

Epidemiology of Snake bite cases in Manipal Teaching Hospital, Pokhara

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Abstract

Envenomation by poisonous snakes is considered as an occupational hazard. Snake bite commonly report to the casualty of Manipal Teaching Hospital. This prospective research was conducted in the Department of Forensic medicine of Manipal Teaching Hospital to study the epidemiology, manifestations, treatment and outcome of snake bite victims presented at Manipal teaching Hospital during the period of January 15th 2013 to January 14th 2014. A total number of 91 cases of snake bite was reported during the study. The Victims of snake bite predominantly were Males. The mean age of the victims was 38.5 years. Maximum cases occurred during the summer, monsoon and post monsoon months, during day time and involved mainly the lower limbs. Most of the snakes could not be identified. Local clinical manifestation was observed as a common complication in most of the cases. Polyvalent Anti snake (ASV) venom vials were not used as a specific treatment. No mortality was reported during the study.

Keywords: Snake bite, Anti snake venom

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INTRODUCTION

Out of 3000 species of snakes found worldwide about 15% are considered dangerous to human life.¹ So, far 89 species of snake have been recorded from Nepal, but the exact number remains to be determined because large parts of the country are still unexplored from a biological point of view.² The incidence is quite high in rural warm regions of Terai and even in the mountainous region of the Nepal.³ Envenomation is an occupational hazard for the farmers and farm labourers, plantation workers, herders and hunters in tropical and subtropical countries⁴⁻¹³. Although the exact incidence is unknown, about 20% of the bites result in no envenomation and 10% result in mortality the actual incidence of snake bites may be much higher as majority of cases occurring in

rural population go unreported.¹⁴ According to World Health Organization, more than 20,000 cases of snake bites and 1,000 deaths may occur annually. A community based study in South-eastern Nepal showed an annual incidence of 1162 bites/100000, annual mortality rate of 162/100000 and case fatality rate of 27%.³

Table 1: Victim Profile and Salient Features in Snake bite

	No of cases
Gender distribution	
• Male	48
• Female	43
Occupation	
• Farming	45
• Grass cutting	27
• Others	19
Diurnal variation	
• Day	60
• Night	31
Place of bite	
• Outdoor	84
• Indoor	07
Site of bite	
• Upper limbs	39
• Lower limbs	51
• Trunk	01
Fangs marks	

- Single 07
- Double 15
- More than two 0
- Scratches 0
- Not appreciable 69

LAMA: Leave against medical advice

Table 2: Victim Details of Hospitalisation and Clinical Manifestations in Snake bite

	No of cases
Hospital admission	
• Within 1 hours	11
• 1-6 hours	44
• 7-12 hours	14
• 2 days	13
• >3 days	09
First aid prior to Hospitalisation	
• Tourniquet	7
• Tourniquet and incision	0
• No first aid	84
Antivenom used	
• Yes	3
• No	88
Clinical Manifestation	
• Local only	91
• Neurotoxic only	0
• Both local and neurotoxic	0
• None	0
Final Outcome	
• Recovered	78
• DOR	7
• LAMA	6
• Expired	0

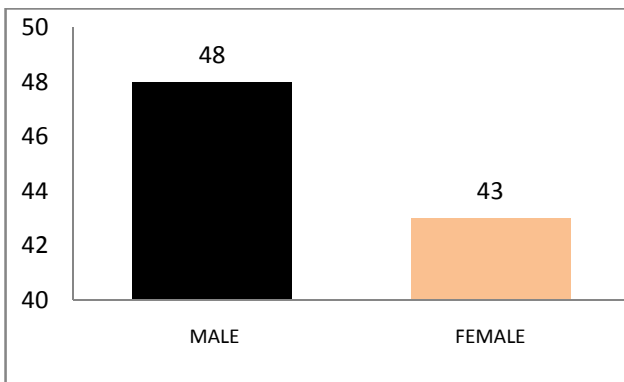


Figure 1: Gender wise distribution of snake bite

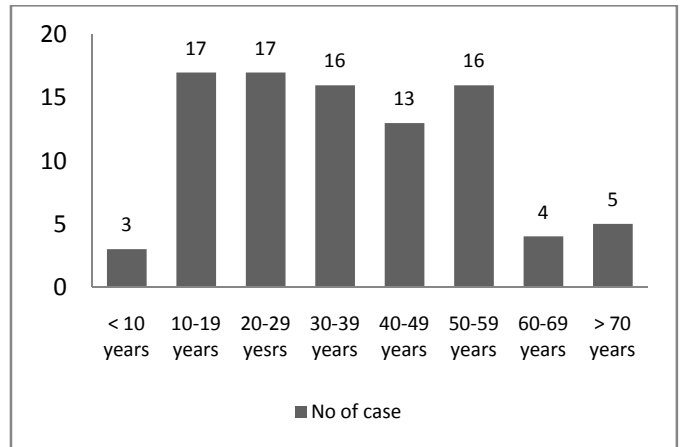


Figure 2: Age distribution of snake bite

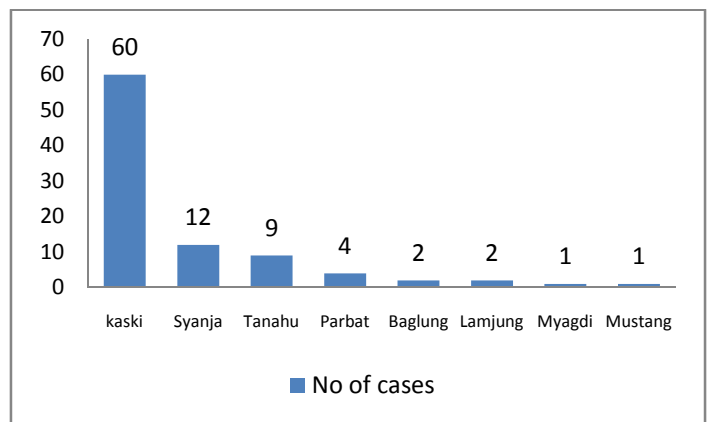


Figure 3: District wise distribution of snake bite

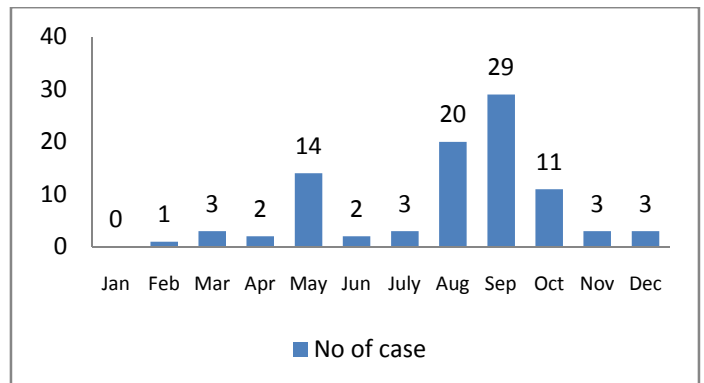


Figure 4: Month wise distribution of snake bite

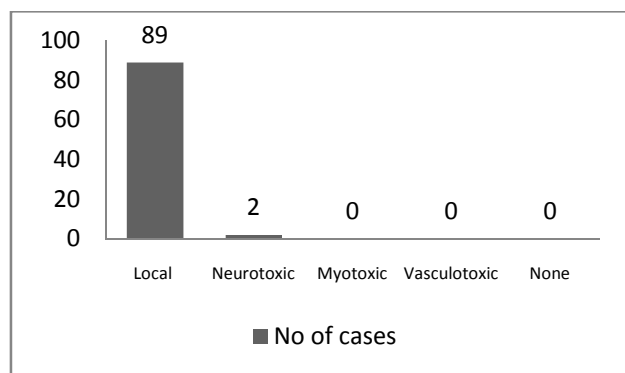


Figure 5: Systemic manifestation of snake bite

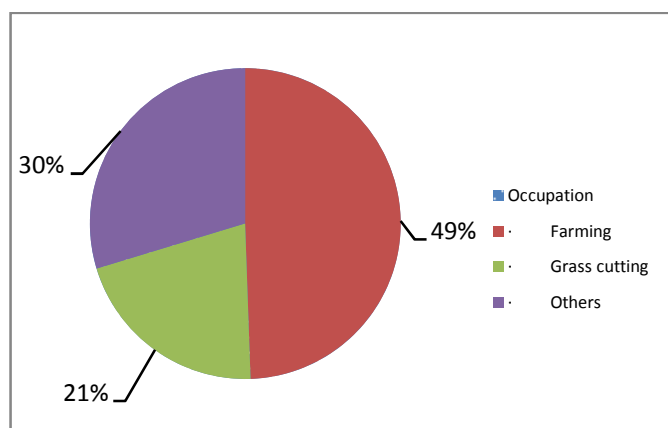


Figure 6: Occupation of snake bite victims

MATERIAL AND METHODS

Manipal Teaching Hospital is situated in Pokhara, Kaski district in Western Development Region of Nepal. It is the only medical institution providing tertiary care facilities for the people residing in western development region of Nepal which constitutes about 20% of total population of Nepal. It gets its referrals from Regional hospital, Medical colleges and other Zonal and District Hospitals of the Western Development Region of Nepal. This Prospective Hospital based study was carried out in Manipal Teaching Hospital Pokhara, from January 15th 2013 to January 15th 2014 after obtaining ethical clearance from the institutional ethical committee. A total of 91 snakebite victims admitted to the casualty ward of the hospital during the one year period was studied. Detailed information on demographic data based on age, gender, occupation, identification of the snake, seasonal variation, symptoms of snake bite, time of bite, snakebite case management and outcome of snakebite was recorded. Data entry was performed using the Microsoft excel and percentages were applied to find out the results.

RESULTS

A total of 91 snakebite cases were recorded. Majority of the victims were from Kaski district 65.34%. Higher

proportion of victims were aged between 10-59 years (86.81%). The majority of the victims were males 52.74% with a male female ratio being 1.11:1. Maximum number of victims 49.45% belonged to farmers in occupation. Most of the snake bite cases were reported in the month of May to October i.e. 86.81% and the bite was mostly during day time 65.93%. The most common place of bite was outdoor i.e. in the field 92.30%. In 75.82% of the cases the fang marks were not appreciated. The most common site of bite was lower limb 56.04%. Majority of the snakes 59.34% could not be identified. Most of the patients 48.35% were admitted in the hospital within 1-6 hrs post bite. Tourniquet was not applied in maximum no of cases 92.30% as a first aid measure. The post bite survival rate was maximum i.e. 85.71%.

DISCUSSION

Snakebite is a major public health problem in Nepal¹⁵. In our study a higher proportion of victims were aged between 10-59 years (86.81%) and were males (52.74%) with a male female ratio of 1.11:1 this corresponds to a recent South Asian review report that mentions three-quarters of the snake bite victims are in the 10 to 40 year age group¹⁶. This could be attributed to increased activity of males in the surroundings resulting in high degrees of exposure and contact with snakes. Majority of the snake bite victims were farmers (49.45%) in our study. Rural dwellings, farmers working bare-footed in fields are predisposing factors to snake bites. Majority of snake bite victims were bitten while working in the field (92.30%). Snake bite is an important occupational injury affecting farmers and plantation workers.^{17, 18} The most common site of bite was lower limb (56.04%) in our study this may be due to accidental stamping of a snake while working in the fields. Most of the snake bite cases were reported during day time (65.93%) corresponding to the period of their outdoor activities.^{17, 18, 20}

Majority of the snake bite cases were reported in the months of May to October (86.81%). This period of month corresponds to summer, monsoon and post monsoon months in the region. This was similar to other studies done earlier.^{20, 25} During summer months snakes usually come out of their burrows due to the heat in search of cooler places, thereby increasing the risk of accidental contact with humans. This can also be attributed to the high seasonal rainfall, abundant natural vegetation and high density of rodents, reptiles and amphibians making it an ideal habitat for snakes to live and also to the intensive human agricultural activities in the region further leading to increased man-snake encounter causing snake bites. On the other hand there were very less cases reported in the months of November

to January which can be attributed to the hibernation of snakes in this period. Our findings are in agreement to previous studies^{18,19}. Kaski district had a maximum (65.93%) of snake bite cases. Manipal Teaching Hospital being in Kaski district may be the reason for influx of maximum number of cases from this district. In our study most of the snakes could not be identified (50.96%) which is in accordance with other studies conducted by various authors. In one study 60% of the snakes were unidentified, 29% were krait, 10% were cobras and 1% was viper²⁰. Similarly in another study 52% were unidentified, 40% were krait and 8% were cobras²¹. This may be because majority of the people cannot identify the snakes properly in this western part of Nepal and do not have proper knowledge about the type of poisonous and non poisonous snake. There are 77 types of species of poisonous and semi poisonous snakes found in Nepal. Generally Cobra (Goman), King Cobra (Rajgoman), Krait, Munga, Russel-viper and pit-viper, green pit-viper are in the list of poisonous snakes in Nepal. The percentage of victims in which tourniquet was applied as first aid measure was (7.69%) This is in contrary to a study reported by Alirol *et al* (2010), where in eight out of 15 studies reviewed, more than 50% of snake bite victims used inappropriate and harmful first aid methods. Tourniquets are used by up to 98% of patients.¹⁶ In our study most of the cases were brought to the hospital within the first six hours of snake bite (48.35%) and more than half of the victims (92.30%) did not receive any first aid measures prior to hospitalization. Only those cases that came from far-off districts came late. This is in agreement to a study conducted by Lohani *et al* where patients were brought to the hospital 30 minutes to 10 hours post bite.²² The mean arrival time to the hospital was 3 hours post bite in a study conducted in rural Pakistan.²³ The majority of the people residing in far off districts do not want to go to a doctor following snake bites. This may be attributed to lack of awareness of the efficacy of medical treatment with antivenins, lack of availability of snake antivenins in the public hospital, lack of transport facilities and inability to afford transportation²⁴. Most of the victims showed only local signs of envenomation. This is in contrary to other studies done in Terai belt of Nepal where snake bite showed neurotoxic features.^{3, 19, 20, 21} This may be due to the reason that most of the snakes in this part of country are non poisonous and not a threat to the human life thereby showing only local manifestations. Our study revealed that the majority of the individuals recovered after snake bite i.e. (89.6%) and did not require any antivenom therapy. Our finding is similar to a study conducted by Joshi DD.²⁵ This may be because in our Western region of Nepal majority of the snakes are non-poisonous and not a

danger to human life thereby needing only conservative management. Over 70% of victims of snakebites need only careful observations and symptomatic treatment and do not require antivenom treatment.²⁵

CONCLUSION

Snakebite is a major public health problem in Nepal. There is an urgent need to educate the community at grass root level to alert them about the common poisonous and non poisonous snakes around the region and about seeking early snakebite remedies. Lack of transport facilities is a common reason for causing delay in seeking treatment. Public health interventions should focus on improving victim's rapid transport mainly for people residing in far-off districts to seek adequate treatment.

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