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Poisonous snake bite cases in the sub-urban region of Chennai

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Abstract---In a developing country like India, the incidence of snake bites is very high. Some states like Uttar Pradesh, Bihar, Andhra Pradesh, etc. are the worst affected states. The rate of fatality is also comparatively higher in India as there is usually a delay in hospital admission. In the present study, we observed a higher incidence of snakebites amongst farmers and field workers in the age range of 21 to 40 years with a male preponderance. Most commonly bite marks were seen on legs and hands. Pain, local swelling, and neurotoxic features were dominant clinical features at the time of hospitalization. None of the victims were found using protective measures such as rubber gloves or long boots while working in the field.

Keywords---snake bites, snake venom, neurotoxic, vasculotoxic, Tamil Nadu.

Introduction

The incidence of snake bites and snake envenomation is very high in India, and it has been calculated that approximately about 10,000 people have died due to snakebites every year ¹. The highest incidence of snakebite cases occurs in India in the whole world. In India, Uttar Pradesh, Andhra Pradesh, and Bihar are the worst affected states ². In Tamil Nadu, the estimated death rate due to snakebite is three per 100,000 per annum in contrast to nine in Uttar Pradesh, five in Andhra Pradesh, and four in Bihar ³. Commonly encountered poisonous snakes in Tamil Nadu are in the order of vipers, krait, and cobra and the incidence of sea snake bites is very less though it is a coastal state. In developing countries like India major portion of individuals bitten by snakes first consult traditional practitioners before visiting a medical center and the resulting delay in transportation leads to mortality. The present study planned to study clinical features and epidemiological factors in snake bite cases.

Materials and Method

It is a retrospective descriptive study of snakebite cases admitted & treated at SRM General Hospital, Kattankulathur, Potheri, Tamil Nadu during the year 2011 to 2015. The study was conducted by collecting information from hospital indoor case sheets and laboratory reports. We excluded all poisonous bites & sting cases having doubtful history. We considered only those cases having clear snake bite history and treatment for it at our hospital. A suitable proforma was prepared and the collected data were entered, tabulated, and studied subsequently by comparing with the previous available studies.

Observation

During the study period, we observed 135 cases of snakebite, 76 cases, (56.3%) male and 59 cases, (43.7%) female. The male-female ratio was calculated at 1:0.8. The age and sex-wise distribution of cases is shown in Table No. 1 given below.

Table No. 1: Age & Sex Wise Distribution of Cases

Age group	Male(%)	Female (%)	Total (%)
0 - 10	6 (4.4%)	4(3%)	10 (7.4%)
11 - 20	11(8.1%)	10 (7.4%)	21(15.6%)
21 - 30	24(17.8%)	21(15.6%)	45 (33.3%)
31-40	18(13.3%)	20 (14.8%)	38 (28.1%)
41 – 50	11(8.1%)	3 (2.2%)	14 (10.4%)

51- 60	4 (3%)	1(0.7)	5 (3.7%)
61-70	2(1.5%)	0(0%)	2 (1.5%)
Above 70	0 (0%)	0 (0%)	0 (0%)
Total	76 (56.3%)	59 (43.7%)	135(100%)

As far as the place of the bite was concerned, the maximum number of incidents happened in the house, 56 cases, (41.5%) which was followed by field or farm, 51 cases, (37.8%). Other places like parking areas, gardens, etc. where one or two

incidents happened were classified together as “Others” seen in 6 cases, (4.4%), shown in Table No.2.

Table No.2: Cases Distribution According to Place of Bite

Place of bite	Male (%)	Female (%)	Total (%)
House	29(21.5%)	27(20%)	56(41.5%)
Playground	9(6.7%)	8(5.9%)	17(12.6%)
Field/Farm	30(22.2%)	21(15.6%)	51(37.8%)
Construction site	4(3%)	1(0.7%)	5(3.7%)
Others	4(3%)	2(1.5%)	6(4.4%)
Total	76(56.3%)	59(43.7%)	135(100%)

Lower limbs particularly lower portions of legs showed the maximum site of snakebite, 93 cases, (68.9%). The least common site of snakebite was the face, with 2 cases, (1.5%) as shown in Table No.3.

Table No.3: Case Distribution According to Site of Bites

Site of bite	Male (%)	Female(%)	Total (%)
Upper limb	19(14.1%)	16(11.9%)	35(25.9%)
Lower limb	50(37%)	43(31.9%)	93(68.9%)
Trunk	5(3.7%)	0(0%)	5(3.7%)
Face	2(1.5%)	0(0%)	2(1.5%)
Total	76(56.3%)	59(43.7%)	135(100%)

All the admitted cases showed some or other clinical features of snake envenomation. Pain & swelling were seen in as many as 56 cases, (38.5%). The neurotoxic features were seen in 48 cases, (35.6%) which was followed by nephrotoxic cases, 7 cases, (5.2%), Table No. 4.

Table No.4: Distribution of Cases according to Clinical features

Clinical Features	Males (%)	Females (%)	Total (%)
Pain & Swelling	28(17.8)	28(20.7%)	56(38.5%)

Bleeding	7(3%)	2(1.5%)	9(4.4%)
Neurotoxic	22(16.3%)	26(19.3%)	48(35.6%)
Nephrotoxic	4(3%)	3(2.2%)	7(5.2%)
Non-specific	14(10.4%)	8(5.9%)	22(16.3%)
Total	76(56.3%)	59(43.7%)	135(100%)

The maximum number of death occurred during the first five days of hospitalization, seen in 67 cases, (49.6%). On the 18th day of admission, two patients died due to renal failure complications. One male died due to septicemic shock after a month of hospitalization, shown in Table No.5 below.

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Table No.5: Cases distribution according to survival period

Time interval	No of patients		No of death (%)
	Male (%)	Female (%)	
Less than 5days	38(28.1%)	29(21.5%)	67(49.6%)
6 -10days	20(14.8%)	14(10.4%)	34(25.2%)
11 15days	12(8.9%)	14(10.4%)	26(19.3%)
16 – 20days	4(3%)	2(1.5%)	6(4.4%)
More than 20days	2(1.5%)	0(0%)	2(1.5%)
Total	76(56.3%)	59(43.7%)	135(100%)

Discussion

The present study center caters to wide areas of rural areas as it is situated at the outskirts of Chennai city areas. The majority of the population belongs to the farmer category and they have poor housing conditions. Most of the incidents happened at home or while people were working in fields or farms in rural areas. If we take it together, the maximum cases of snakebite were seen in the age group ranging from 21 to 40yrs, 83cases (61.5%). This may be because of the fact that during this age group, people are more active and involved in many indoor and outdoor activities. Our present observation is consistent with the previous works ^{4,5,6,7}. Hansdak SG et al ¹¹ also reported the involvement of the younger age group victims in venomous snake bite cases.

In the majority of the cases, bite marks were seen on the legs which were followed by the hands. Our observation was consistent with the works of Singh J ¹² and UM Natarajan, N Natarajan ¹³. Hands and legs are more exposed and susceptible body parts while a person is working and so these parts were mostly involved. Pain and swelling were not only common local findings but also presenting symptoms during admission. Similar finding was also reported by Rekha Thapar et al¹⁴. Bleeding from the bitten area was seen in 9 cases. We didn't come across any case of bleeding from other body parts. This could be due to two reasons 1. Viper bites were less common, and 2. Early hospital admission and treatment. However, available

investigation reports showed increased bleeding and clotting time with low platelet count. Neurotoxic manifestations in the form of ptosis, drowsiness, difficulty of breathing, etc. were common general features. In the cases of nephrotoxic patients, the main clinical features were anuria and oliguria. Approximately 50% of death occurred within the first 5 days of hospitalization. In the early days of hospitalization, death occurred due to acute renal failure. Gradually death rate decreased and only two patients died due to multiple organ failure after a prolonged hospital stay.

Conclusion

In a developing country like India snake bites still remain a major health problem contributing to enough proportion of morbidity and mortality, especially during the rainy season. As a precautionary measure people must be advised to use long pants, gum boots, or heavy shoes and gloves while working in the field or other outdoor places. In cases of snake bites, people must be educated to report and get treatment at the hospital as early as possible.

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Ethical Clearance:- Obtained as per institute guidelines

Conflict of interest: None to declare **Funding:-** Nil

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