CLINICAL PRESENTATION AND OUTCOME OF SNAKE-BITE PATIENTS AT ZAMKO COMPREHENSIVE HEALTH CENTRE, LANGTANG, PLATEAU STATE.

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Abstract

Objective: To assess the pattern of clinical presentation and management outcome of snake bite victims treated in a comprehensive health centre in a rural setting in North-Central zone of Nigeria where snake bite morbidity and mortality are known to be unacceptably high.

Methods: All records of admission in the Comprehensive Health Centre from Jan to December 2001 were examined and all those admission due to snake bites were retrieved and carefully studied. Information on biodata, clinical presentation, clinical assessment, key investigations, type of treatment given and duration of admission were extracted, examined, computerized and analysed using the EPI info version 3.22 (CDC Atlanta). Differences among variables were subjected to statistical analysis and all P-values less than 5% were considered significant.

Findings: 103 of 620 admissions, constituting 16.6% were due to snake bites. Majority of patients were farmers (48.5%) and students (22.3%). Farming and walking along the bush-path carry equal risk of exposure and accounted for 70% of bites. In 96% (99) of cases the snake was identified as carpet viper (Echis carinatus).

87 patients (84.5%) had envenomation defined as whole blood clotting time of 20 minutes or more. There was no significant difference in the proportion of envenoming between those bitten on the leg (83.9%) and those bitten on the hand (16.1%). About eight out of every ten patients (81.6%) use a first aid measure and nine out of every ten patients that used a first aid measure used a tourniquet either alone or combined with other measures such as traditional medicine, incision of site. About 13% of those that employed first aid measures used the black stone.

The common presenting features on the site of bite were oedema (38.8%), oedema and bleeding (26.2%), fang marks and bleeding (16.5%) and tissue necrosis (3.9%). More than half of the patient with envenoming (52%) presented to health facility within 3 hours and 94% within 48 hours. All patients with envenoming had antivenom with the majority (69.7%) receiving between 20-30 mls. All patients did well on treatment and there were no deaths and no patient had permanent disability.

Conclusion: Snake bite is a common cause of preventable morbidity and mortality and the carpet viper is the most common specie responsible in Langtang and its environs. Farming and walking bare foot along the bush-paths carry equal level of risk of exposure to snake bite in these communities and people should be educated on the need to use protective clothing. Effective anti snake venom exist but its effectiveness in reducing the menace of snake bite could be greatly enhanced by education on the need to avoid the use of popular first aid measures of doubtful benefit.

Key words: Snake bite, pattern of clinical presentation; treatment outcome, Langtang.

INTRODUCTION

Snake bite constitutes a major cause of morbidity and mortality in the Savannah region of West-Africa notably Nigeria, Benin, Ghana and Cameroon[1,2].
The saw scaled or Carpet Viper (Echis Ocellatus, Echis Carinatus) has proved to be the commonest specie responsible for high morbidity and mortality. In Nigeria, the untreated mortality ranges from 10-20%[3,4].

In some rural hospitals in Nigeria, about 50% of the total bed capacity may be occupied by snakebite victims at peak times such as early raining season and during harvesting period[1,3]. In the Comprehensive Health Centre Zamko, Langtang North LGA of Plateau State we see an average of 100 snakebite cases yearly.
Poor quality of primary care and absence of effective antivenom are known to seriously contribute to high mortality in the management of such cases. This review was undertaken to assess the pattern of presentation and management outcome of snakebite victims in a comprehensive health centre in a rural environment with ready access to free antivenom. The objective of the study was to assess the pattern of clinical presentation and management outcome of snake bite victims treated in a comprehensive health centre in a rural setting in North-Central zone of Nigeria where snake bite morbidity and mortality are known to be unacceptably high.

MATERIAL AND METHODS

Zamko Comprehensive Health Centre situated in a rural setting in Langtang North Local Government Area of Plateau State is under the supervision of the Family Medicine Department of Jos University Teaching Hospital (JUTH). It is also one of the facilities involved with the Federal Government EchiTab Antivenom Study on the treatment of snake bite in Nigeria. Information gathering with respect to snakebite was structured and record keeping was re-organised at the Centre at the inception of the EchiTab Study in 1998 so as to ensure a good database at the Centre.

All records of admission in the 22-bed comprehensive Health Centre at Zamko from Jan to December 2001 were examined and all those admission due to snake bites were retrieved and carefully studied. Information on biodata, clinical presentation, clinical assessment, key investigations, type of treatment given and duration of admission were extracted, studied, computerized and analysed using the EPI info version 3.22 (CDC Atlanta). Differences among variables were subjected to statistical analysis and all P-values less than 5% were considered significant.

RESULTS

There were 620 admissions, out of which 103 was due to snake bite constituting 16.6% of total admission. There were 62 males and 41 females with a male to female ratio of 3:2. The age range of patients was 3-65 years with a mean of 26.8 $\pm$ 14.8 years (Details in table 1).

Of the 103 victims, 35 were from Langtang North, 9 from Langtang South, 24 from Mikang, 17 from Shendam, 11 from Wase, 1 from Kanam LGAs all from Plateau State. The remaining 6 patients were from local governments in Taraba State.

Distribution by occupation showed that 48.5% (50) were farmers, 22.3% (23) were students, 9.7% (10) were housewives while 5% (6) were cattle rearers. Others constituting 13.6% (14) were from such occupation as black-smiting, hunting, trading and civil servants, (Details in table 2).

Records of activities at the time of bite were available for only 100 patients and revealed that 36% (36) of cases were walking along a path in the bush, 36% (36) were engaged in the farm; 8% (8) were fetching wood, while 5% (5) each were hunting and grazing respectively. Others constituting 15% (15) were engaged in a range of

activities such as playing in the field, defecating etc, (Details in Bar chart in figure 1).

Distribution of the site of bites showed that 77 (74.8%) were bitten on the foot, 6 (5.8%) on the leg, 19 (18.4%) on the hand and only 1 (1%) person was bitten on the buttock while defecating.

Of the 103 cases, 84.5% (87) had envenomation defined as whole blood clotting time of 20 minutes or more, while 15.5% (16) did not. 83 (80.6%) patients were bitten on the foot or leg and 73 (83.9%) had envenomation while 19 (18.4%) patients were bitten on the hand and 14 (73.7%) had envenomation. These differences in the proportion of envenoming were not significant.

Analysis of treatment seeking behaviour revealed that 84 (81.6%) of the 103 cases used some first-aid measures while 19 (18.4%) patients did not take any treatment action before presentation. Of the 84 cases that applied first-aid measures, 75 (89.3%) applied tourniquet combined with other measures,11 (13.1%) patients used the black stone combined with the incision of the site, 6 (7.1%) patients used traditional medicine only while 1 patient incised the site of birth only. Of the 75 (89.3%) cases that applied tourniquet above the site of bite, 23 (27.4%) patients also incised the site, while 37(49.3%) also applied traditional medication to the site of bite. (Details in table 4).

Review of clinical findings on examination revealed that 40 (38.8%) patients had oedema only at the site of bite, 27 (26.2%) had both oedema and bleeding, 15 (14.6%) patients had just fang marks, 4 (3.9%) patients had tissue necrosis and 2 (1.9%) patients had bleeding and fang marks at the site of bite. 3 (2.9%) patients did not have any lesion at bite site.

Time spent before presentation for the 87 people with envenomation, range from 1-366 hours with 52% (45) presenting to the facility within 1-3 hours and 94% (82) presenting within 48 hours.

Information on admission was available for 84 of the 87 cases with envenomation. 58% (49) were admitted for 1-5 days while the remaining 42% (35) were admitted for 6-14 days. The longer duration of admission was seen in those with tissue necrosis.

Records were available for only 86 of the 87 patients that had antisnake venom. Amount of antivenom administered range from 10mls (a Vial) - 120 mls (12 vials). 28% received just 10 mls while 69.7% received between 20-30 mls while the rest received between 40-120mls. Patient either received South-African Institute for Medical Research (SAIMR) antivenom or EchiTab antivenom.

Of the 103 patients; 39.8% (41) brought the snake to the health facility which was identified as carpet viper (Echis Carinatus), while in the remaining 60.3% (62) of cases the description of the snake was by the patients or relatives. In 99 (96%) cases the snake was identified as carpet viper while in the remaining 4 cases the snake could not be identified.

All the patients had prophylaxis against tetanus with tetanus toxoid vaccine. There was no single case of blood transfusion. All patients did well on treatment and there were no deaths and no patient had permanent disability.

DISCUSSION

Snake bite is still a major cause of preventable morbidity especially in the rural areas in Nigeria as revealed by this study. A record of 103 cases in a single year makes Langtang North an area with the highest reported cases of Snake bite in Nigeria. A 4-year review in Gombe Specialist hospital recorded 207 cases[5] while a 10-year review at Ilorin showed 115 cases[6] as against 435 cases reported from a 20 year review from two large hospitals in Benin in Southern Nigeria[7]. This high prevalence from Langtang could be due to a

number of factors such as high incidence of snake bite, the basis for which the EchiTab project was sited, availability of free anti snake venom which attracted patients from nearby LGAs in Taraba State and easy access to a treatment centre which might have encouraged more patients to visit the centre.

Snake bite is still a problem affecting mainly farmers, cattle rearers and children with the younger age group of 11-30 years accounting for over two-third of the cases in this study. The age group 11-20 years accounted for the highest proportion of snake bites cases in this study, a finding similar to that reported by Opadijo at Ilorin[6] and Abra at Ibara District, Western Nigeria[8] but different from the age group of 21-30 years reported by Mustapha in Gombe[5] and Pugh in Katsina[9]. The younger age group in this study is partly due to the observation that subsistence farming is started at an early stage of life in these communities coupled with the rural nature of the communities in which both adults and secondary school children use bush-paths where more than one-third of bites occurred. The preponderance of males observed is consisted with reports from other parts of the country[5,6,8,9] however the male to female ratio of 3: 2 is lower than 6:1 reported from Gombe[5] and 4:1 from Ilorin[6]. This difference may be due to the lifestyles of the major ethnic groups in this communities consisting of subsistence farming, wood gathering and hunting all of which expose both male and females to snake bites.

Records of activities at the time of bite and distribution of site of bites revealed that farming and walking along a bush path accounted for more than two-thirds of the cases and the two activities carry equal risk of exposure to snake bite. Also feet and hands accounted for over 90% of sites of bite. These suggest that interventions geared towards these activities and sites of bite have the highest potential to markedly reduce the incidence of snake bite in these communities.

The Carpet viper (Echis Carinatus) was the only specie identified in about 96% of cases suggesting this specie of snake is not only the most common but also that knowledge about its existence is high in the environment. Non-envenoming bites accounted for 15.5% of cases. This is however higher than the reported value of less than 10% dry bites for saw-scaled viper bites[10].

Eight out of every ten patients in this study used a first aid measure and about nine out of every ten patients that used a first aid measure employed a tourniquet. This practice is not only common but also dangerous given the fact that pressure immobilization is known to increase the local effects of the necrotic venom from viper[10]. Also about half of the patients that used the tourniquet also applied the traditional medicine while three out of every ten patients that used the tourniquet also incised the site of bite. The proportion of patients that used traditional medication (42.7%) is higher than the 22% observed in Gombe[5]. Thirteen percent of those that used first aid also used the black stone which has been reported to be ineffective[10]. All the first aid measures adopted by patients have been reported to be popular, affordable but useless and dangerous[4,10] hence the need to adopt measures to discourage their use.

There was no single case of death reported. This was far better than the 10.6% reported in Gombe[5] and even still lower than 2.8% reported in some good centres[4]. The low mortality in this case may be due to early presentation since 94% of cases presented within 48 hours of bite. Availability of free but effective antivenom[11] and well trained staff also contributed to the low mortality.

This study has revealed that snake bite is a common cause of preventable morbidity and mortality and the carpet viper is the most common specie responsible. Farming and working bare foot in the bush paths expose people unnecessarily to snake and people should be educated on the need to use protective clothing. Effective anti

snake venom exist and should be made widely available but its effectiveness in reducing the menace of snake bite could be greatly enhanced by education on the need to avoid the use of popular first aid measures of doubtful benefit.

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Table 1: Age and Sex Distribution of Cases of Snake in Zamko 2001.

AGE (Years)	SEX		Total
	Male	Female	
0-10	3	5	8
11-20	24	13	37
21-30	16	13	29
31-40	8	5	13
41-50	4	1	5
51-60	7	3	10
>60	0	1	1
Total	62	41	103

Table 2: Distribution of Occupation of Snake bite Patients at Zamko-Langtang, Jan-Dec 2001

AGE (Years)	OCCUPATION						Total
	farming	grazing	student	Black-smith	House-wife	Others	
0-10	0	0	3	0	0	5	8
11-20	10	4	18	0	1	4	37
21-30	18	1	2	1	5	2	29
31-40	11	0	0	0	2	0	13
41-50	4	1	0	0	0	0	5
51-60	7	0	0	0	1	2	10
>60	0	0	0	0	1	0	1
Total	50	6	23	1	10	13	103

Table 3: Distribution of sites of bite and envenoming among snake bite patients at Zamko, 2001.

*Envenoming	Site of bite				Total
	foot	leg	Hand	others	
Present	68	5	14	0	87
Absent	9	1	5	1	16
Total	77	6	19	1	103

*Envenoming = blood clotting time $\geq$ 20 minutes

Table 4: Distribution of the use of first-aid measures by snake bite patients in Zamko, 2001.

First Aid measures used before presentation	SEX		Total
	Male	Female	
Tourniquet	16	19	35
Incisions at site	1	0	1
Traditional medicine	5	1	6
Tourniquet + traditional medicine	12	5	17
Tourniquet + incisions	3	0	3
Tourniquet + incision + traditional medicine	6	3	9
Black stone	6	5	11
Incision + traditional medicine	0	1	1
Others	1	0	1
None	12	7	19
Total	62	41	103

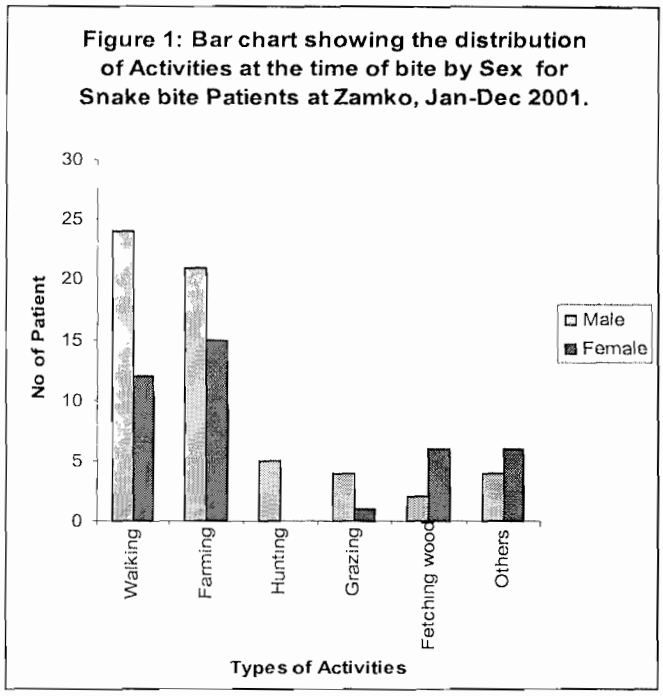
Figure 1: Bar chart showing the distribution of Activities at the time of bite by Sex for Snake bite Patients at Zamko, Jan-Dec 2001.
30
25
20
15
10
5
0
No of Patient
Male
Female
Walking
Farming
Hunting
Grazing
Fetching wood
Others
Types of Activities