

A RETROSPECTIVE REVIEW OF SNAKE BITE CASES ADMITTED IN A TERTIARY CARE HOSPITAL

Prince Sreekumar Pius¹, John Vinoj², Indhuja³, Premkumar⁴, Akila Diwakaran⁵

¹Professor, Department of Medicine, Kanyakumari Government Medical College.

²Senior Assistant Professor, Department of Medicine, Kanyakumari Government Medical College.

³Postgraduate, Department of Medicine, Kanyakumari Government Medical College.

⁴Intern, Kanyakumari Government Medical College.

⁵Intern, Kanyakumari Government Medical College.

ABSTRACT

BACKGROUND

Snakebite is one of the common medical emergency encountered in Kanyakumari district of Tamilnadu. Although majority of the snakebites are non-poisonous, delay in seeking medical care and administration of Anti-snake venom can result in serious mortality and morbidity.

METHODS

To determine the demographic characteristics of all snakebite cases, a retrospective study was conducted on all snakebite cases admitted in the Emergency Department of Kanyakumari Government Medical College Hospital for the period of January 2013- December 2015.

RESULTS

Out of the 866 cases admitted during the study period, 69.97% were males. The 20–49 years age group constituted about 55.43% of total cases. Cases were evenly distributed throughout the year with slight preponderance of cases in the last quarters of the year {October to December-250 (28.86%); July to September-238 (27.48%)}. The time interval between the bite and seeking medical assistance was between 1 to 4 hours in most of the cases-569 cases (65.7%). The case fatality rate was higher in females 2.7% compared to males 1.1%.

CONCLUSION

Snakebite is a common medical emergency in this area and appropriate use of antivenom, early referral when required, proper education and awareness will help to reduce the mortality from snakebite.

KEYWORDS

Snake Bites, Envenomation, Anti-snake Venom.

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INTRODUCTION: Snakes are found all over the world and are more commonly distributed in tropical and temperate climates.¹ India is estimated to have the highest snake bite mortality in the world. According to WHO estimates there are 11,000 deaths due to snake bite per annum in India, most of which are due to delay in seeking medical care. There are about 236 species of snakes in India, most of which are non-poisonous. However, there are 13 known poisonous species and of these, four namely common cobra (*Naja naja*), Russell's viper (*Daboia russelii*), saw scaled viper (*Echis carinatus*) and common krait (*Bungarus caeruleus*) are highly venomous and believed to be responsible for most of the poisonous bites in India.² Snakes are most likely to bite humans when they are threatened,

startled or provoked. Snakebite is generally considered to be a rural problem and has been linked to environmental and occupational conditions. Many houses in rural India are made of mud and have many crevices where rodents flourish and snakes are attracted to such houses in search of prey.³ Mortality and morbidity vary depending on the species of snake, since the estimated fatal dose of venom vary among species. In India, almost two thirds of bites are attributed to saw scaled viper, about a quarter to Russell's viper and a smaller proportions to cobras and kraits.^{4,5,6,7} Snake bite is an important and serious medical problem in India. However, reliable data for mortality and morbidity are not available because of the nonavailability of a proper reporting system. In this endeavour, we studied the epidemiology of snakebite cases over a period of 3 years.

AIMS AND OBJECTIVES: To study the epidemiology of snakebite cases admitted to hospital, age wise, sex wise distribution, type of snake, time of bite, delay in seeking medical help, outcome and mortality of snakebite cases.

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Corresponding Author:

Dr. John Vinoj,

#61, Old State Bank Colony,

Nagercoil-629001, Tamilnadu.

E-mail: johnvinoj@rediffmail.com

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METHODS: In this record based retrospective study, snakebite cases admitted to the hospital during the time period of January 2013- December 2016 were studied. Data were collected from the Medical Records Department of the Kanyakumari Government Medical College Hospital. Recorded information was entered in a pre-coded proforma and included age, sex, residence, site of bite, type of snake poison, time of bite, delay in arrival to hospital, whether cases were directly admitted to the hospital or referred from other health centres and the outcome of the cases. The total number of snake bite cases admitted during the above period was 866. All snakebites were classified as medicolegal cases, whose records were kept separately in the Medical Records Department. All the snakebite cases except the cases whose details were inadequate was included in the study.

RESULTS: The age and sex wise distribution of the 866 cases are shown in the table. Of the total 866 cases, 606 were males (69.97%) and 260 were females (42.9%) [Fig:1]. Cases were evenly distributed in the age group of 20 to 70 years with most cases in 20–49 age group which neurotoxic bites constitutes about 55.43% of total cases [Fig:2]. Snake bite was more prevalent among males than females with the ratio being 2.3:1. Bites were more common on lower limb (507 cases; 58.54 %) followed by upper limb (254 cases; 29.33%). Other less common sites were the trunk, chest and face. In few cases, the bite site could not be analysed due to improper documentation [Table:1].

Most of the cases clustered during the time period from October to December (250 cases) followed by July to September (238 cases), corresponding to monsoon season in this area. The cases were comparatively less in the first quarters of the year [Fig: 3]. Majority of the snakebites were during the daytime with nearly half of the bites during 6:00 am to 6:00 pm (494 cases; 57.04%). This may be attributed to occupational exposure to bites during work in daytime in paddy fields and farms [Table:2].

Of the 866 cases, 140 were referred from other health centres with an average of 46 cases per year. All the referred cases had received tetanus toxoid before admission to the hospital. Of the total cases, 106 (12%) were vasculotoxic with abnormal coagulation profile and among them 17 cases required dialysis due to acute kidney injury; 27 cases were due to neurotoxic snakebites (krait >cobra) with 16 cases requiring ventilator assistance due to respiratory arrest. Most of the cases were due to bite from non-poisonous snakes. In some cases, the type of snake could not be found out mainly because the victim has not seen the snake, and the bites were dry bites [Fig:4].

There were totally 14 deaths during the study period, case fatality rate being 1.6%. Most of the deaths were due to neurotoxic bites (9 cases); 5 were due to vasculotoxic bites. This difference is statistically significant ($\chi^2 = 18.71$, $df = 1$, $p < 0.05$) [Table:3]. The average time from admission to death was 1.5 days for neurotoxic and 3.2 days for vasculotoxic bites. Mortality was equal among males and females. The time interval between the bite and seeking

medical assistance was between 1 to 4 hours in most of the cases (569 cases; 65.7%) [Fig:5].

Among the admissions, Polyvalent Anti-snake venom was administered to 248 cases. Anti-Snake Venom was administered to all patients with cellulitis crossing a joint. Nearly all patients developed allergic reaction to ASV. A venomous snakebite case averagely required 15 vials of ASV.

Site of Bite	Number of Cases
Upper limb	254
Lower limb	507
Head	3
Trunk	5
Not known	98

Table 1: Site Of Snakebite

Time Period	Number of Cases
6 am to 6 pm	494
6 pm to 6 am	352

Table 2: Time of Occurrence of Bite

Type	Total	Death
Neurotoxic	106	9
Haemotoxic	27	5

Table 3: Mortality from Different Types of Envenomation

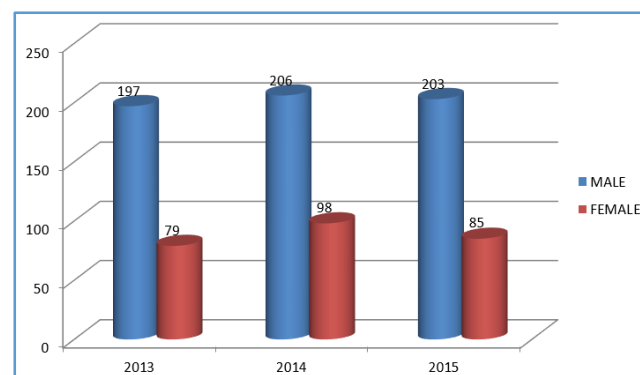


Fig. 1: Sex wise Distribution of Cases

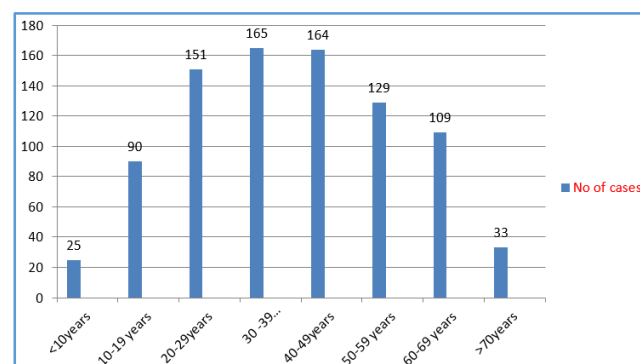


Fig. 2: Age wise Distribution of Cases

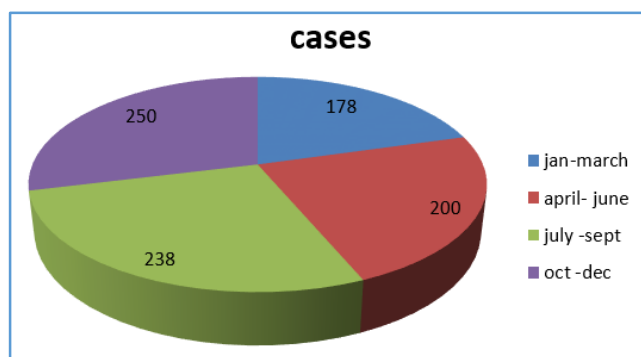


Fig. 3: Season wise Distribution of Cases

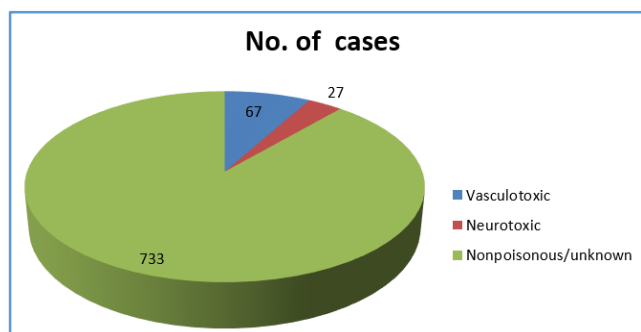


Fig. 4: Types of Envenomation

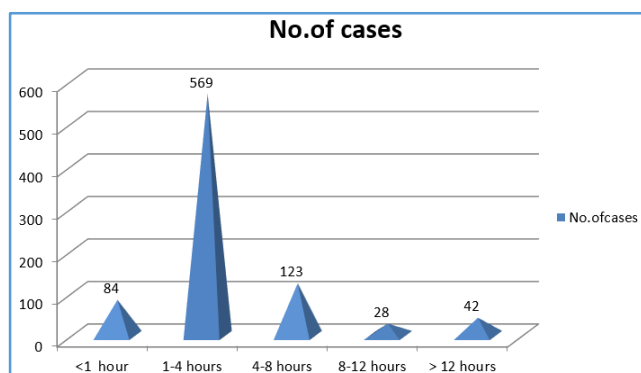


Fig. 5: Delay in Seeking Medical Care

DISCUSSION: In this study, we found that in majority of cases the exact snake species was not identified, even though fang marks and other symptoms suggestive of venomous bites were present in these cases. This may be due to the fact that these bites were quick and defensive bites and the patients were frequently anxious and frightened to identify the species. Viper bites were more common than cobra and krait bites. Mortality was higher than with vasculotoxic bites. The difference was statistically significant ($\chi^2 = 18.71$, $df = 1$, $p < 0.05$). The overall case fatality rate was 1.6%. The case fatality rate was higher in females 2.7% compared to males 1.1%. This may be due to cultural attitudes in India where men immediately seek medical help compared to females.⁸

The observation that bites were common in lower limb (58.54%) compared to upper limb (29.33%) suggest that in most cases the snakes were stepped on inadvertently. Most of the patients had a lapse of 1 to 4 hours in seeking medical help, the maximum delay was 15 days and the shortest lapse was 20 minutes. One of the reasons for the delay in seeking

medical help may be because there is a common tendency in the community to prefer trying traditional and native treatment first rather than coming to the hospital immediately.

Bites were common in the age group of 20 to 49 years with males more affected than females which may be attributed to the fact that men in this age group are economically active and involved in outdoor activities compared to females. Snakebite cases among males and females were in the ratio 2.3:1.^{8,9}

Cases were evenly distributed throughout the year with slight preponderance of cases in the last quarters of the year (October to December-250 cases-28.86%; July to September-238 cases-27.48%; April to June-200 cases-23.09%; January to March-178 cases-20.55%). This difference was not statistically significant. The last quarter of the year corresponds to rainy season in this area. During rainy season, the rains may flood the burrows and dislodge the snakes making them take shelter near human dwellings.^{9,10} Bites were common from 6:00 am to 6:00 pm (57.04%) during which time most rural people are engaged in agricultural work and more prone to snakebites.

CONCLUSION: As a tertiary care teaching hospital, our hospital is well equipped for treating snakebite cases. Mortality rate is relatively less and even this could be attributed to delay in arrival, seeking traditional treatment and lack of awareness.

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