Clinical Profile Of Snake Bite – 5 Year Study From North Karnataka,Bagalkot

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ABSTRACT

Introduction
Snakebite is an environmental hazard associated with significant morbidity and mortality. Delayed presentation to hospitals frequently contributes to increased morbidity and mortality from snakebite. Incidence of complication is directly proportional to the duration of venom in the blood prior to neutralization by antisnake venom due to late arrival of patient to the hospital.

Methods
All adult patients with history of snake bite or with definite symptoms of bite were included and clinical profile studied under various parameters between Jan 2006 to Dec 2010 in Department of Medicine in S.Nijalingappa Medical College and HSK Hospital.

Results and conclusion
A total of 139 snake bite patients were studied during the study period. Nearly 65% were in the age group of 20-40 years and the majority were males 56% and these bites were during monsoon and during night times and 50.3% had bite marks in the lower limbs. 42% had only local signs and needed monitoring and low dose ASV. Most bites in our area were neurotoxic (30%) with good outcome compared to haemotoxic (9%). ASV was used in 110 patients and requirement of ASV was high in haemotoxic (230 ml) compared to neurotoxic patients (180 ml). 5% developed disseminated intra vascular coagulation had fatal outcomes. Ventilator support and haemodialysis was needed in 7% patients who presented late to hospital & this saved their lives. Mortality was 5%. The present study also high lights sociological impact and suggest certain preventive measures to reduce snake bite mortality and also rationalize ASV usage in different envenomation.

KEYWORDS: ASV Disseminated Intravascular Coagulation, Envenomation Haemodialysis

INTRODUCTION
Snake bite remains a public health problem in many countries even though it is difficult to be precise about the actual number of cases India. It is estimated that the true incidence of snake envenomation could exceed 5 million per year; with nearly 50,000 deaths 400,000 develop severe sequelae [1]. The global disparity in the epidemiological data reflects variations in health reporting accuracy as well as the diversity of economic and ecological conditions [2].
records to determine the exact epidemiology or even mortality in snake bite cases are also generally unavailable [3]. Hospital records fall far short of the actual number owing to dependence on traditional healers and practitioners of witchcraft etc. It has been reported that in most developing countries, up to 80% of individuals bitten by snakes first consult traditional practitioners before visiting a medical center[4,5] Incidence of complication is directly proportional to the duration of venom in the blood prior to neutralization by ASV due to late arrival of patient at hospital. [5, 6, 7] Approximately 15 percent of the 3000 species of snakes distributed world wide are venomous. Snake envenomation is termed technically as ophitoxemia [8, 9].The incidence of envenomation is particularly high in tropical regions where snakes are abundant and human activities like field work and sleeping outdoors increase the risk of man-snake encounters. Awareness against quack treatment would also be helpful and as complications are directly proportional to the duration of venom in the blood prior to neutralization by ASV, late arrival for treatment adds to increased mortality. These are to be enlightened to rural masses through televisions, NGO coordination in villages and strongly discouraging the use of either tourniquet, splints, cautery, suction etc and encourage early referral.

ASV is unquestionably life saving in severe systemic envenomation in centers where it is not available in large scales, many lives could be saved if appropriate amounts of ASV were administered and there were timely interventions with endotracheal intubation and ventilation by ambu bag at primary health care centers where large numbers of snakebite cases present initially with respiratory paralysis and haematologic complications by blood and components till ASV is available can save a life.[6] and by training of doctors and paramedical people for treatment of snake bites.

The objective of this study was to look into different clinical manifestations of snake bite in population of study area which comes under back waters of Upper Krishna project and to postulate preventive measures, first aid treatment and educate rural people so that they seek medical aid first rather than believing in myths and to rationalise ASV schedules.

SUBJECTS AND METHODS:
All adult patients with history or symptoms of definite snake bite with envenomation were included and clinical profile studied under various parameters between Jan 2006 to Dec2010 in Department of Medicine in S.Nijalingappa Medical College and HSK Hospital & Research Center. IEC clearance taken.

Hanagal Sri Kumareshwar Hospital Research Centre is a tertiary care hospital serving poor people of rural population in back ward and back water areas (Upper Krishna project) of North Karnataka attached to S.N.Medical College.

RESULTS
Total of 139 snake bite patients with definite local or systemic envenomation were noted during this study, 78 male patients (56.1%) and 61 female patients (43.8%). 91 patients (65.4%) were in the age group between 20-40 years, 31 patients (22.3%) greater than 40 years as in Graph(1). About 99 patients(71.2%) came to hospital late evening and night. 40 patients(28.7%) in the morning and afternoon, this coincided with time of bite 83 patients(59.7%)were bitten during evening and night times. 47 patients(33.8%) in morning hours and time not definite in 9 patients(6.4%).74 patients(53.2%) had bites in fields, while 65 (46.7%)occurred around there dwelling .history of snake bite given by 126 patients(90.6%) and 13 patients(9.3%) had no history but signs and symptoms of envenomation were present. Majority of bites 78(56.1%) occurred between April to September. 70 patients (50.3%) had bite marks in the lower limb 38 (27.3%) had on upper limb, 1 patient(0.7%) on head and neck and 30 people(21.5%) had no bite marks.

Graph(2) shows that 58 patients(42%) had local signs at the bite, neurological signs in 42(30%) and hematological in 13 patients(9%). 26 patients (19%)had severe cellulitis of lower limb needed surgical intervention. We noticed severe cellulitis in 19% needing surgical debridement, fasciotomy because of medling of bite site by patient attenders as well as traditional wound healers.

Graph (3) shows, that overall 95patients (68.3%) recovered completely, cellulitis in 26 (18.7%)
patients, respiratory paralysis in 6 (4.3%) needing ventilatory support recovered and 5 patients of ARF recovered on haemodialysis fully without chronicity. Out of 139 patients 5 people ended up in DIC had severe rapidly spreading cellulitis, could not be salvaged in spite of surgical debridement antibiotics and ASV. They presented to hospital very late after 48 hours. We transfused whole blood in severe bleeding patients, as components like fresh frozen plasma were not available then in our rural set up blood banks; presently we have been licensed for the same and possess all components. 8 needed ventilator support for respiratory muscle paralysis. A total of 7 patients (5%) out of 139 died including 5 DIC patients and 2 on ventilator (machine related complications) and 6 patients survived.

Graph 1: Age wise comparision of patients

Graph 2: Clinical profile of Snake bite patients
DISCUSSION

In our study table1 shows, out of 139 patients of them majority were working class males and farmers (56.1%) and 65.4% of patients were in the age group 20-40 years similar to Suchitra et al [10] of 53% males of 31-50 years. The male: female victim ratio was 1.3: 1. Very similar to our study the male preponderance has been well established in all the previous studies from India and abroad [11-17]. Sharma [18] etal in his study found mean age of the victims to be 32 years and 60% were males. We found that 73 (53%) of snake bites occurred in farmers working in fields and interestingly 65(46.7%) near there dwellings, conveying that lot majority of villagers dwell in huts and houses beside there fields to guard as well. Very similar to Sharma [18] in his study found that most of the cases of snake bites occurred outdoors (82%) and agriculture was the dominant profession and in Saurabh etal [19] field bites were 25.5% and dwellings around 37%. Majority of the incidences were reported during the day i.e. from 6 AM to 10 PM with a peak between 12 Noon to 6 PM. Most of these incidences occurred outdoors in the field or jungle presumably during working. These are the people who work in the field and in the rainy season are the most susceptible victims of snake bite. The sociological impact of such incidence is immense as these groups of people are the earning members and form the work force of the family. Hence death of these individuals affects the total family as they are economically dependent on them.

71.2% patients presented to hospitals during late evening and night hours. our villages are in remote places where there no conveyances to access to tertiary centers specially during this time. They are treated by traditional wound healers, then reach local practioners later referred to us. Hence time lapse to receive ASV is greater and parallels with morbidity and mortality.53.2%patients had bites infields.

Most bites 78(56.1%) occurred between April to September, probably during the winter months the reptiles go into their hibernation period and hence the incidences are less. Brunda etal [12] reported maximum bites during June to September while Panna Lal etal [11] found the highest number of cases from September to November. Similar findings were reported from Brazil etal[13] in 1988. In the district of Burdwan etal[14] maximum incidence was recorded in July and August while in Nepal majority of the incidences occurred during the monsoon (August to October) 51%. On the other hand 38.37% of the fatalities in our study were reported between late night and early morning hours of 10 PM-6 AM. During this
period in the rural areas the people remain asleep and are unaware of the impending danger. The male: female victims during this period were 2:1 and 81% of the incidences during this period occurred within the room on the floor, i.e. when the individuals were sleeping. Sharma et al [18] found 49% of the victims lived in huts with mud walls. He also reported that bites in the houses occurred during resting and between Midnight and 6 AM. This is due to the fact that in the villages the persons usually sleep on the floor of their houses which are not properly locked. Moreover the lack of electricity in most of the villages in this area also is a major problem at night. Snakes are known to enter houses at night in search of food and bite humans [20-23]. Contrary to this Lalloo et al [23] reported that most of the incidences occurred during day time this could be related to geographical variation. About 99 patients (71.2%) came to the hospital late evening and night. 40 patients (28.7%) in the morning and afternoon, this coincided with time of bite 83 patients (59.7%) were bitten during evening and night times. 47 patients (33.8%) were in the morning hours and not definite time in 9 patients (6.4%).

Table 1: Comparison of demographics with other studies

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<tbody>
<tr>
<td>Males</td>
<td>56.1%</td>
<td>60.50%</td>
<td>80%</td>
<td>58%</td>
<td>100%</td>
<td>60%</td>
</tr>
<tr>
<td>Females</td>
<td>43.8%</td>
<td>39.50%</td>
<td>20%</td>
<td>42%</td>
<td>0%</td>
<td>40%</td>
</tr>
<tr>
<td>20-40years</td>
<td>65.4%</td>
<td>59.3%</td>
<td>90%</td>
<td>53%</td>
<td>NA</td>
<td>NA</td>
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Table (2) shows that 70 patients (50.3%) had bite marks in the lower limb 38 (27.3%) had on upper limb, 1 patient (0.7%) on head and neck and 30 people (21.5%) had no bite marks. The lower limbs were more affected by bites (55.81%)[19]. Among the 54 cases reported from outdoor locations 34 bites were on the lower limbs. Many of these victims were working in the field in standing position and their feet were completely exposed as they remain bare footed. Hansdak et al[15] in his study found 60% of the bites in the lower limbs. Laloo et al [23] also reported on similar findings. Bites during the night hours were mostly in indoor locations and was noted in the upper limbs in 14 cases and on the lower limbs in 16 cases.

Table 2: Comparison of the site of bite

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<tbody>
<tr>
<td>Lowerlimbs</td>
<td>50.30%</td>
<td>55.80%</td>
<td>81%</td>
<td>60%</td>
</tr>
<tr>
<td>Upperlimbs</td>
<td>27.30%</td>
<td>40.89%</td>
<td>9.80%</td>
<td>NA</td>
</tr>
<tr>
<td>Others</td>
<td>0.70%</td>
<td>4.30%</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>No bite marks</td>
<td>21.5%</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
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</tbody>
</table>
Table (3): We did not give ASV 29(20.9%) as there were no signs of progression or systemic envenomation. The patients with local signs required signs required an average of 5 ASV vials.

Table 3: comparision ASV doses with other studies

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<tbody>
<tr>
<td><strong>Mean dose</strong></td>
<td>140 ml</td>
<td>NA</td>
<td>180 ml</td>
<td>160 ml</td>
<td>120 ml</td>
<td>40.7 ml</td>
<td>60 ml</td>
<td>179.2 ml</td>
</tr>
<tr>
<td><strong>Hemotoxic</strong></td>
<td>230 ml</td>
<td>60 ml</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><strong>Neurotoxic</strong></td>
<td>180 ml</td>
<td>150 ml</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td><strong>Local signs</strong></td>
<td>50 ml</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>+</td>
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+ : Predominant signs / symptoms in the study. ------ : Not Available

ASV was used in 110 patients (79.1%). Neurological signs in form of ptosis, dysarthria, dysphagia were predominantly found in 30.2% required 10-30 ASV vials an average of 18 vials(180ml). we also administered atropine and neostigmine in few patients. Haemotoxic bites patients had increased bleeding and needed more an average of 23 vials(230ml).

Patients with bleeding complications were given whole blood transfusions but mortality was higher in them compared to neuroparalytic types, who recovered on ventilators with few mortality. The overall mortality was 5 % (7 patients) and it was 4.3% in Asif [24] and Bawaskar [20] study of 5.4%.

Our usage of ASV in neurotoxic envenomation parallels with HS Bawaskar [20] 150ml, but in haemotoxic we required 230ml as all studies conclude ,that ASV should be continued till bleeding and clotting parameters reach normal. Probably we had more severe envenomation depending on nature and species of snake as well as delayed presentation.

The mean ASV used was 140 ml (range 50-260 ml). This is in par with Vijeth [25] have reported similar mean effective dose of ASV as 179.2ml with neurotoxic predominance ,Jasjit Singh [26] with mean dose of 180ml haemotoxic predominance, Gupta [27] with 160ml where neurotoxic envenomation was predominant while lower doses have been found effective by Tariang[28](47ml) and Paul et al [29] (60 ml).

In our present series, 50 mL of ASV was infused over 2 h to neutralize circulating venom, together with 20 mL infused slowly over the next 24 h to neutralize venom. Depending on clinical and laboratory parameters the required ASV infused accordingly for neurological and haematological envenomation and dose titrated. The ASV used is lyophilized polyvalent enzyme refined equine immunoglobulin manufactured in India.

Vijeth et al [25] reported that while-the majority of cases (341) required 10mL of ASV another 138 cases needed repeated doses and maximum dose required was 180 ml. The maximum dose advocated for the treatment of neuroparalytic envenoming is 300 mL as reported by Theakston [21] et al.

Hence for patients having incoagulable blood at entry we administered higher initial dose of ASV i.e., 150-200 ml and judged by Clotting time, subsequent dose of ASV given for patients having still incoagulable blood and 100 ml more (and those having mild dysfunction 50 ml) until

total correction occurs as supported by vijeth [25] etal study.

Currently lack of definitive guideline regarding the optimum dosage has prompted physicians to use ASV empirically in higher doses. Judicious use of ASV should be encouraged in physicians especially in the field to avoid any adverse effects due to its overdose and scarcity of these drugs.

CONCLUSION

In conclusion, snake-bite is a common life-threatening emergency in the study area. Our area had more number of neurotoxic snake bites with good outcome compared to hematotoxic bites requiring greater ASV with more complications. Overall mortality was in the acceptable range which was mainly because of late presentation with severe envenomation which could have been prevented. More importantly in this study we tried to rationalize the ASV usage in different categories of snake bite patients for better results. Occupational risk and an increased seasonal incidence of snake-bite were observed.

Knowledge of the varied clinical manifestations of snake-bite is important for effective management, ready availability and appropriate use of anti snake venom, close monitoring of patients, institution of ventilatory support and early referral to specialized units when required, helps in reducing the mortality. We did explain this to our peripheral doctors through regular CME and for rural people through camps conveying that fatalities from snake bites are surely preventable and the primary aim should be to reduce the incidence by taking proper precautionary measures like wearing protective thick, knee high footwear and avoiding sleeping on the floor, quick transportation for medical attention, discouraging indigenous medicines and myths.

REFERENCES:


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