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A Study of Ventilator Support and Clinical Outcome in Patients of Snake Bite in Tertiary Care Centre

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Abstract: Snake bite envenomation is one of the common acute lives threatening medical condition presenting to the emergency with significant morbidity and mortality. To study the use of ventilator support its duration and outcome in patients with snake bite. Hundred confirmed snake bike patients admitted in ICU, Department of Medicine, G.R. Medical College and JA group of hospital Gwalior from April 2014 to November 2015, were included. The demographic profile, details on ventilator support and outcome were recorded. Male preponderance (69%) was recorded. Snake bite was common among 21-30 years (26%) of age group. Half of all the patients, who required ventilator support, were given 12-24 hours of ventilatory support. Only 4% patients died due to snake bite. Snake bite is a common life-threatening emergency in the study area. Delay in hospitalization is associated with poor prognosis and increased mortality rate due to consumptive coagulopathy, renal failure, and respiratory failure.
Keywords: Snake bite, ventilator support, snake poison.

INTRODUCTION

Among occupational hazard snake bite is common medical emergency in Indian population. It is more common in the areas where farming is the main source of income. Out of 2000 species of snake worldwide, 400 are reported to be poisonous [1, 2].

Several reports from India have shown that out of 2, 50, 000 incidents of snake bite, around 50,000 victims die.

Death rates are high in India despite the fact that venomous snakes are less in India; also anti-snake venom (ASV) is easily available [3]. The main reason for such a high incidence of snake bite is that people use all kinds of indigenous and locally available remedies initially, instead of going to the hospital [4].

The epidemiological data regarding the snake bite is very limited in Indian population as most of the snake bite occurs in illiterate, rural people where people believe on witchcraft and traditional healers for the treatment. Only those cases of snake bite which are in critical stages or of severe envenomation reach the hospital for the treatment [5].

Snake-bite is considered as life-threatening in nature which may cause local to systemic complications in the form of neurotoxicity or haematotoxicity [5]. Present study was an attempt to study the use of ventilators in snake bite patients, its duration and outcome in patients of snake bite.

MATERIALS AND METHODS

A prospective study was performed on 100 patients with definite snake bite patients who were admitted in ICU, Department of Medicine, G.R. Medical College and JA group of hospital Gwalior between April 2014 to November 2015.

All the patients were subjected to history taking, complete physical examination and relevant blood investigations including compete blood count and renal function test.

All cases presenting with definite history of snake bite with toxicity were included in the study after snake bite confirmation whereas, cases of unknown bite were excluded from the present study.

Written informed consent was taken from eligible patients and enrolled in the study. A questionnaire was prepared to interview patients and bystanders including detailed information regarding

general demographic information. Details of ventilator support and outcome was also collected and recorded. All those presenting with toxicity were given Anti Snake Venom (ASV) and supportive management.

All the data was analyzed using IBM SPSS ver. 20 software. Frequency distribution and cross tabulation was used to prepare table. Data were expressed as number and percentage.

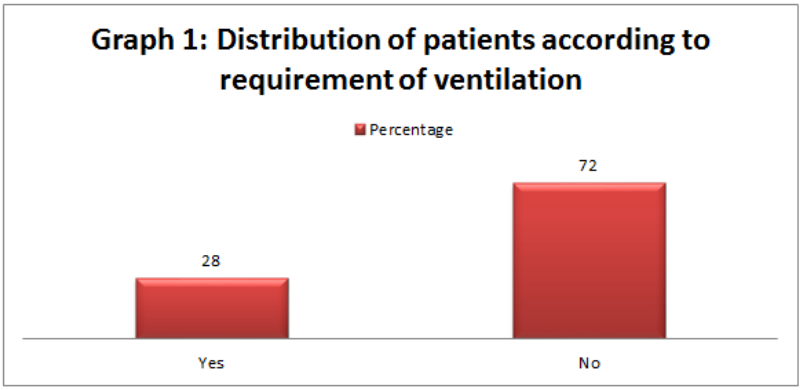
RESULTS

Out of 100 patients studied 69% were males and 31% were females. Most of the cases of snake bite were between the age group of 21-30 years (26%) and second most common age group was 41-50 years (21%).

Almost all (96%) patients recovered and only 4 (4%) died in hospital due to snake bite.

Table-1: Distribution of patients according to duration of ventilatory support given

Time duration on ventilator (hrs)	No of patients (n=28)	Percentage
0-6	0	0
7-12	8	28.6
13-24	14	50
25-72	6	21.4
Total	28	100



DISCUSSION

Several Indian reports have shown that around 2 lakh peoples get snake bites and out of that around 15,000-30,000 cases/year are reported to be fatal [6]. In present study most common age group having snake bite was 21-30 years (26%) which suggest that incidence of snakebite was more in younger age group. In a similar study by Padhiyar et al most of the cases were in the range of 21- 40 years (54.7%) [7]. Several other Indian studies like Kularatne *et al*. [8], Sanjib *et al*. [9] and Rojnuckarin *et al*. [10] also reported similar age group as the most common for snake bite. Bhalla *et al*. studied 150 patients and reported that most common age group was 14-30 (56.57%) [6]. Present study observations are similar to the study done by Russel *et al*. [11] where the study reported similar age group of snake bite.

Padhiyar *et al*. also reported male preponderance (82.8%) [7] Which was similar to the results of present study where 69% were male? Rojnuckarin *et al.* [10] also had majority of male patients (59%) in their study. Bhalla *et al.* also reported that males (66%) were bitten more than females [6]. All the previous reports mention the same finding of male preponderance in snake bite compared to female. Ahuja and Singh [12] reported the ratio as 4:1 (M: F). Bhat *et al*. [13] in 1974 reported the incidence as 7:3 (M: F).However some researcher reported female predominance in their area [14].

In present study 28% of patients required ventilator which is similar to the reports of Nigam *et al*. (35%) [15]. Padhiyar *et al*. studied 64 snake bite patients and reported that 18.75% (12/64) required mechanical ventilation [7]. Study done by Bhalla *et al*. reported 3 deaths out of 150 patients in neuroparalytics, because of the delay in administration of ASV producing respiratory paralysis and delay in ventilatory support who were transferred from other hospitals [6] Even present study has proved the importance of ventilator in decreasing mortality.

In present study half (50%) of all the patients, who required ventilator support (n=28), were given 12-24 hours of ventilatory support. Bhalla *et al*. studied 150 patients and reported that out of 15 patients who required ventilator, 66.67% required ventilator for <12 hours [6].

Almost all (96%) patients recovered and only 4% died in hospital due to snake bite. This may be due

to delay in seeking treatment because of that condition of the patient deteriorated. This delay in arrival was may be because of lack of awareness of the hazards of snakebite, an unrelenting belief in the traditional system of medicines, and a lack of proper primary healthcare facilities.

These results are similar to Punde *et al.* [16] (4.7%) Koirala *et al.* [17] (2.5%) and Zafar *et al.* [18] (5%). In a study by Padhiyar *et al.* [7] out of 64 patients who got snake bike 2 patients expired (3%) which is almost similar to the present study results.

In our ICU, most of the cases admitted were of neurotoxic snakebites. Neurotoxic envenomation's have the potency to cause a broad spectrum of presentations starting from ptosis and ophthalmoplegia to respiratory arrest. Timely administration of anti-snake venom and ventilator support can prevent the mortality and morbidity of the victims.

CONCLUSION

To conclude neurotoxic snake bite can results in good outcome if proper and immediate treatment is provided in time. The outcome get worsen in cases which get delayed treatment. Awareness regarding the false belief toward snake bite and available treatment options need to be spread. Awareness in the public and medical staff about the complication of snakebite and benefit of early reporting to hospital is needed.

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