



STUDY OF EPIDEMIOLOGY, CLINICAL PROFILE AND OUTCOME OF PATIENT ADMITTED TO PICU WITH SNAKE BITE IN AGE GROUP BETWEEN 1 – 13 YEARS

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ABSTRACT Snakebite is an acute life threatening time limiting medical emergency. It is a preventable public health hazard often faced by rural population in tropical and subtropical countries. Snake bites are “life-threatening condition” since many cases die even before reaching the hospital. The present study was conducted to study the epidemiology, clinical profile and outcome among patients admitted to PICU with snake bite in age group between 1 – 13 years. This was a cross-sectional study conducted at PICU / ward Dept. of Pediatrics, Dr.VMGMC, Solapur. During study period total 50 children between 1 to 13 years of age who come with history of snake bite were enrolled, 50% belonged to 6-10 years age group. About 72% were male children's. About 90% were resident of rural area & majority 34% were belonging to lower socio-economic class according to modified BG Prasad's scale 2020. About 60% snake bite occurred in monsoon & at the evening 54%. Majority of snake bite 80% were non poisonous. Majority of children with snake bite recovered completely & only 2% were died. About 78% did not had any complication after snake bite. Most common complication after snake bite was AKI (6%).

KEYWORDS : Snakebite, PICU

INTRODUCTION

Snakebite is an acute life threatening time limiting medical emergency. It is a preventable public health hazard often faced by rural population in tropical and subtropical countries with heavy rainfall and humid climate. Rapid urbanization and deforestation in the agricultural country like India, creates a casual encounter between humans and snakes in daily life. This happens particularly during rainy season. Snake bites are “life-threatening condition” since many cases die even before reaching the hospital.¹

Recently the Government of India's Central Bureau of Health Intelligence reported only 985 snake bite deaths in 2010. Its incidence is usually underestimated because of lack of epidemiological data. In India the number of snake-bite fatalities has long been controversial. Estimates as low as 61,507 bites and 1,124 deaths in 2006 and 76,948 bites and 1,359 deaths in 2007 and as high as 50,000 deaths each year have been published.²

There are about 216 species of snakes identifiable in India, of which 52 are known to be poisonous. The major families of poisonous snakes in India are Elapidae which includes common cobra (Najanaja), king cobra and common krait (bungaruscaerulus), viperidae includes Russell's viper, echiscarinatus (saw scaled or carpet viper) and pit viper and hydrophidae (sea snakes).³

Snake bite is most common in school age children, adolescent and young adults. It accounts for 3% of all deaths in children of ages 5–14 years. Ninety seven per cent of the victims of snake bite die in rural areas with a survival rate of 3%, among the 97% deaths around 77% are outside health care facilities, presumably because they chose traditional therapy from tantriks, vaidyas and ojhas.⁴ In Maharashtra, common poisonous snakes are cobra, russell viper, saw scaled viper and krait.⁵ Also, snake bite cases have shot up sharply due to long period of electric load shedding in villages leaving them in darkness. Snake bite is thus an important medical emergency and important cause of hospital admission. With this background, the present study was conducted to study the epidemiology, clinical profile and outcome among patients admitted to PICU with snake bite in age group between 1 – 13 years.

MATERIALS & METHOD

This was a cross-sectional study conducted at PICU / ward Dept. of Paediatrics, Dr.VMGMC, Solapur all children between 1 to 13 years of age admitted with history of Snake Bite during the period from January 2022 to December 2022 were included in study group. Total 50 children between 1 to 13 years of age who come with history of snake bite were enrolled in study after taking consent from the parents. All

the patients were thoroughly assessed and investigated.

Statistical Analysis

Data was fed in master chart by using MS excel. Data was expressed as frequency and percentages, means, median, standard deviations and range in tabular and graphical format. Statistical comparison between two groups was made using the Chi-square test (categorical variables). p-values with two tailed. Statistical significance was set at $p \leq 0.05$ as statistically significant and $p \leq 0.01$ statistically highly significant. All calculations were made using the SPSS V26.0 trial version.

OBSERVATIONS

During study period total 50 children between 1 to 13 years of age who come with history of snake bite were enrolled, 50% belonged to 6-10 years age group followed by 30% from 11-13 years age group & 20% from 1-5 years age group. About 72% were male children's with M.F. ratio 3:1. About 90% were resident of rural area & majority 34% were belonging to lower socio-economic class according to modified BG Prasad's scale 2020. About 60% snake bite occurred in monsoon & at the evening 54%. (Table 1)

Table 1 : Distribution Of Children With History Of Snake Bite According To Socio-demographic Parameters (n=50)

| Factors | Frequency | Percentage | |
|----------------------|----------------------|------------|-----|
| Age group (Years) | 1-5 | 10 | 20% |
| | 6-10 | 25 | 50% |
| | 11-13 | 15 | 30% |
| Gender | Male | 36 | 72% |
| | Female | 14 | 28% |
| Resident | Urban | 05 | 10% |
| | Rural | 45 | 90% |
| Season | Summer (Feb-May) | 14 | 28% |
| | Monsoon(June-Sept) | 30 | 60% |
| | Winter (Oct-Dec) | 06 | 12% |
| Timing of the day | Morning (6 am to 12) | 02 | 04% |
| | Afternoon (12-4 pm) | 07 | 14% |
| | Evening (4-8 pm) | 27 | 54% |
| | Night (8 pm to 6 am) | 14 | 28% |
| Socioeconomic status | Upper middle | 05 | 10% |
| | Lower middle | 12 | 24% |
| | Upper lower | 15 | 30% |
| | Lower | 17 | 34% |

Table 2 : Distribution Of Children With History Of Snake Bite According To Clinical Profile (n=50)

| Factors | | Frequency | Percentage |
|--|----------------|-----------|------------|
| Type of Snake | Poisonous | 10 | 20% |
| | Non poisonous | 40 | 80% |
| Type of snake bite | Neuroparalytic | 04 | 40% |
| | Vasculotoxic | 05 | 50% |
| | Myotoxic | 01 | 10% |
| Intervention done before referred to Institute | First Aid | 10 | 20% |
| | ASV | 02 | 04% |
| | Symptomatic | 05 | 10% |
| | None | 33 | 66% |
| Time to admission after snake bite | 0-06 hrs. | 30 | 60% |
| | 07-12 hrs. | 15 | 30% |
| | 13-24 hrs. | 4 | 06% |
| | 25-36 hrs. | 1 | 04% |
| Duration of hospitalization | 00 - 02 days | 21 | 42% |
| | 03-05 days | 19 | 38% |
| | > 05 days | 10 | 20% |

Most common presentation after snake bite was anxiety, palpitation, vomiting & paresthesia. Majority of snake bite 80% were non poisonous (non venomous) & 50% were vasculotoxic snake bite. Out of total, 66% children with snake bite did not required any intervention. Only 03 cases had received ASV at primary health care facility. About 20% required first aid, 10% required symptomatic treatment and only 4% required anti-snake venom. About 60% children with snake bite admitted to hospital within 6 hour. About 42% required hospitalization only for 2 days & 20% required hospitalization for more than 5 days. (Table 2)

Table 3 : Distribution Of Children With History Of Snake Bite According To Outcome (n=50)

| Factors | | Frequency | Percentage |
|---------------|----------------------|-----------|------------|
| Outcome | Survived | 49 | 98% |
| | Death | 01 | 02% |
| Complications | ASV Reaction | 04 | 8% |
| | Compartment Syndrome | 02 | 4% |
| | Gangrene | 02 | 4% |
| | AKI | 03 | 6% |
| | None | 39 | 78% |

Majority of children with snake bite recovered completely & only 2% were died. About 78% did not had any complication after snake bite. Most common complication after snake bite was AKI (6%). (Table 3)

DISCUSSION

In present study all 50 children with snake bite were studied, 40 (80%) had non poisonous and 10 (20%) had poisonous snake bite. Majority children above 5 years. Children over 5 years are at risk of snakebite because they are involved more in outdoor games. Older children in rural areas are given responsibility of carrying out outdoor activities like grass cutting, cattle grazing and firewood collection etc. thus making them an exposed age group for snake bite as seen in our study. We also found preschool children had an incidence of 10% as compared of 35% in a study by Jamieson and Pearn⁶ and 13% in study by Shrestha.⁷

Incidence was more in boys (72%) as compared to girls (28%). This is in coordination with other studies where the incidence is always higher in male children which can be attributed to their behaviour and nature to play more of outdoor games.^{6,7,8}

In present study found that incidence of snake bite was common in rural areas 90% than in urban areas 10%. It was also found that maximum bite was common at evening and night time & in monsoon followed by summer seasons. Incidence is more in heavy rain during monsoon, where the holes and burrows occupied by snakes and rats are filled with water thus the snakes have no shelter. Most bites occur during night times when the snake is accidentally disturbed by the prey and also since snakes are nocturnally active. As seen in our study the incidence of snake bite (51.85 %) is more in months of July to September. This characteristic pattern has also been reported in other studies.^{9,10,11}

In present study found that, 10 patient required ASV out of which 4 patient develop ASV reaction and were treated conservatively and recovered completely. In VT snake bite most common manifestation was local bleeding >> swelling > cellulitis. Out of 5 VT snake bite 03 were in acute renal failure, 01 patient required peritoneal dialysis and

01 patient required hemodialysis. 04 patient required FFP and 3 patient required packed red blood cell transfusion and diuretics. Chronic renal failure in other studies varied from 0-28% but no such cases were observed in our study. Of the 15 (9.25%) patients of neuroparalytic bites, 10 (66.66%) patients developed respiratory paralysis and required ventilatory support.^{12,13,14} In present study found that, ptosis was most common and earliest manifestation, 3 require mechanical ventilation and all were recovered. One Patient had died due to VT snake bite because of delayed presentation to hospital (Day 2) and patient was in DIC, ARF shock and associated with systemic infection. Snake bite is thus an important and serious medical problem in many parts of India, mainly the solapur district of Maharashtra where this study was conducted. We conclude that boys aged more than 5 years are more prone to snake bites. Outcome can be fatal in patients presenting late so awareness amongst masses is important regarding the seriousness and early treatment. Early diagnosis, appropriate treatment and close monitoring of children for development of complications and its prompt management can be life saving.

CONCLUSION

The snake bite is rural medical emergency. The delay in appropriate treatment leads to significant morbidity and mortality. Do it R.I.G.H.T first aid to be taught to the public. Good first aid, early referral, administration of adequate, timely dose of ASV, and timely management of allergic reactions can significantly reduce mortality rate.

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