

Original Research Article

Clinical and Coagulation Profile in Patients with Snake Bites In A Tertiary Care Hospital

Dr. Sagar Biradar¹, Dr. G.S Mahishale²¹Postgraduate, ²Associate Professor

Department of General Medicine, Shri B. M. Patil Medical College Bldg University, Research Centre, Vijayapur, Karnataka

***Corresponding author**

Dr. Sagar Biradar

Email: drsagarbiradar@gmail.com

Abstract: Snake bite is the condition resulting from the bite of a venomous snake and characterized by variable symptoms (as pain and swelling at the bite site, blurred vision, difficulty in breathing, or internal bleeding). Snakebite is a common medical emergency and an occupational hazard in most parts of India. The mortality due to snakebite in India is around 1,300 to 50,000 per annum, which is much higher. The objective is to study the different clinical manifestations profile and coagulation following snakebite. The information for the study was collected from snake bite patients admitted to BLDEU'S Shri B.M Patil Medical college Hospital and Research Centre, Vijayapur between December 2014 to March 2016. Results: Totally 36 cases of snakebite admitted in BLDEU'S Shri B.M Patil Medical college Hospital and Research Centre, Vijayapur between December 2014 to March 2016 were studied. Males 23 (63.9%) were affected more than females 13 (36.1%) in the ratio of approximately 2:1. Most common age group is 20-39 years. Snakebite is a common health hazard in rural areas 24(66.7%). Agricultural laborers are the major sufferers with majority of bites occurring outdoor 30(83.3%) and occurring over limbs, out of which 22 (61.1%) were lower limbs. Most bites occur in between 12 Noon to 6 PM (36.1%) patient's. Snakebite is one of the common hazards especially in rural setup as agriculture being the main occupation. Males are at more risk of bite than females due to their outdoor activity peak incidence of snakebite is observed between May to October as it is favoring climate for snakes. Hence early hospitalization and timely ASV administration were the corner stones in the treatment of snakebite.

Keywords: Snakebite, ASV, Coagulation, Cobra, Viper

INTRODUCTION:

Snake bite is the condition resulting from the bite of a venomous snake and characterized by variable symptoms (as pain and swelling at the bite site, blurred vision, difficulty in breathing or internal bleeding). Snakebite is a common medical emergency and an occupational hazard in most parts of India. The mortality due to snakebite in India is around 1,300 to 50,000 per annum[1], which is much higher the factors like favorable climate, rural predominance of the population and farming practiced in India are the major contributing factor for the snake bite. Hence India is also known as land of Exotic Snakebites. In India, there are about 216 species of snakes of which about 52 are venomous and of these only 5 varieties of snakes are commonly encountered as the cause of snakebite poisoning. They are,

1. Russell's viper - Doboia ruselli
2. Cobras - (Common cobra) - Naja Naja

3. Krait - Bungarus Caeruleus

Saw scaled viper - Echis Curinatus and Pit viper.

Approximately 2 lakh people are bitten by poisonous snakes in India annually, out of them about 20,000 die². The annual mortality from snake bites in India is between 35000 to 50000. Annual snake bite incidence is about 66-163 per 100000 population. Morbidity is about 1.4 to 68 per lakhs and mortality is 1.1 to 2.4 per lakh population and case fatality rate is 1.7 to 20%. Snake bite is a major public health problem throughout the world. Snake poison is oldest known poison to mankind. Most of the Indian population resides in rural places and their main occupation is agriculture. The incidence of snake bite and scorpion sting is due to climate which favors large population of snakes. The incidence of snake bite in Bijapur and its surroundings is high. Hence, this study is undertaken to

study the snake bite, clinical presentation with special emphasis on complications and outcome.

AIMS AND OBJECTIVES

To study the different clinical manifestation and coagulation profile following snakebite

MATERIALS AND METHODS

SOURCE OF DATA:

The information for the study was collected from snake bite patients admitted to BLDEU’S Shri B.M Patil Medical college Hospital and Research Centre, Vijayapur between December 2014 to march 2016.

METHOD OF COLLECTION OF DATA:

Information was collected through prepared proforma from each patient. All patients were interviewed as per the prepared proforma and then complete clinical examination was done.

Inclusion criteria:

- History of snake bite.
- Patients with presence of fang marks.
- Patients with one or more clinical manifestation of snakebite like local swelling, haemorrhages, blister formation, vomiting, abdominal pain, regional lymphadenopathy etc.

Exclusion criteria:

- Patients with bites other than snakebites.
- A patient who is a known case of any bleeding disorder.
- Chronic alcoholics.
- Individuals with acute or chronic liver disease.
- Pregnant females.
- Patients on anticoagulation therapy.

TYPE OF STUDY:

Hospital based study

SAMPLE SIZE:

- Hospital based study.
- Incidence rate of snake bite in Karnataka = 0.5% [5/1000 population]
- Level of significance = 99%
- Margin of error = 3
- Formula for estimating sample size:

$$n = \frac{Z \alpha^2 \times P \times (1-P)}{d^2}$$

Zα = Z value for α level = 99%

P = incidence rate of snake bite

d = margin of error

- Hence calculated sample size “n” is 36
- Hence in this study 36 cases of snake bite will be included.

STATISTICAL METHOD

Data were presented using diagrammatic and mean SD, All characteristics were summarized descriptively. For continuous variables, the summary statistics of N, mean, standard deviation (SD) were used. For categorical data, the number and percentage were used in the data summaries. Chi-square (χ²)/ Freeman-Halton Fisher exact test was employed to determine the significance of differences between groups for categorical data. If the p-value was < 0.05, then the results will be considered to be significant. Data were analyzed using SPSS software v.23.0.

RESULTS

During the study period from December 2014 to March 2016. 36 patients were admitted in. B.L.D.E.U’s SHRI B.M Patil Medical College Hospital And Research Centre, Vijayapur, With alleged history of snakebite were included in the study.

Table 1: Age wise distribution of snakebites

Age (Yrs)	No. of patients	%percentage
16-19	7	19.4
20-29	13	36.1
30-39	10	27.8
40-49	3	8.3
≥50	3	8.3
Total	36	100.0

The snakebites were observed in all age groups. The youngest patient was 16 years old and oldest was 69 years. The majority of patients were between the age group 20 to 29 years, which constituted of 13(36.1%) patients, next commonly affected age group was 30 to 39 years, with 10(27.8%) patients. This higher incidence in these age groups seem to be

contributed due to higher occupational activities in these group of people.

In our study, the snakebite was more commonly seen in males in 23(63.9%). The male to female ratio was approximately 2:1. In our study snakebite was mainly seen in rural area consisting of 24(66.6%) cases, while the rest 12 (33.3%) were from

urban places. This distribution may be explained due to agriculture being the main occupation in rural areas in our country. Among 36 patients, the bites have occurred

predominantly during outdoor activities that is 30(83.3%).

Table 2: Distribution of snakebites by Time of Bite

Time of Bite	No of patients	%percentage
6 A.M. – Noon	7	19.4
12 Noon – 6 P.M.	13	36.1
6 P.M. – Midnight	12	33.3
Midnight – 6 A.M.	4	11.1
Total	36	100.0

In our study, the maximum number of bites were noted between 12 noon to 6 PM that is in 13 (36.1%) patients, corresponding to maximum outdoor and agricultural activity during this time. Between 6 PM to 12 midnight, snakebites were noted in 12(33.3%) patients. Overall maximum bites occurred between 12 noon to midnight, 25 (69.4%) patients out of 36 patients. Snakebites were commonly observed on limbs that are in 33 (91.7%) patients. Among the limbs, lower limbs were commonest site noted in 22 (61.1%) patients, followed by upper limb in 11 (30.6%). Bite at

unusual sites were noted in 3(8.3%) patients, two on face and one over back, all three bites occurred while patients were asleep. Among all snakebites, majority of cases were due to poisonous snakebites that is 24 patients (66.6%). In 33.3% of patients the biting snake was nonpoisonous. The incidence of venomous snakebites was 24 (66.7%), whereas nonpoisonous constituted only 33.3%. Among poisonous bites, hemorrhagic manifestations 15 (41.7%) were more common than neurotoxic manifestations 9 (25.0%).

Table 3: Distribution by Symptoms

Symptoms	No. of patients	%percentage
Fright and Anxiety	34	94.4%
Vomiting	16	44.4%
Pain Abdomen	3	8.3%
Local Pain	25	69.4%
Swallowing difficulty	13	36.1%
Breathlessness	6	16.7%
Numbness	15	41.7%

After the snake bite, the predominant symptoms noted were fright and anxiety in 34(94.4%) patients usually developed soon after the bite noted in both poisonous and non-poisonous snake bite. Pain at the site of bite was noted in 25(69.4%) patients, swallowing difficulty 13(36.1%) patients was noted and

numbness in 15(41.7%) patients. Respiratory symptoms like breathlessness was seen in 6(16.7%) patients. Gastrointestinal symptoms like vomiting, pain abdomen were seen in 16(44.4%) patients and 3(8.3%) patients respectively.

Table 3: Distribution by Hemotoxic manifestation

Hemotoxic	No.of patients	%percentage
Bleed at site of bite	15	41.7%
Gum/ gingival bleed	6	16.7%
Echymosis/ Hematoma/Purpura	1	2.8%
Heamaturia	6	16.7%
Hematemesis	3	8.3%
ICH	0	0.0%

Out of 15 patients associated with hemotoxic manifestaions, bleed at the site was the most common noted manifestation in 15 (41.7%) patients followed by heamaturia and gum/gingival bleed in 6 (16.7%)

patients and hematemais was noted in 3(8.3%) patients then the least one was to present is echymosis/hematoma/purpura 1(2.8%) patients.

Table 4: Distribution by Neurotoxic manifestation

Neurotoxic	No.of patients	%percentage
Ptosis	9	25.0%
Ophthalmoplegia	5	13.9%
Palatal/ Pharyngeal palsy	2	5.6%
Respiratory difficulty	4	11.1%
Convulsions	0	0.0%
Coma	0	0.0%

Out of 9 patients associated with neurotoxic manifestations, ptosis was the most common noted manifestation, in all 9(25.0%) patients, followed by

ophthalmoplegia in 5(13.9%) patients and respiratory difficulty 4(11.1%) patients. palatal/ pharyngeal palsy in 2(5.6%).

Table 5: Investigations

Investigations	No. of patients	Min	Max	Mean	SD
BT (min)	36	3.48	9.32	6.3	1.7
CT (min)	36	1.2	10.2	6.7	1.9
PT (sec)	36	15	22	16.8	1.8
Hb (gm/dl)	36	7.4	15	11.2	1.9
TLC (C/dl)	36	92	220	114.1	25.3
Blood Urea (mg/dl)	36	20	338	69.0	85.3
S-Creatinine (mg/dl)	36	0.6	11.2	2.5	3.3
Platelet count x 1000/ cumm	36	80	300	190.4	62.3

Bleeding time, clotting time, prothrombin time were seen to be prolonged in patients with hematotoxic

manifestation mean BT was 6.3 minutes, mean CT was 6.7 minutes and mean PT was 16.8 seconds.

Table 7: No. of Dose given

No. of Dose given		
N	ASV vials Range	%
12	1-10	33.3%
8	11-20	22.2%
5	>20	13.9%

Antisnake venom was administered to patients with all venomous bites, minimum 4 vials and maximum 48 vials were given 12(33.3%) patients

received 1 to 10 vials of Antisnake venom, 8(22.2%) patients received 11 to 20 vials and 5(13.9%) patients received more than 20 vials.

Table 8: Comparison of Mean Duration of hospital stay

Type of Snake	No. of patients	Range	Mean (Days)	SD	p value (with compare to Non- poisonous)
Non- poisonous	12	1-9	2.9	2.4	--
Poisonous	24	1-14	4.5	3.1	0.136
Hemorrhagic	15	1-14	5.4	3.7	0.059
Neurotoxic	9	1-4	3.2	1.3	0.739
Total	36	1-14	3.9	2.9	

On an average, patients stayed in hospital for 5days ranging from a minimum of 1 day to maximum of 14 days for treatment. The mean duration for hemorrhagic snake bite is 5 days, and for neurotoxic is 3 days. Type of snake bite manifestations was found to be statistically insignificant with duration of hospital stay.

DISCUSSION

Snakebite is one of the major medical emergency and hazard to life and health of people in the predominantly agricultural country like ours. In our study, snakebite was observed in all the age groups. The maximum number of patients were in the age group 10-39 years, they constituted 80% patients, which is comparable to that of Sawai^[3] (70.28%) and Nigam P

[4] (83.3%). Biyajenee Mohapatra *et al.*; [5] also concluded that snakebite and deaths peaked at ages 15-29 years. Maximum number of cases was seen in 10 to 39 years age group.

The incidence of snakebite is more common among males shown in our study as well as others. It is obviously due to the increased risk of exposure to the snake bite occupationally. Snakebite is mainly the disease of the rural population. In the present study, 24 (66.7%) patients were from rural population and 12(33.3%) from urban population. The findings are consistent with finding of Bhat RN [6]. An incidence of 30(83.3%) of snakebite was reported during outdoor activities in the present study. A similar high incidence was also reported by Bhat RN [6]. Our study showed that maximum number of bites i.e., 13(36.1%) occurred between 12 Noon to 6 PM and 12(33.3%) bites occurred between 6 PM to 12 midnight, which is similar to findings of Sawai [3] (64%). Afternoon bites correspond to peak agricultural activity, while evening bites are combination of activity and poor lighting.

In our study, maximum number of bites occurred on lower extremities 22 (66.1%). The lower and upper extremities constituted 33 (91.7%), bite sites suggesting the site of the bite was predominantly determined by accidental or inadvertent contact of the snake during the activities. The incidence in our study is similar as observed by Sawai [3] (97.90%). In our study, 24(66.7%) patients were given ASV. In general, the mean dosage requirement ranged between 4 to 48 vials. Duration for which ASV was administered ranged from 1 hour to 10 days, which is comparable to the study reported by Saini *et al.*; [7]

CONCLUSION:

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 20-39 years. Males are more prone to the bites. Maximum bites were noted in rainy seasons (May to October) and during daytime. Poisonous bites are more common than non-poisonous. In neurotoxic envenomation, ptosis was the commonest and earliest symptom while in hemotoxic envenomation, most common symptoms were bleeding from bite site and hematuria. 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 definitely reduce the incidence and complications of snakebites.

REFERENCES

1. Gupta YK, Peshin SS. Snake bite in India: current scenario of an old problem. *J Clin Toxicol.* 2014; 4(1):182.
2. Swaroop S, Grab B. Snakebite mortality in the world. *Bulletin of the World Health Organization.* 1954; 10(1):35.
3. Sawai Y, Honma M. Snake bites in India. *Snake* 1975; 7: 1-16.
4. Nigam P, Tandon VK, Kumar R, Thacore VR, Lal N. Snake bite--a clinical study. *Indian journal of medical science.* 1973; 27(9):697-704.
5. Mohapatra B, Warrell DA, Suraweera W, Bhatia P, Dhingra N, Jotkar RM, Rodriguez PS, Mishra K, Whitaker R, Jha P, Million Death Study Collaborators. Snakebite mortality in India: a nationally representative mortality survey. *PLoS Negl Trop Dis.* 2011 Apr 12; 5(4):e1018.
6. Bhat RN. Viperine snake bite poisoning in Jammu. *Journal of the Indian Medical Association.* 1974; 63(12):383-92.
7. Saini RK, Arya RK, Singh S, Sharma S, Gupta VK, Pathania NS. Coagulation defects in snake bite poisoning. *The Journal of the Association of Physicians of India.* 1985 Feb; 33(2):148.