

# A study of management of the patients of snake bite at tertiary health care centre

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## Abstract

**Background:** More than 2,00,000 cases of snake bite are reported in India each year. Reports from Maharashtra account for 2000 deaths. **Aims and Objectives:** To study management of the patients of snake bite at tertiary health care centre. After approval from institutional ethical committee a cross-sectional study was carried out in the department of Medicine of a tertiary health care centre in the patients of snake bite showing signs of *envenomation* were admitted to Medicine ward during the one year period i.e. January 2016 to January 2017. In the one year duration there were 105 patients were admitted for snake bite. The statistical analysis was done by Chi square test calculated by SPSS 19 version. **Result :** In our study we have seen that The majority of the patients were in the age group of 30-40 were 30.48%, followed by 20-30 25.71%, 40-50 were 18.10%, 50-60 were 14.29%, <20 -11.43%. The majority of the patients were Male i.e. 71.43% and 28.57% were female. The most common type of Snake was Cobra i.e. 60.00% , Viper bite were 27.62% and Krait bite were 12.38%. The majority of the patients were Rural i.e. 80.95%, Urban slum were 14.29%, and Urban were 4.76%. The majority of the patients with presence of ASV at primary treatment centre recovered i.e. 97.70% as compared to only 44.44 in whom ASV at primary treatment centre was absent, this difference was statistically significant ( $X^2=36.69, df=1, p<0.0001$ ). The majority of the patients with recovered i.e. 100% i.e. in whom Delay ASV was < 4 hours. and 80% in whom the delay was 4-24 hours. and only 10% in who the delay was >24 hours. This difference was statistically significant ( $X^2=72.40, df=2, p<0.0001$ ) **Conclusion:** It can be concluded from our study that still the mortality of snake bite is very high and important factors implicated were absence ASV at primary treatment centre and delay in ASV for more than 4 hours. so, the Adequate ASV and treatment guide line should circulated at every primary treatment centre for decreasing mortality related to snake bite.

**Key words :** Snake bite, ASV (Anti Snake Venom), Cobra bite, Viper Bite, Krait bite

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## INTRODUCTION

More than 2,00,000 cases of snake bite are reported in India each year. Reports from Maharashtra account for 2000 deaths.<sup>1,2,3</sup> Morbidity is also significant and there has been little improvement in reducing the fatalities over the years in spite of now having good supplies of

polyvalent anti-snake venom (ASV) available. The major reason for high mortality rate is the delay in getting the victim to a well-equipped casualty treatment facility fast enough. Romulus Whitaker, pointed out that, the Indian cobra (*Naja naja*), the common krait (*Bungarus caeruleus*), the Russell's viper (*Daboia russelii*) and the saw scaled viper (*Echis carinatus*) are basically four venomous snakes found in India.<sup>4,5</sup> In 2009, Snake bite was recognized for the first time by WHO as a tropical neglected disease.<sup>6</sup>

## METHODOLOGY

After approval from institutional ethical committee a cross-sectional study was carried out in the department of Medicine of a tertiary health care centre in the patients of snake bite showing signs of *envenomation* were admitted to Medicine ward during the one year period i.e. January 2016 to January 2017. In the one year duration

there were 105 patients were admitted for snake bite. All details of the patients like age ,sex, type of snake bite , Delay of ASV (Anti Snake Venom administration ) , ASV availability and Outcome in the patients like Recovered or Death or having poor outcome like requirement of Prolonged ventilation , Dialysis etc. The statistical analysis was done by Chi square test calculated by SPSS 19 version.

## RESULT

**Table 1:** Distribution of the patients as per the age

Age	No.	Percentage (%)
<20	12	11.43
20-30	27	25.71
30-40	32	30.48
40-50	19	18.10
50-60	15	14.29
<b>Total</b>	<b>105</b>	<b>100.00</b>

The majority of the patients were in the age group of 30-40 were 30.48%, followed by 20-30. 25.71%, 40-50 were 18.10%, 50-60 were 14.29%, <20 -11.43%.

**Table 2:** Distribution of the patients as per the sex

Sex	No.	Percentage (%)
Male	75	71.43
Female	30	28.57
<b>Total</b>	<b>105</b>	<b>100.00</b>

The majority of the patients were Male i.e. 71.43% and 28.57% were female.

**Table 3:** Distribution of the patients as per the type of Snake bite

Type of Snake bite	No.	Percentage (%)
Cobra	63	60.00
Viper	29	27.62
Krait	13	12.38
<b>Total</b>	<b>105</b>	<b>100.00</b>

The most common type of Snake was Cobra i.e. 60.00 % , Viper bite were 27.62% and Krait bite were 12.38%.

**Table 4:** Distribution of the patients as per the place of residence

Place of residence	No.	Percentage (%)
Rural	85	80.95
Urban slum	15	14.29
Urban	5	4.76
<b>Total</b>	<b>105</b>	<b>100.00</b>

The majority of the patients were Rural i.e. 80.95%, Urban slum were 14.29%, and Urban were 4.76%.

**Table 5:** Distribution of the patients as per the presence of ASV at primary treatment centre

ASV	Recovered	Death or poor outcome	Total
Present	85 (97.70)	2 (2.30)	87 (100)
Absent	8 ( 44.44)	10(55.56)	18 (100)
<b>Total</b>	<b>93 (88.57)</b>	<b>12 (11.42)</b>	<b>105 (100)</b>

( $\chi^2=36.69,df=1,p<0.0001$ )

The majority of the patients with presence of ASV at primary treatment centre recovered i.e. 97.70 % as compared to only 44.44 in whom ASV at primary treatment centre was absent , this difference was statistically significant ( $\chi^2=36.69,df=1,p<0.0001$ )

**Table 4:** Distribution of the patients as per the Delay of ASV and Outcome

Delay (Hours)	Recovered	Death or poor outcome	Total
<4	80 (100)	0 (0)	80 (100)
4-24	12 (80)	3 (20)	15 (100)
>24	1 (10)	9 (90)	10 (100)
<b>Total</b>	<b>93 (88.57)</b>	<b>12(11.42)</b>	<b>105 (100)</b>

( $\chi^2=72.40,df=2,p<0.0001$ )

The majority of the patients with recovered i.e. 100 % i.e. in whom Delay ASV was < 4hours., and 80% in whom the delay was 4-24 hours. and only 10% in who the delay was >24 hours. this difference was statistically significant ( $\chi^2=72.40,df=2,p<0.0001$ )

## DISCUSSION

Snakebite is generally considered to be a rural problem and has been linked with environmental and occupational conditions.<sup>7</sup> Most houses in the rural areas of India are made of mud and have many crevices where rodents flourish. Snakes have easy ingress to such houses and often enter them in search of food. Firewood and dried cow dung, stored in or near the house, provide ready shelter for snakes and rodents.<sup>8</sup> Morbidity and mortality from snakebite envenomation depends on the species of snake, since the estimated fatal dose of venom varies among species. In India, almost two-thirds of the bites are attributed to the saw-scaled viper (as high as 95% in some areas such as Jammu<sup>9</sup>), about a quarter to Russell's viper, and smaller proportions to cobras and kraits.<sup>6</sup> Snakebite is an important and serious medical problem in many parts of India. However, reliable data for morbidity and mortality are not available since there is no proper reporting system. Moreover, many cases are not recorded in official statistics, as people seek traditional treatment methods. Most snakebite studies in India deal with clinical and management aspects, and there are few epidemiological studies.<sup>10</sup> Narvencar K *et al*<sup>11</sup> found a significant difference between early and late administration of Antsnake venom in terms of mortality benefit.

In our study we have seen that The majority of the patients were in the age group of 30-40 were 30.48%, followed by 20-30. 25.71%, 40-50 were 18.10%, 50-60 were 14.29%, <20 -11.43%. The majority of the patients were Male i.e. 71.43% and 28.57% were female. The most common type of Snake was Cobra i.e. 60.00 % , Viper bite were 27.62% and Krait bite were 12.38%. The

majority of the patients were Rural i.e. 80.95%, Urban slum were 14.29%, and Urban were 4.76%.

The majority of the patients with presence of ASV at primary treatment centre recovered i.e. 97.70 % as compared to only 44.44 in whom ASV at primary treatment centre was absent, this difference was statistically significant ( $X^2=36.69, df=1, p<0.0001$ ). The majority of the patients with recovered i.e. 100 % i.e. in whom Delay ASV was < 4hours., and 80% in whom the delay was 4-24 hours. and only 10% in who the delay was >24 hours. This difference was statistically significant ( $X^2=72.40, df=2, p<0.0001$ )

This was similar to Rupal Padhiyar<sup>12</sup> *et al* they found The majority of cases were in the range of 21- 40 years (54.7%). There were 82.8% males (53/64), 17.2% females (11/64) and 60.9% (39/64) bites were during day time. There were 43.8% (28/64) vasculotoxic bites, 34.4% (22/64) neurotoxic bites and 20.3% (14/64) nonpoisonous bites. Viper was the most common (9%) identified snake, followed by krait (5%). References from Rural Health Centers were 57.8% (57/64), 11% were from Primary health centers and rest from private sector. Anti snake venom (ASV) was received by 68.75% (44/64) patients before reaching tertiary care. The correlation of timing of receiving 1st dose of ASV with outcome found improved group 65.9% (29/37) patients, 60% (15/25) in in morbid group had received ASV within first 4 hours. Both the expired patients received ASV after 4 hours and within 24 hours. In their study early administration of ASV was significantly associated with better outcome ( $p=0.016$ ), Also I F Inamdar<sup>13</sup> *et al* found The prognosis for snakebites depends on factors besides hospital treatment: whether first aid is given immediately after the bite, early initiation of appropriate treatment, and the type of venom. In this study, mortality among those who received first aid before coming to the hospital was lower (3.1%) than among those who did not receive first aid (9.2%). First aid in the form of a firm bandage, immobilising the bitten area, and incising to draw blood was applied by many patients. Mortality was higher (8.4 %) in cases where the time interval between the bite and initiation of treatment was more than 6 hours, and lower (4.4%) among those who received treatment within 6 hours. Mortality from neurotoxic snakebite was higher (8.9%) than that from vasculotoxic snakebite (4.2%)

## CONCLUSION

It can be concluded from our study that still the mortality of snake bite is very high and important factors implicated were absence ASV at primary treatment centre and delay in ASV for more than 4 hours. so, the Adequate ASV and treatment guide line should circulated at every primary treatment centre for decreasing mortality related to snake bite.

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