Original Research Article

A clinical study of neurotoxic manifestations following snake bite in a tertiary care centre of south Karnataka

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Abstract

Background: As agriculture is the major occupation of Indian subcontinent; as an occupational hazard most of our farmers are exposed to the risk of poisonous snake bites every single day and night. After the occurrence of snakebite snake venom is injected into the body and has so many deleterious effects in the form of local swelling and intense pain, haematotoxicity, neurotoxicity, myotoxicity, nephrotoxicity. Aim of this study was to observe clinical manifestations of neurological manifestations and to study the outcome of the patients with respiratory paralysis after giving them the proper management in the form of antisnake venom and cardio-respiratory support. **Material and Methods:** Present prospective study has been conducted in emergency ward and intensive care unit of Medicine department of K. R. Hospital, Mysore, India during the period from July 2003 to June 2005. **Results:** In the present study, maximum number of patients belonged to the age group of 3rd to 5th decade. There were 106 patients studied among them males were 79 (74.53%) and female were 27 (25.47%). Most of them i.e.75 (70.75%) were from agricultural background. Though the distal part of body was the commonest site of snake bite, three patients had unusual site of snake bite (over external ear, scalp and body trunk). About 22 (20.75%) patients had neurological manifestations, out of them 8 (7.55%) patients had respiratory paralysis and required mechanical ventilation. **Conclusions:** Emergent treatment of neurovascular manifestations of snakebite with anti snake venom and mechanical ventilation is important for better outcome such patients.

Key Words: Snake bite, Anti Snake Venom, Neurotoxicity, Ptosis, Respiratory paralysis.

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Received Date: 18/01/2018 Revised Date: 11/02/2018 Accepted Date: 20/03/2018
DOI: https://doi.org/10.26611/202736

Access this article online	
Quick Response Code:	Website: www.medpulse.in
	Volume 8 Issue 1

INTRODUCTION

There are more than 3500 species of snakes in the world, about 500 belong to the four families of venomous snake and only 200 species have caused morbidity and mortality in human beings.[1] Management of snake bite victims has been attempted since the advent of medicine and it is found in various 'Materia Medica' including the earliest by Chinese Pan Tsao (2700BC).[2] Commonly encountered poisonous snakes in India are Cobras, Kraits and Vipers.[3,4] Most of the traditional, popular, available and affordable first-aid methods have proved to be useless or even frankly dangerous. These methods include: making local incisions or pricks/punctures ("tattooing") at the site of the bite or in the bitten limb, attempts to suck the venom out of the wound, use of (black) snake stones, tying tight bands (tourniquets) around the limb, electric shock, topical instillation or application of chemicals, herbs or ice packs. Local people may have great confidence in traditional (herbal) treatments, but they must not be allowed to delay medical treatment or to do harm.[5] Though prevention would be ideal in a setting of developing country like India with occupational dependency of agriculture and hence exposure to the deadly snakes the alternative is to stress on timely and

How to cite this article: Anitha M S, Lade V V. A clinical study of neurotoxic manifestations following snake bite in a tertiary care centre of south Karnataka. *International Journal of Recent Trends in Science and Technology.* April to June 2018; 8(2): 39-41.
http://www.statperson.com

appropriate management of the snake bite. This will be possible through the careful monitoring of the symptoms, signs and pathogenesis and the value of timely medical interventions. Timely administered anti-snake venom and ventilator assistance can prevent the morbidity and mortality of the patients. [6, 7] This study was under taken with the objective of looking for neurological manifestations following snake bites and interventions.

AIMS AND OBJECTIVE

1. To study the clinical manifestations of snake bite victims admitted in a tertiary care centre K. R. Hospital Mysore, South Karnataka.
2. To study neurotoxicity following snake bite and outcome of the patients.

MATERIAL AND METHODS

Study design: A Longitudinal Descriptive study.
Study area: Emergency Ward and ICCU of Medicine Department, K. R. Hospital Mysore.
Study Period: July 2004 to May 2005.
Study sample: 106 cases
Sampling Method: As per inclusion and exclusion criteria, all patients admitted during the study period in the Emergency Ward and ICCU of Medicine department, K. R. Hospital Mysore.
Inclusion Criteria: All the patients during the study period with history of snake bite and fang marks who developed local or systemic reactions known to occur with poisonous snake bite were included in the study.
Exclusion Criteria: Doubtful cases of snake bites also patients who did not develop any local or systemic manifestations of envenmonation were excluded from the study. A detail history was taken both from patients and attendants in all cases and a thorough clinical examination was done at the time of admission, before administration of anti snake venom (ASV). After clinical examination the signs and symptoms were recorded as Clinical examination for evidence of systemic envenmonation. Clinical examination for evidence of systemic envenmonation included search bleeding from skin and mucus membrane, bradycardia, hypotension for level of consciousness, cranial nerve palsy, ptosis and observation of respiratory movements. All cases were investigated for routine hemogram, blood sugar level, urea and creatinine, bleeding time and clotting time, serum electrolytes, hematuria, chest X-ray. After admissions all patients were reassured. Injection TT 0.5ml was administered intramuscularly. Polyvalent Anti Snake Venom (ASV) was given to all cases. Patients who developed hypersensitivity reactions to ASV were given ASV under cover of Hydrocortisone, Chlorpheniramine maleate and Adrenaline. Patients who developed features of neurotoxicity were administered Inj. Neostigmine 0.5 mg preceded by 0.6mg Atropine given according to WHO guidelines till neurological recovery.

RESULTS AND DISCUSSION

Table 1: Age and Sex distribution of snake bite cases

Age (Years)	Sex		Total
	Male	Female	N (%)
< or =19	06	00	06 (5.66)
20-29	21	05	26 (24.53)
30-39	14	10	24 (22.64)
40-49	12	08	20 (18.86)
50-59	16	04	20 (18.86)
> or =60	10	00	10 (9.43)
Total	**79(75%)**	**27(25%)**	**106 (100)**

Table no. 1 shows the distribution of snake bite cases according to their age and gender. The maximum number of patients belonged to the age group of 3rd to 5th decade. This observation is similar to Banajee *et al*[8] and Reid *et al*.[9] There were 106 patients among them 79(74.53%) were males and 27(25.47%) were females. Male preponderance in the present study and other studies[4,8, 9] is high may be because of the fact that in our country males spent major portion of their time outdoor.

Table 2: Distribution of snake bite cases according to occupation

Occupation	Number of cases	Percentage
Agriculture	74	69.81
Wood picker	10	9.43
Snake Charmer	04	3.77
Forestry	04	3.77
Student	04	3.77
Housewife	10	9.43
Total	**106**	**100**

Table no.2 shows the distribution of snake bite cases according to their occupation. Most of them i.e.75 (70.75%) were from agricultural background this could be due to agriculture is the major occupation of the people around Mysore city.

Table 3: Distribution of snakebite cases based on site of bite

Site	Number of cases	Percentage
Distal part of lower limb	75	69.81
Distal part of upper limb	20	18.86
Proximal part of lower limb	8	7.56
Proximal part of upper limb	0	0
Other sites	3	2.83
Total	**106**	**100**

Table no. 3 shows the distribution of snake bite cases according to the site of bite. Though the distal part of body was the commonest site of snake bite, three patients had unusual site of snake bite (over external ear, scalp and body trunk).

Table 4: Distribution of cases based on local symptoms and signs

Symptoms and Signs	Number of cases	Percentage
Severe pain	106	100
Tenderness	106	100
Fang marks	24	22.64
Swelling	100	94.33
Bleeding	70	66.03
Blebs/Blisters	22	20.75
Discolouration	56	52.83
Rashes	0	0
Paraesthesia	40	37.74
Regional lymphadenopathy	44	41.50
Cellulitis	92	86.79
Local necrosis	12	11.32

Table no.4 shows the distribution of snake bite cases according to the local symptoms and signs. All patients had severe pain and tenderness at the site of snake bite. Pain and swelling were the most common symptoms and signs in the present study as well as in the study by Mishra *et al*.[4]

Table 5: Distribution of neurotoxicity snake bite cases by clinical manifestations

Symptoms/Signs	No. of cases	Percentage
Ptosis	22	20.75
Blurring of vision	22	20.75
Ophthalmoplegia	10	9.43
Neck muscle weakness	22	20.75
Dysphagia	10	9.43
Respiratory muscle paralysis	08	7.54
Flaccid Paralysis	08	7.54

There were 22 (20.75%) neurotoxicity cases among 106 cases. Table no.5 shows the distribution of these 22 neurotoxicity snake bite cases according to their symptoms and signs. Symptoms being mainly ptosis, blurring of vision and neck muscle weakness in all 22 cases. 8 (7.54%) patients had respiratory paralysis and flaccid paralysis requiring ventilator support. In Mishra *et al* study neurotoxicity was seen in 6.70% which is comparable to the present study.[4]

Table 6: Distribution of cases according to management

Therapy	No. of cases	Percentage
Antisnake Venom (ASV)	106	100
Inj. Neostigmine and Inj. Atropine	22	20.75
Mechanical Ventilation	08	7.54

Table no.6 shows the distribution of cases according to their management. All cases were given Anti Snake Venom (ASV). All cases of neurotoxicity (22) were given Inj. Neostigmine and Inj. Atropine. Eight patients (7.54%) had respiratory paralysis and they were managed with additional mechanical ventilation. There was no case fatality among patients of present study.

SUMMARY AND CONCLUSION

Among 106 patients studied 22 (20.75%) patients had neurological manifestations, of which 8 (7.55%) patients had respiratory paralysis and required mechanical ventilation. All the patients with neurological manifestations survived with ASV administration and mechanical ventilation. The careful monitoring of the symptoms and signs and pathogenesis and the value of timely medical interventions such as mechanical ventilation and ASV infusion have got definite role in the management of all snake bite victims for a favorable outcome. Timely arrival of patients of snake bite to hospital and reassurance with proper treatment according to WHO treatment guidelines is very important for survival.

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Source of Support: None Declared
Conflict of Interest: None Declared