Retrospective analysis of symptoms and outcomes of snakebite cases

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ABSTRACT

Usually, every part of the globe is found with snakes, varying with the species or variety of snakes found in a particular region. It is scientifically known that about 3000 types of snakes are prevalent in all parts of the globe. Among these 300, only 10% of the snakes are reportedly venomous, giving life-threatening risks in human beings. Depending upon the snake group, neurotoxic or hemotoxic venom of the snake is manifested. Symptoms of swelling or without swelling at the site of the bite, flank bite marks, local pain are seen in moderate cases, and the severe cases may manifest with shock, renal failure, and/or coagulopathy. The retrospective data were collected from one tertiary care hospital in Nellore district, Andhra Pradesh, India. A further retrospective analysis was carried out using snakebite victims or patients. About 20 patients among these were excluded from the study based on incorrect labeling of snake bite. Therefore, complete data for the study was collected from 72 patients for the study who were admitted into the general medical ward. When the duration time of the treatment is delayed, obviously, the snake bite becomes mortal in the case of the patient. This is because, like the time-lapse, the anti-venom action becomes ineffective. However, despite the above findings like clinical presentation, demographic characteristics, and timelines in both the groups. The overall mortality rate in the present study was reported 2%. It can be concluded from the study that by rapid administration of antivenin in appropriate doses, the snakebite cases can be managed successfully. Thus, we suggest developing an inter-disciplinary approach to reducing the mortality rate of snakebite.

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scale is clinically available for calculating the dose of anti-venin sera for administration (Isbister, 2006). Within at least 4 to 24 hours after a snake bite, the anti-venom should be administered in the victim for its effective action (Parrish et al., 1965; Nataprawira et al., 2009). The present paper is a retrospective analysis of snakebite victims admitted in tertiary care hospitals in Nellore District, Andhra Pradesh, India.

**MATERIALS AND METHODS**

The present retrospective data were collected from a tertiary care hospital located in the Nellore district of Andhra Pradesh. About 92 cases of snake bites data, including patient age, sign, and symptoms at the time of admission and treatment modalities, have been collected. However, the patient’s particulars, like their name and address, are not collected from the hospital. All the cases were collected during the period of 1st January-31st July 2017 and were recorded. Inclusion criteria: Aged in between 5-70 of either sex with strong suspected or confirmed snake bites. Exclusion criteria: Patients brought to the hospital with uncertain snake bite history with a doubt of whether it is snake bite, or any other venomous insect bite were excluded from the study.

**Statistical analysis**

Data collected were entered into the computer database. The analysis was done by graph pad prism version 5.

**RESULTS AND DISCUSSION**

The retrospective data collected from 1st January to 31st July 2017 of 92 days period. There are about 92 snakebite victims presented with various clinical signs and symptoms were collected and assessed. About 20 patients among those were excluded from the study based on incorrect labeling of snake bites. Therefore, complete data for the study was collected from 72 patients for the study who were admitted to the general medical ward. It was found that many snake bites encountered during evening time, and most bitten cases were of lower limb bites (Table 1).

All 72 patients were found to be bitten in the agricultural fields in various regions. The mean was calculated between the snake bite and the arrival of the patient to the hospital, which was found to be about 5 hours.

As shown in Table 1 the presenting clinical signs and symptoms of the patients were enlisted, which are common with snake bites. The neurotoxicity symptoms like ptosis and altered sensorium were noted in 30 snake bites patients and the percentage was found to be 41.66%. The percentage of bleeding was (16.66%) observed in almost 12 patients. About 37.5% of patients showed an increase in heart rate with above 100 beats /mins.

About 52.77% of 32 patients were presented with abnormal coagulation profiles such as APTT, activated partial thromboplastin time aPTT, the Prothrombin time (PT). After 6 hours of admission in the medical ward, about four patients have developed delayed deranged coagulation. Leucocytosis (WCC > 11 × 10^9) was presented in about 12 patients. Abnormal creatinine levels were observed in 10 patients.

Among those 2 patients were reportedly having a renal impairment and land up having end-stage renal failure. However, the patients were shown with normal baseline levels of renal function at the time of discharge.

Polyvalent anti-venom was received by 52 (72.22 %) patients admitted with snakebite. Among these, 41 patients were administered the first dose of antivenom at 3 hrs after the snake bite. This leads to minimization in neurotoxic symptoms, coagulopathy and mortality rate.

With a standard deviation of 10.11, about 1 vial to 45 vials, with a mean of 11.67, was required to normalize the coagulation. 24% of patients received steroids, 30% of patients were given with anti-histamines and 40% received about 52 vials to be normalized. Among the overall study population, about 2 patients died of intracerebral bleeding and chronic renal failure.

Snake bites are common in an agricultural and farming field in India. The common snakes like krait (Bangarus caeruleus), Cobra (Naja naja), Cipher (Echis carinatus) are the various common land snakes found in regions of Andhra Pradesh. In many studies, as observed, male predominance is encountered in agricultural field areas (Al-Lawati et al., 2009; Lahori et al., 1981). The earlier sign and symptoms of snake bites are local swelling and hemorrhage at the bitten sites (Bhat, 1974; Banerjea, 1974). From the retrospective data, nearly 17% of the patients had shown hemorrhage at the bitten site. Previous retrospective analysis studies had been shown that the different percentages of hemorrhage were from as low to high as 68% (Saini et al., 1984; Virmani and Dutt, 1987). This retrospective analysis revealed that acute renal failure was developed by 8 patients weighing about 3.6% of the total population, and they were managed conservatively. In a study conducted on children with snakebite, it is seen that about only 1%
Table 1: Patients characteristic and sites of bite

| Category                          | Parameters observed |
|-----------------------------------|---------------------|
| Age                               |                     |
| 5 - 14                            | 16.66%              |
| 15 - 30                           | 43.05%              |
| 31 – 50                           | 26.38%              |
| 51 - 70                           | 14.08%              |
| Sex                               |                     |
| Female- 32                        | 44.44%              |
| Male- 40                          | 55.55%              |
| Upper Limb 20                     | 27.7 %              |
| Lower Limb 46                     | 63.88 %             |
| Neck 6                            | 0.08 %              |
| Neurotoxic Symptoms               |                     |
| Presence of symptoms - 30         | 41.66 %             |
| Absence of symptoms - 42          | 58.44 %             |
| Pulse rate (>100 beats/min) -27    | 37.5 %              |
| Pulse rate (<100 beats / min)- 45  | 62.5 %              |
| Hemorrhage at the biting site - 12 | 16.66 %             |
| Coagulation profile               |                     |
| Deranged - APTT,aPTP, PT - 38      | 52.77%              |
| Outcome                           |                     |
| No mortality 70                   | 97.3%               |
| Mortality 2                       | 2.7%                |

of cases have exhibited the development of renal failure reported by (Lahori et al., 1981) in their study. When the delay in the time for treatment is delayed, obviously, the snake bite becomes mortal in some cases of the patient (Einterz and Bates, 2003; Muguti et al., 1994). This is because, like the time-lapse, the anti-venom action becomes ineffective (Snow et al., 1994; Habib, 2003). However, despite the above findings like clinical presentation, demographic characteristics and timelines in both of the groups, retrospective analysis data revealed that only about 2% of the mortality rate was noted. About equal proportions of male and female victims of snakebite have been assessed in the present study. And the present study was found to be similar to previous studies (Meyer et al., 1997; Theakston et al., 2003).

CONCLUSION

It can be concluded from the study that by rapid administration of anti-venin in appropriate doses, the snakebite cases can be managed successfully. Thus, we suggest developing an inter-disciplinary approach to reduce the mortality rate of snakebite.

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