Original Article

A study of clinical profile of snake bite with reference to neurological and hematological manifestations

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Abstract

Background: Snake bite is a major public health problem throughout the world especially in tropical and subtropical countries. The objective of the study is to analyze the factors. Which determine the prognosis of patients, admitted with poisonous envenomation, These prognostic factors include: Time since snake bite and admission to Katuri Medical College and Hospital, Guntur, Whether patient received first aid or not, systemic involvement, Site of bite. **Methods:** 35patients with history of snake bite with or without fang marks were included in this study and a detailed history of bite including time of bite, type of snake, first aid history, patients manifestation and history of treatment received from outside was taken. A detailed clinical examination was done and each patient was subjected to investigations like complete blood count, bleeding time (BT), clotting time (CT), prothrombin time (PT), blood urea, serum creatinine, electrolytes and ECG, All investigations were repeated to evaluate the progress. **Results:** Total patients studied were 35, of which 60% were male, 40 % were female. Highest incidence of snake bite was seen in: Age group of 12 -40 years (82.84%), Purely agricultural workers (85.71%), There was more incidence of bite on lower extremity. There was no complication in patients presenting within 6 hours of bite. Out of 35 patients of snake bite 18 were neurotoxic and 17 were vasculotoxic and these one patient expired due to respiratory paralysis due to neurotoxic envenomation and one from cerebral bleed due to vasculotoxic bite. **Interpretation and Conclusion:** In this study maximum number of patients (54.28%) was reported between 6-24 hours of bite and all those who presented within 6 hours of bite did not have any complications, Systemic involvement worsened the prognosis, the more severe the systemic involvement, the bad is the prognosis, Out of 35 patients one died due to respiratory paralysis resulting from neurotoxic bite and one died due to subarachnoid hemorrhage resulting from viper bite.

Keywords: Neurotoxic, Snake bite, Vasculotoxic.

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INTRODUCTION

Snake bite is a major public health problem throughout the world especially in tropical and subtropical countries. Recent estimates indicate somewhere between 1.2 million and 5.5 million snake bites worldwide each year, with 4,21,000 to 1,841,000 envenomations and 20,000 to 94,000 deaths[1].The highest burden of snakebites is in South Asia, Southeast Asia and sub-Saharan Africa[2]. Nationally representative study of 1,23,000 deaths from 6,671 randomly selected areas across India in 2001-03, 0.47% of total deaths were attributed to snake bites[3]. More than 2,00,000 snakebites are reported in India and an estimated of 35,000 to 50,000 people die each year[4] as compared to approximately 8,000 venomous snakebites in the United States of America each year[5]. Snakebites contributes to 4,00,000 amputations each year all over the world[6]. India has been credited with a higher mortality rate from snakebite than has any other country, but reported estimates of its yearly snakebite mortality range from 1331(revised) in 2007 and 1364(provisional) in 2008 (Government of India) to about 50,000[7]. Nearly

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3,500 species of snakes exist in the world out of which 250 are venomous. In India about 216 species are found out of which about 52 are poisonous[8].There are 4 varieties of snakes which are commonly encountered as the cause of snake bite poisoning[9], they are Indian cobra (Naja naja), Common krait (Bungarus caerulues), Russel's Viper (Daboi russelii), Saw Scaled Viper (Echnis carinnatus).

MATERIALS AND METHODS

A Cross Sectional study was carried out on 35 Patients admitted to Department of General Medicine, Katuri Hospital, during the period between June 2014 to December 2015.

Inclusion Criteria

All patients with history of snake bite with or without a fang marks were included in the study and they were subjected to investigations like complete blood count, bleeding time (BT), Clotting time (CT), Prothrombin time (PT), urea, Creatinine, electrolytes and Electrocardiogram (ECG). Following criteria were taken into consideration to differentiate snake bite with or without envenomation. Presence of local swelling, blister or necrosis at or around the site of bite, Hypotension or shock, Laboratory evidence of coagulation abnormalities, Hemorrhagic manifestations-gingival bleed, GI bleed, hemoptysis etc, Neurotoxic presentations-ptosis, respiratory weakness etc, Cardio toxicity in the form of irregular pulse, tachycardia or bradyeardia. All investigations were repeated to evaluate the progress and the parameters were analysed by Microsoft excel.

RESULTS

Total patients studied were 35, of which 60% were male, 40 % were female (Table 1). Highest incidence of snake bite was seen in:- Age group of 12 -40 years (82.84%), Purely agricultural workers (85.71%) (Table 2), There was more incidence of bite on lower extremity (Table 3). There was no complication in patients presenting within 6 hours of bite (Table 4). Out of 35 patients of snake bite 18 were neurotoxic(Table 5) and 17 were vasculotoxic(Table 6) and these one patient expired due to respiratory paralysis due to neurotoxic envenomation and one from cerebral bleed due to vasculotoxic bite.

Table 1: Showing Age Incidence

Age Group	Number of Patients (%)
12-20	08(22.85 %)
21-30	12(34.28%)
31-40	09(25.71%)
41-50	04(11.42%)
51-60	01(2.85%)
61-70	01(2.85%)
Total	**35(100%)**

Table 2: Showing Occupational Incidence

Occupation	No.of Cases	Percentage
Agriculture	30	85.71%
Others	05	14.28%

Table 3: Showing Site of Bite

Site	Number of Patients (%)
Palm	10(28.57 %)
Forearm	01(2.85%)
Arm	03(8.57%)
Foot	13(37.14%)
Calf	04(11.42%)
Thigh	02(5.71%)
Ear	02(5.71%)

Table 4: Showing Time Interval between the bite and admission in the Hospital

Hours	No.of Cases	Death
0-6	08	0
6-24	19	2
24-48	03	0
After 48hours	05	0

Table 5: Neurological Signs and Symptoms

Signs and Symptoms	Number of Patients (%)
Ptosis	18(51.4 %)
Difficulty in swallowing	14(40 %)
Difficulty in speech	10(28.5 %)
ophalmoplegia	10(28.5 %)
Drowsiness	09(25.7 %)
Respiratory paralysis	08(22.85%)

Table 6: Haematological Signs and Symptoms

Signs and Symptoms	Number of Patients (%)
Haematuria	05(14.2 %)
Haematemesis	04(11.4 %)
Bleeding gums	03(8.57 %)
Malena	02(5.71 %)
Haemoptysis	02(5.71 %)
Cerebral Haemorrhage	01(2.85 %)

DISCUSSION

This is a prospective study of a total 35 poisonous snake bite cases admitted to Department of General Medicine of Katuri medical college and hospital, Guntur, from June 2010 to December 2011. The Study shows: AGE AND SEX**:** The highest incidence of snake bite was in the age group of 12 to 40 years (82%) out of which 60% were male and 40% were females. The predominance of male victims suggests a special risk of outdoor activity. This finding is similar to Suchithra. N *et al* study (58%) and Wanje Sludhir D *et al* (62%)[10].

Time Interval Between Bite And Admission

Time interval between bite and admission in the hospital carries a prognostic importance, lesser the time interval better the prognosis. The delay in seeking medical help is

mainly due to home remedies and faith in traditional practitioners before visiting to medical center and owing to the delay several victims developed complications and die during transit to the hospital, In this study 8 patients (22%) reported within 6 hours of bite and did not have any complications, 19 cases reported between 6-24 hours, 3 cases between 24-48 hours and 5 cases after 48 hours of bite. The patients who died had complications like compartmental syndrome, ARF, intracranial bleed and those who required ventilator support had presented after 12 hours of bite. Similar findings were found in Suchithra.N *et al* study[11] and Virendra C Patil *et al* study[12].

Clinical Features

Pain at the site of bite was a common symptom 80% similar high incidence (90.69%)of pain was reported by Wanje Sudhir D *et al* study[10]. Local swelling was present in 57% of cases; this incidence of local swelling is 73.90% in Wanje Sudhir D *et al* study.Blister formation was seen in 5.71% of cases compared to Wanje Sudhir D *et al* study shoed blister formation 11.36% of cases. Vomiting was observed in 54.2% of patients compared to 8.73% Virendra C Patil *et al* study.

Haematological Manifestations

Haematuria was observed in 5 cases (14.2%) followed by haematemesis in 4 cases (11.4%), Bleeding gums in 3 cases (8.57%) malena in 2 cases (5.71%), Haemoptysis in 2 cases (5.71%) and Cerebral hemorrhage in 1 case (2.85%).Virendra C Patil *et al* study[12] reported haematuria as the commonest (10.22%) presentation followed by bleeding from gums (7.95%), bleeding from injection site (38.7%), haemetemesis (5.68%). Tushar B Patil *et al* study[13] reported hematuria (29.8%) and overall bleeding manifestations (22.8%). Renal Failure**:** Renal failure was observed in 3 cases (8.57%), all of these 3 cases were subjected to hemodialysis, out of which all recovered, Tushar B Patil *et al* study reported 24.8% of acute renal failure, Virendra C Patil *et al* study reported 14.56% of acute renal failure in their study 25.5% was reported by Suchithra N *et al* study.

Neurotoxicity

In our study 18 patients (51.42%) out or 35 developed neurotoxic manifestations. In that altered sensorium (drowsiness) was observed in 9 cases (25.7%), ptosis was observed in 18 cases (51.4%), difficulty in swallowing seen in 14 cases (40%), difficulty in speech seen in 10 cases (28.5%), difficulty in respiration in 13 cases (37.1%), respiratory paralysis in 8 cases (22.85%) and ophtalmoplegia in 10 cases (28.57%). In study conducted by Virendra C Patil *et al*, Head lag was the commonest (88.66%) and ptosis is second most common 86.66% followed by diplopia 46.66%, respiratory paralysis requiring ventilator in 14% cases Out of which one had developed delayed peripheral neuropathy. In our study 8 patients had respiratory failure that required assisted ventilation out of which 7 recovered and 1 died. Convulsion, hemiplegia, coma and aphasia were not observed in any of the cases in present study.

Cardiotoxicity

Cardiotoxicity was observed in 8 patients (22.85%). Among the them sinus bradycardia was observed in 2 patients and tachycardia I 1 patient of vasculotoxic snake bite (5.71%) and sinus tachycardia was also observed in 5 patients of neurotoxic snake bite. The bradycardia is probably because of a direct depressant action of snake venom over sinoatrial node. Myocardial ischaemia, infarction, other arrhythmias were not observed in any of the cases. Mortality**:-** Mortality rate in Suchithra N *et al* study was 3% whereas our study showed a slightly higher mortality of 5.71% (two patients) due to respiratory failure and cerebral bleed. Mortality rates in other studies are 5.68% in Wanje Sudir D *et al* study and 2.27% in Verendra C Patil *et al* study. In our study among two fatal cases, one patient of neurotoxic snake bite died due to respiratory paralysis, which was presented 13 hrs after bite, no first aid or anti snake venom received prior to admission, patient was treated with high dose of ASV, Neostigmine and atropine. Patient was also given assisted respiration in the form mechanical ventilation. Patient died after 3 days of admission in spite of mechanical ventilation.

CONCLUSION

In this study maximum patients (54.28%) reported between 6-24 hours of bite and all those who presented within 6 hours of bite did not have any complications and prognosis was better, In the present study, none of the patients received proper first aid and so first aid as a prognostic factor cannot be concluded. Systemic involvement worsen the prognosis, more severe the systemic involvement, worse is the prognosis, There patients developed acute renal failure, who recovered with dialysis support, Out of 35 patients one died due to respiratory paralysis resulting from neurotoxic bite and one died due to subarachnoid hemorrhage resulting from viper bite.

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