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General Medicine

SPECTRUM OF SNAKEBITE ENVENOMATION IN RURAL SOUTH TAMILNADU

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ABSTRACT **Background:** In India snake bite is a common cause of morbidity and mortality especially in rural population. Snakebites are estimated to cause 100000 deaths each year worldwide and India accounts for half the global deaths due to snakebites. **Methods:** A descriptive study carriedout at a tertiary care hospital in south Tamilnadu. All snake bite cases admitted fpr a period of one year were included in the study. Data were collected and analyzed using simple percentage analysis, chi square test. **Results:** The study included 403 snake bite victims. The majority was males (65%). 5% of snake bitten victims took native treatment before coming to the hospital. The most common snake was Russell's viper. The most common symptom was pain and swelling (39%). Maximum number of cases were reported during May (49 cases). The most common complication was cellulitis (8.9%).The case fatality rate was 2.7% **Conclusions:** Snake bite is a common life threatening emergency in this part of the world. Early treatment is very much associated with reduced mortality and morbidity.

KEYWORDS : snakebite, neurotoxicity, hemotoxicity

INTRODUCTION

Snakebite is an occupational, environmental and domestic health hazard with a significant economic impact on the individual and the family. Around 4.2 lakh cases of snakebite envenomation and around 50,000 to 1 lakh deaths per annum have been reported globally.[1]The large number is in India ranging from 80,000 envenomation victims and deaths accounting to 10,000 -25,000 annually.[2] >95% snake bites occurs over extremities. Complications such as shock, systemic bleeding, respiratory muscle paralysis, acute renal failure and tissue necrosis at the site of bite are fatal if not addressed early.[3] On June 9th, 2017 WHO categorized snakebite envenomation into the Category A of the Neglected Tropical Diseases.[1,4] Venomous snake bite profile are highly varying in various parts of India.[5] Hence, the current study was conducted to assess the clinical and epidemiological profile of snake bite cases admitted at a tertiary care hospital in South India.

MATERIALS AND METHODS:

All the snake bite cases admitted in Tirunelveli Medical College Hospital during the period of 1st May 2017 to 30th April 2018 were included. Around 403 patients were recorded and studied under Descriptive pattern. Informed consent was obtained. The Type of snake, place of bite, history of any unauthorized treatment, time delay between bite and seeking medical attention, predominant presenting symptoms are obtained from history and with the help of photographs. Outcome of the patient were assessed according the history, comorbid conditions and complications secondary to snake bite. Statistical analysis was done using simple percentage analysis, Chi square test.

RESULTS

In our study 403 Snake bite patients were selected during the one year period (from May 2017 to May 2018) based on inclusion and exclusion criteria, observed and subjected to relevant investigations and results are compiled.

Table 1: Age and sex wise distribution of study population.

Age Group	Male	Female	Total	P value
18-30	48	27	75	0.642
31-40	90	51	141	
41-50	61	36	97	
51-60	47	15	62	
61-70	16	12	28	
Total	262(65%)	141(35%)	403(100)	
Mean ±SD	40.42 ±16.62	44.01 ±16.64	42.25 ±14.42	

There was male preponderance with 65% of population. Most of the patients had the snake bite when they were outside of their home. Among the 403 snake bite patients around 5% of people (20) underwent some form of unauthorized method of treatment before seeking medical care. The people who went some form of traditional or unauthorized method of treatment show increased morbidity (20%)

and mortality (10%) than who don't. The snake was correctly identified either with history of with the help of photographs is in only 46% of the patients. Among the identified snakes Russell's viper is the most common snake type accounts for 37% of the cases and least common is Krait 10%.

The most common presenting complaints in our study is pain and swelling at the bite site. Out of 403 patients only 226 (56%) patients showed the sign of envenomation, 177 (44%) patients showed no evidence of envenomation. Among 226 patients who showed the signs of envenomation cellulitis (36.5%) is the major sign followed by the prolonged clotting time (30%) and the last is the neuromuscular weakness (11.4%).

Table 2 Distribution of the study population based on the clinical manifestations at the time of presentation

Complications	Frequency	Percentage (%)
AKI	27	6.6%
Ptosis	46	11.4
Hypotension	15	3.7
Regional lymphadenopathy	51	12.6
Cellulitis	147	36.5
Compartment syndrome	36	8.9%
DIC	9	2.2%
Respiratory failure	24	5.9%
Sepsis	23	5.7%

Overall outcome was good for the patients admitted with snake bite. 359 (89%) patients recovered completely following snake bite, 33 patients had morbidity and 11 patients expired due to complications of snake bite. Mortality rate is 2.7%.

Table 3 correlation of complication with mortality

Complications	Patient with signs of envenomation(n=226)		p value
	Survivors (n=215)	Non survivors(n=11)	
AKI	21	6	0.019
Respiratory Failure	18	6	<0.001
DIC	4	5	<0.001
Cellulitis	136	11	<0.001
Sepsis	13	10	0.046

The patients who presented to the hospital early following the snake bite had good outcome. Delayed presentation resulted in increased morbidity and mortality. All the patients who died had cellulitis. Cellulitis increased the morbidity significantly. Cellulitis is one of the major factors which significantly prolonged the hospital stay in snake

bite patients. Sepsis is the major complication which increased the mortality of the patients. Among 11 people who died 10 developed sepsis. Early treatment of sepsis can prevent mortality.

DISCUSSION

During the one year study period the total number of snake bite patients admitted was 403. This contributed to 1.7% of all the admissions in our department. The mortality due to snake bite was 2.7% in our study period which accounted for 0.6% of overall mortality. The Mean age for male 40.42 ±16.62 and for females 44.01 ±16.64.The practice of unauthorized mode of treatment was present in 20 patients (5%) and the most common method is application of tourniquet above the bitten area, followed by incision with sharp objects at the bite site. The incidence of morbidity is in rise when the age of the patient increases. The mean age of 40 and below are having favorable outcome than the patients with mean age ≥ 48. The mortality also increases with age because of presence of co morbidities which significantly affects the outcome of the patient.

Among the 403 patients who had the definite snake bite only 226 patients (56%) showed some form of envenomation. 117 patients (44%) showed no symptoms or signs eventhough definitely bitten by snake accounts for "dry bites". The bitten snake was identified in only 46% (184 patients) and 54% of patients not identified the snake even with the help of photograph. Since most of the bite was occurred in the evening and night than the day and the location of bite is outdoor mostly in congested areas the identification was not possible in the most of the cases. Among the snakes identified, most of the bites are produced by Vipers, especially Russell's viper accounts for the most of the bites (37%) followed by saw scaled viper (30%). Cobra (23%) and krait (10%).The most common presenting symptom following snake bite is Pain and swelling at the bite site accounts for 39% of cases and least common is GI symptoms (2.4%). Among our study patients 37 were diabetic which has significant correlation with the outcome of the patient. Mortality and morbidity among diabetic patients were significant with p value of <0.001. Other comorbidities like hypertension and CAD doesn't affect the outcome of the patients significantly. In hospital-based studies, mortality rates ranged from 3% to 20%.Various authors have found important contributors to death in such patients like delay in arrival at hospital (prolonged bite to hospital time), respiratory failure, ARF, presence of severe coagulopathy or DIC, shock etc[6-8].

The most common complication following snake bite is cellulitis. Compartment syndrome (8.9%) leading to fasciotomy increases the morbidity and mortality significantly (p value <0.0001).The overall outcome was good , 359 patients out of 403 recovered completely. 11 patients were died in the hospital because of multiple complications. Even though the mortality is less compared to death of other causes it remains the important health related issue which could be prevented by proper health education of population and avoiding unwanted delay in seeking medical care following snake bite.

CONCLUSION

Snake bite is a common life threatening emergency in this part of the world. The ready availability and appropriate use of AVS, close monitoring of patients, the institution of ventilator support and if required, early referral to a larger hospital all help to reduce the mortality. Patients requiring various supportive treatments like blood transfusion, Inotropes, Haemodialysis and Mechanical ventilation, had a statistically significant correlation with poor outcome. Messages regarding prompt reporting of such cases and importance of effective treatment must be disseminated among people .

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