

Clinical Spectrum and Outcome of Snake Bite Cases in Western Nepal

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ABSTRACT

Background: Prevalence of snake bite is high in Nepal. However, there is no exact figure of mortality and morbidity associated with snake-bite probably due to poor reporting. **Objectives:** To study demographic characters of snake bite victims, to see clinical symptoms of the bite, outcome of snake bite, use of ASVS and its associated anaphylactic reaction. **Methods:** A retrospective observational hospital based study carried out through July- October 2017 of the patients with the history of snake bite and visited to secondary level hospital (Army Hospital) at Nepalgunj. **Result:** Among 169 cases of snake bite between 6 months to 83 years, 49.70% was between 20-54 years. Highest number of cases (n=110) came from local areas of Nepalgunj like Manikapur, Alanagar, Fulltegra, Daduwa, Gayatrinagar and Samsherganj. Male victims were 61.53% (n=104) and 38.46% (n=65) were female. Commonest site of bite was in lower limb (n=116), followed by upper limb (n=47), head, neck and trunk. Maximum number of cases came to the center within 90 minutes of bite while only n= 28 came after 180 minutes of bite. Use of tourniquet as first aid was seen in 68% (n=115) and 3 cases came in with incised wound and sucked wound. A total of 97.04% (n=164) were dry bite with 26.62% (n=45) only had suspicion of snake bite (snake not seen due to invisibility or bite other than snake). A majority of cases presented without any other symptoms (with only history of bite), 45.56% had bite marks, 17.16% had pain and swelling at the bite site, 6.7% had bleeding from the site and burning and tingling sensation. A total of 2.95% (n=5) of snake bite cases needed ASVS and one developed ASVS complication. **Conclusion:** Snake bite is more common in adult male between 20-54 years and the commonest site is lower limb. Maximum number of cases presented within in 90 minutes of bite using tourniquet on the affected limb as first aid. Only small percentage of snake bite required anti-snake venom treatment and its complication rate is high.

Key words: Dry bite, envenoming, pre hospital care, snake bite, tourniquet

INTRODUCTION

Snake bite counts significant health burden in South East Asian Region (SEAR) resulting in death and/or disability of young individuals involved in agricultural work. However, there is no exact figure of mortality and morbidity associated with snake-bite due to poor reporting in this region¹. Among 3,500 species of snakes identified in the world, only 500 species are venomous² and only 60 are venomous included in three families namely, Elapidae, Viperidae and Colubridae; out of 250 species found in SEAR¹. While in Nepal, till date only 20 poisonous snakes among 79 species of snakes been reported³. Around four million snake bites occur each year in Asia, resulting in 100,000 deaths per year⁴. In Nepal, Terai being the lowland agricultural plain characterized by a hot tropical climate, snake bite is a major public health issue here. The most notorious venomous snakes can be recognized by their size, shape, colour, pattern of markings, behavior and the sound they make when they feel threatened. Viperidae (all species) results local

envenoming (swelling) with bleeding/clotting disturbances. Russell's viper cause local envenoming with shock or acute kidney injury. King cobra causes local envenoming with paralysis while Krait cause paralysis with minimal or no local envenoming¹.

Though snake bite is common health problem, there is no exact nationwide data available in Nepal. This study aimed to see the demographic characters of the snake bite victims at Nepalgunj city of Banke district of Western Nepal and other factors like site of bite, type of bite, envenoming signs, delay of hospital presentation, first aid measure before hospital presentation, mortality (short term) and morbidity and uses of ASVS and occurrence of its reaction.

MATERIAL AND METHODS

This was a retrospective observational study from the month of July 1st to October 31st 2017, during and after the monsoon season, when the snakes are most abundant, at Department of Emergency (ER), at any time in 24 hours in a secondary level hospital in Nepalgunj (Army Hospital).

With the permission from the ethical committee, the records of snake bite and suspected snake bite cases presenting to ER over a period of 4 months were collected and analyzed for demographic characteristic, site of bite; time elapsed since bite, pre hospital care, bite marks, presenting symptoms, clinical signs of envenoming, use of ASV, anaphylactic reaction

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and condition at discharge. Records of collected data was analyzed for final outcome. Standard statistical methods were used in analysis of the data using Microsoft Excel.

RESULTS

There were a total of 169 patients enrolled in this study, where 104 were male and 65 were female with a Male: Female ratio 1.6:1. Male ratio was high till age of 19 then the ratio was equal. The highest occurrence of snake bite was seen between 20 to 54 years (n=81) and least common between 0-4 years of age (n=14) (Figure 1).

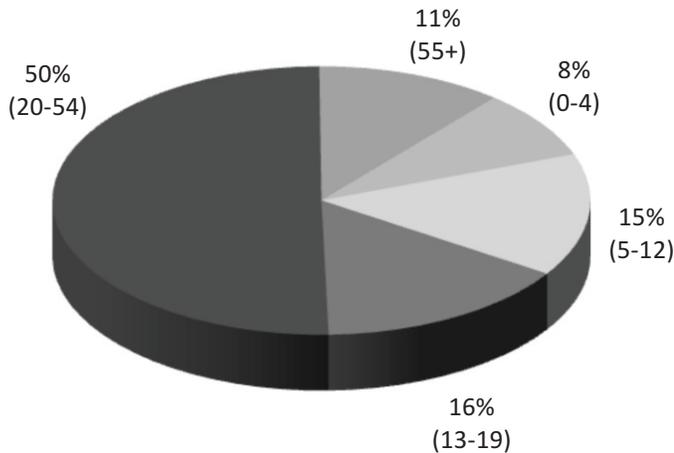


Figure 1: Pie chart showing distribution of age group in percentage

Majority of patients were brought from the local areas of Banke district and very few from Surkhet, Dhangadhi, and Dailekh (Figure 2.).The commonest site of bite was lateral aspect of lower limb and toes and least common was in head, neck and trunk (Table I). Within 90 minutes after snake bite, 38.46% patients came to the Emergency room for medical management who were from Surkhet, Dailekh, and Dhangadhi and those 23.07% who came within 30 mins were from the adjoining villages of Banke district (Table II). As a primary pre hospital treatment, n=115(68.04%) came in with a tight tourniquet on the affected limb and 1.77% even had incised and (n=3) had sucking wound at the time of presentation.

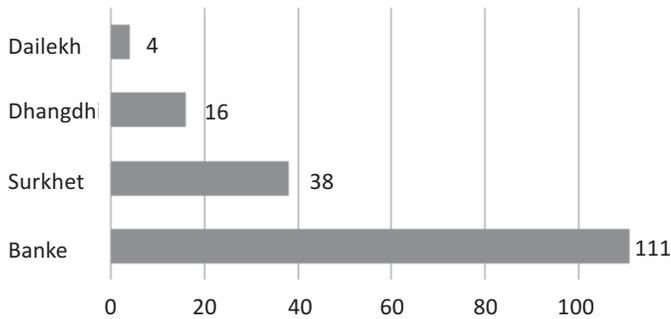


Figure 2: Distribution of snake bite victims

Site of Bite	Frequency
Head, Neck & Trunk	4
Upper arm and finger	47
Lower limb & toe	118
Total	169

Table I: Showing distribution of site of bite

Time elapse since bite	Number
Within 30 mins	39
Within 90 mins	65
Within 180 mins	37
More than 180 mins	28
Total	169

Table II: Table showing the time elapsed since bite

Among the total 169 bites, 95% had dry wound whereas 45 cases had suspected snake bite (snake not visualized or bite other than snake like scorpion and others) and nine cases presented with different signs of envenoming. Among the total patients, 53.25% had no symptoms (with only history of snake bite), 45.56% had bite marks, 6.5% had bleeding from the site of bite mark, 17.16% had local pain and swelling, 7.10% had tingling and burning sensation, 1.18% had ptosis and blisters at the wound site, 3.55% had respiratory distress and send to ICU for better center (Figure 3).

Prehospital treatment was very common (n=121, 71.50%). Among that use of tourniquet on the affected limb was the highest (n=115) followed by wound incision and sucking, three victims each.

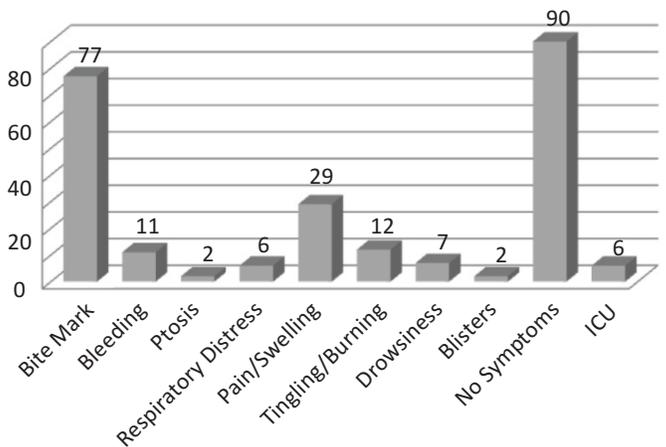


Figure 3: Showing presenting clinical features

Out of total 169 patients, ASVS was used in only 5 patients and one developed anaphylactic reaction. Among the cases with sign of envenomation, four were managed conservatively with intravenous fluids, inj. TT and other supportive measures. Patient's recovery was satisfactory and discharged in good condition in 86.5% and 10% left against medical advice and 3.5% was referred to other center for ICU being not available at that time and there was no mortality.

DISCUSSION

In Nepal, yet there is no nationwide study to show the exact snake bite incidence and its sequelae i.e. morbidity and mortality. WHO has recommended that snake-bite should be formally recognized as an important occupational disease in the South East Asian region. And it is shown in studies that South Asia, South east Asia, sub-Saharan Africa exists highest burden of morbidity and mortality.⁵ Despite its importance, there have been fewer proper clinical studies and there is lack of reliable epidemiological data nationwide. The published data, based almost exclusively on hospital returns to the Ministries of Health, are likely to be unreliable and therefore misleading. The highest recorded incidence was 162 death/100 000/year, determined in the Eastern Terai.⁶ In this study, only 20% of the deaths occurred in hospitals. Increased risk of fatality was associated with being bitten inside the house while resting between midnight and 06:00 hours. Other risk factors were an initial visit to a traditional healer and delayed transport to the hospital.

In the present study, among 169 cases of snake bite; majority (49.70%) were of age 20-54 years, mostly farmers, suggesting affection in the adult age group as suggested in the previous literatures^{1,7}. Whereas a study done in Western Nepal showed majority victims between 11-20 years with female predominance⁸. Here in our study there was male preponderance with M:F ratio of 1.6:1 which is similar to previous studies though exact reason is unknown^{3,7-10}. Commonest site of bite was in lower limb (n=116) in present study and finding correlates with the previous literatures^{3,7-11}. In our study, majority (97.04%, n=164) were dry bite with only 2.95% cases presenting with signs of envenomation requiring ASVS and one developed ASVS complication. This is comparable with a study done in Western Nepal, where only 9% (n=6993) had signs of envenoming and used ASVS with 13% case fatality rate but the anaphylactic reaction to ASVS was not noted⁸. Significant number of cases used tourniquet as first aid before presenting to hospital and it support other studies too⁸. So ASVS should be used judiciously due to its high potentiality of possible adverse reaction.

CONCLUSION

The most common age group victim of snake bite in our study was adult male (20-54 years), with bite mostly on lower limbs. Use of tourniquet on the affected limb as a prehospital treatment is very high in our society, so was true with our study.

Most snake bites were dry, needing ASVS in very few cases which may suggest judicious use of ASVS due to its high potentiality of adverse reactions. Overall snakebite outcome was fair in our center.

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