Karnataka.

MATERIAL AND METHODS

The present study was carried out over a period of one year (January 1st to December 31st 2017) in our hospital which is a tertiary care centre and teaching institute in southern part of state of Karnataka. All those patients who are >18

years of age and presenting to the casualty department with alleged history of snake bite were included in the study and prospectively studied for the symptoms and signs of envenomation. Snake bite and species identification were confirmed by a reliable history from patient, those who witnessed the bite and patients bystanders. All patients were interviewed using a standard questionnaire to maintain a record of patients history relevant to snake bite envenomation. In this study all cases of snake bite ≥ 18 years of age who have given informed written consent were included according to inclusion and exclusion criteria. A detailed clinical history and thorough clinical examination was done.

Inclusion Criteria

Subjects above 18 years of age

Subjects who are admitted with alleged history of snake bite

Exclusion criteria

Subjects who have not given written informed consent

Investigations

All patients who got recruited to our study were undergone the following biochemical tests apart from clinical signs and symptoms of envenomation.

1. Whole blood clotting time
2. Complete haemogram
3. Renal function test
4. Random blood sugar
5. Liver function test
6. ECG.

STATISTICAL ANALYSIS

Descriptive analysis of the collected data was done and clinical and demographic profile of subjects with snake bite was studied. The statistical analysis was performed using SPSS software version 20.

RESULTS

The study was done on total 351 subjects with alleged history of snake bite who got admitted in our hospital. 70.7% of the study subjects were males, 29.3% were females. Maximum number of patients were in the age group 31 to 45 with a mean age of 38.9 ± 12.54 years. Majority of the subjects belongs to Mysuru (47.5 %). 21.6 % subjects came from Mandya, 11.3% of subjects came from Chamrajnagara.

Majority (76%) of the bites were unknown. Among others 6.3% were admitted with Viper bite, 13.6% with Cobra bite and 3.9% with krait bite. Irrespective of the geographical area Cobra bite was the most common among known bites. Most of the subjects were agricultural coolie workers (39.6%). 31.6% were farmers, 9.9% were house wife. Maximum number (43.8%) of snake bite cases got admitted in July to September as compared to 23.9% in April to June, 13.6% in January to March, 18.5% in October to December.

Maximum number of subjects reached hospital with in 2-4 hours (52.9%). 22.7% reached with in <2 hours, 10.5% reached with in 5-6 hours. Most of the subjects had bite on lower limb (69.2%) followed by upper limb (28.2%).

Among the study subjects 43.5% had no signs of envenomation, 37.8% had local signs without systemic signs, 63% had both systemic and local signs of envenomation. 40

Demographic profile	Number of subjects	Percentage of subjects
Gender Distribution		
Male	103	70.7
Female	248	29.3
Age distribution(years)		
18-30	127	
31-45	131	
46-60	64	
>60	29	
Geographical location		
Mysuru	167	47.5
Mandya	76	21.6
Chamarajnagar	40	11.3
Hassan	10	2.8
Others	58	16.5
Type of snake		
Viper	22	6.3
Cobra	48	13.6
Krait	14	3.9
Unknown	267	76
Occupation of subjects		
Farmer	111	31.6
Coolie	139	39.6
Student	11	3.1
House wife	35	9.9
Driver	11	3.1
Guard	4	1.1
Others	40	11.3
Month wise distribution of cases		
Jan-March	48	13.6
Apr-June	84	23.9
July-Sep	154	43.8
Oct-Dec	65	18.5
Time taken to reach hospital(hours)		
<2	80	22.7
2-4	186	52.9
5-6	37	10.5
7-8	12	3.4
9-10	15	4.2
>10	19	5.4

Table-1: Table showing demographic profile of subjects

Geographical area	Viper	Cobra	Krait	Unknown
Mysore	11	24	6	103
Mandya	4	9	2	53
CH Nagara	2	6	3	29
Hassan	1	2	0	7
Others	3	7	3	62

Table-2: Table showing type of snake based on geographical area

(11.3%) subjects had renal dysfunction in the form of raised blood urea levels. 38 subjects (10.8%) had renal dysfunction in the form of raised creatinine value. Majority (48.4%) of the subjects didn't received any first aid before reaching hospital. 37.6% subjects applied tourniquet before reaching hospital.

Signs of envenomation	Number of subjects	Percentage of subjects
Local	133	37.8
Systemic	20	5.6
Local and systemic	63	17.9
No signs	153	43.5
Blood Urea(mg/dl)		
<45	311	88.6
45-90	25	7.12
>90	15	4.2
Serum creatinine(mg/dl)		
<1.2	313	89.1
1.2-2	22	6.2
>2	16	4.5
Treatment taken before reaching hospital		
Ayurveda	16	4.5
Tourniquet	132	37.6
Local incision	22	6.2
Others	11	3.1
None	170	48.4

Table-3: Table showing clinical signs and complications

Gender	Sharma et al ³	Brunda et al ⁴	Chattopadhyay et al ⁵	Present study
Male	73%	76%	60%	70.3%
Female	27%	24%	40%	29.7%

Table-4: Table comparing gender distribution among other studies

DISCUSSION

The present study included 351 subjects admitted with snake bite with a male to female ratio of 2.4 and an age mean of 38.9±12.54.

Male preponderance in our study is in close agreement with earlier studies. It may be attributed to their life styles involving outdoor activities and occupational exposures, while most of the females in our country are house wives, thus less prone for snake bite.

Majority of subjects were in the age group 31-45 (37.2%). A similar study conducted by Anubha et al in Uttar Pradesh also showed similar age distribution with 60% of the subjects in the age group 15-45 years. Another study by Amitabha et al showed similar results with maximum number of subjects in the age group 20-40 years.

In the present study majority of the subjects were from Mysore (35.6%) followed by near by districts Mandya (19.3%) and Chamrajnagara (11.3%)

Majority of the bites were unknown snake bite (76%) in the present study. Among known bites Cobra bite was more common (13.6%) than Viper (6.3%) and Krait (3.9%) bites. Similar study conducted by Shyna⁵ et al showed that majority of the bites were viper (46%) followed by unknown bites (36%). Another study conducted by Anubha⁷ et al showed that majority of the bites were by Elapids (46%) followed by viper (38 %).

In the present study majority of the victims were agricultural coolie workers (39.6%) followed by Farmers (31.6%). In an

another study conducted by Amitabha et al⁶ majority of the victims were Farmers (42.3%) followed by coolie workers (17.3%).

Seasonal variation is well known in occurrence of snake bite. In present study maximum (43.8%) cases got admitted to our hospital in the season July to September, which is the rainy season in our area. A similar study conducted by Amitabha et al⁶ gave similar result with maximum number of cases (50%) in July to September, followed by 23% in October to December

81.1% of the subjects in the present study reached hospital within 6 hours of snake bite. In a similar study conducted by Shyna⁵ et al, 86% of the subjects reached hospital within 6 hours, which is similar to our study.

In the present study majority of subjects had bite on lower limb (69.2%) followed by upper limb (28.2%). In another study conducted by Anubha⁷ et al showed 84.8% had bite on lower limb. Another similar study by Amitabha⁶ et al showed 71% bites on lower limb followed by 23% on upper limb.

Renal dysfunction is one of the most important complications which define the prognosis in snake bite cases. In the present study 11.3% of the subjects developed renal which is similar to other studies conducted by Amitabha⁶ et al (15.8%) and Shyna⁵ et al (6%).

CONCLUSION

Snake bite is a common medical emergency which is treatable and complications are preventable. It is more common among male farmers and coolie workers during the rainy season (July to September). Since majority of the bites are unknown, clinical examination for signs of envenomation is important to manage snake bites effectively. Delay in attending proper medical care because of poor knowledge about treatment and still prevailing myths and traditional methods leads to complications (Nearly 40% of the subjects received traditional treatment before reaching our center)

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