

STUDY OF SNAKE BITE CASES AT LIAQUAT UNIVERSITY HOSPITAL HYDERABAD/JAMSHORO

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Background: Envenoming resulting from snakebites is an important public health hazard in many regions. It is common in rural areas not to delay access to life saving anti-venom. The objectives of this study were to know about common types of snakes in local areas, clinical features in snakebite victims, complications in snakebite case, and mortality rate in snakebite victims in rural Sindh. **Methods:** This descriptive study was conducted at 4 medical wards of Liaquat University Hospital Hyderabad/Jamshoro, Sindh from 1st January 2006 to December 2006. One hundred cases with history of snakebite were analysed. Both genders were included in study. Patients with history of trauma, insect bite or thorn prick were excluded from the study. Clotting time (CT) was the main bedside procedure, to assess the degree of envenomation. **Results:** One hundred (100) cases from both genders, from 8 to 55 years age were reviewed. There were 57 (95%) viper bites (haemotoxic) having haemostatic abnormalities and 3 (5%) elapid (neurotoxic) bites presented with neuroparalytic symptoms. Most cases were from Tando Mohammad Khan and Hyderabad (rural) districts of Sindh. All victims had localized oedema at the site of bite. Fang/teeth marks were noted in (90%) cases. Majority (80%) were bitten on the legs below knee. Some 40% of the cases of snakebite occurred when the patient was asleep. Urban to rural ratio was 1:4.5 and male to female ratio was 4:1. Mean time to arrival at our hospital after the bite was 3 hours and mean duration of hospital stay was 4 days. One patient had acute renal failure (ARF) and disseminated intravascular coagulation (DIC), 3% cases of elapid bites were shifted to ICU for assisted ventilation, 4 patients (5.5%) had adverse effects after anti-venom administration and needed intravenous hydrocortisone, promethazine and subcutaneous adrenaline. The average dose of anti-venom was 60 vials for viper bites and 10 vials for elapid bites. Overall mortality rate was 4%. **Conclusions:** Snakebites are common in the rural population of developing countries. There is need to educate the public about the hazards of snake bite, early hospital referral and treatment.

Keywords: Snake bite, venom, anti-snake venom, envenomation, clotting time

INTRODUCTION

Snake bite is a common medical emergency encountered in South Asia. The largest numbers of fatal snakebites occur in South Asia and Africa. In South Asia, there are 25,000–30,000 deaths each year from snakebite. Estimated annual mortality rate due to snake bite in Pakistan is around 1.9 per 100,000 populations.¹

Snake bite millions of people annually creating 'one of the neglected health problems of the tropics' due to a lack of antivenoms.² Contributing to this in developing nations, there is also deficiencies in the management of complications, transportation, hospital equipments and public knowledge of appropriate first aid, which result in a mortality rate one hundred fold higher than in developed countries.³ The victims of snake bites are mainly of the rural population, who are bitten during field work and when sleeping outdoors.⁴

The available data on epidemiology of snakebite from the Pakistan are sparse because most snakebites occur in illiterate rural people who use witchcraft and traditional healers. Only cases of snakebite with severe envenomation reach the health care centres.

This study was carried out to describe the type of snakes, chemical features, complications and

outcome of snake bites seen in a tertiary care hospital of Sindh.

MATERIAL AND METHODS

This descriptive study was carried out at Liaquat University Hospital Hyderabad/Jamshoro during the year 2006. One hundred cases with history of snake bite, from different districts of Sindh were analysed.

Patients included were those with the presence of fang marks and presence of swelling, cellulites, bleeding or blister formation at local site.

Data was recorded with reference to the type of snake, age and sex of the person bitten, site of bite, place and time of bite, time of arrival at hospital, symptoms and signs, type of treatment received before referral, in-hospital treatment and duration of hospital stay. The time after snakebite before the first dose of anti-venom, the amount of anti-venom received and adverse effects were recorded.

The data was fed in computer package Microsoft Excel and analysed via SPSS version 10.0.

RESULTS

A total of one hundred cases of snake bite were included in the study from the period January 2006 to December 2006. Seventy-three (73%) cases had been bitten by poisonous snakes while 23 (23%) by non-

poisonous ones. Most of the cases of snake bite occurred during the months of July and August. Majority of victims of snakebite were from Tando Mohammad Khan and Hyderabad (rural) districts of Sindh. Out of 100 cases, 70 (70%) were men, 25 (25%) were women and 5 (5%) were children. Most of the cases were young rural men with a mean age of 24 years (range 8–55 years). The urban to rural ratio was 1:4.5 and the male to female ratio was 4:1. The place of bite was close to the home (25%) and the rest in or around the fields. Some 40 (40%) of snakebites occurred at night when the victims were asleep and 60 (60%) during the afternoon siesta. The most frequently bitten site was the legs below knee (80%). This is shown in Table-1.

Only 20 patients brought dead snakes with them. From the history and estimation of CT, it was believed that a total of 60 patients (60%) had bites by poisonous snakes. Out of these 60 cases, 50 (83.3%) were scaled vipers and 3 (5%) were cobras. Rest 7 (11.6%) snakes were considered to be undistinguished viper species. Forty (40%) snakes remained unidentified.

The haemostatic abnormalities (attributed to viper bites) were seen in 57 (95%) and neuromuscular features (hallmark of cobra and krait bites) were evident in 3 (5%). There were no patients who had symptoms of both neuromuscular and haemostatic dysfunction. Of the 57 patients with viper bites, one patient (1.75%) developed acute renal failure and was shifted to urology department for haemodialysis.

Table-1: Study showing various important factors in 100 cases of snakebite

Factors	No. of Cases	Percentage
Poisonous Bites	73	73%
Male	55	55%
Female	15	15%
Children	3	3%
Non-Poisonous Bites	27	27%
Male	15	15%
Female	10	10%
Children	2	2%
Signs of Envenomation		
Present	73	73%
Not Present	27	27%
Dead Snake		
Brought by Patients	20	20%
Not Brought by Patients	80	80%
Dose of ASV		
1 Vial	20	27.4%
2 Vials	20	27.4%
3 Vials	20	27.4%
5 Vials	10	13.7%
8–12 Vials	3	4.1%

All 3 patients with neuromuscular features required assisted ventilation (for mean 36 hours). Four patients (4%) died. Three patients died of acute respiratory distress syndrome (ARDS) from

neurotoxic bite and one of disseminated intravascular coagulation from haemotoxic bite.

Fifteen victims (15%), arrival at hospital was within 1 hour of the bite, and they were given anti-venom immediately if the clotting time was prolonged or if ptosis was evident. Another, 50 victims (50%) arrived and were treated within 1–3 hours; 25 (25%) within 3–6 hours and 10 (10%) arrived at hospital more than 6 hours after the bite. The median time to arrival at our hospital after the bite was 3 hours.

Medical referral records were available with 45 (45%) patients. Forty patients (40%) had received treatment before coming to hospital. Among the types of treatment already received were tourniquet tied in 8 patients, incision and drainage was performed in 5 and anti-venom was given to 23 victims. Four patients (4%) were referred after antiseptic dressing of the bitten site.

At our hospital, a total of 73 (73%) patients with signs of systemic envenomation had received equine polyvalent anti-venom. One vial when reconstituted gives 10 ml. Anti-venom was withheld in 27 (27%) cases in the absence of systemic envenomation. The mean dose of anti-venom given for viper bites was 60 vials (range 1–194 vials) and 10 vials for neuromuscular snakebite (range 5–27 vials). In all, 221 vials of ASV were consumed during the period of this study. Of the 73 patients that received anti-venom, 4 (5.5%) patients had an adverse reaction to anti-venom (i.e., anaphylaxis in 2 patients, pyrexial reaction in one and urticaria in one patient) and they were treated with intravenous hydrocortisone, promethazine and subcutaneous adrenaline. No side-effects of this therapy were noted. The average duration of hospital stay in snakebite victims was 4 days (range 1–16 days).

DISCUSSION

Snakebite is a major problem in Sindh province, where rural dwellings, farmers working bare-footed in fields or sleeping out doors are predisposing factors to frequent contact with poisonous snakes.

Most snakebites occur during the monsoon season because of flooding of the habitat of snakes and their prey. Our study, is in conformity of the fact. From another south Indian study, snake bites abound during the months of October to December (33%) and May to July (67%).⁵

The snake *Viper aspis*, probably the only species in our study, is also the most common viper causing bites in France.⁶ Its venom, a complex mixture of proteins and peptides acting as enzymes and ligand, is quite similar to that of the other European vipers (*V. berus* and *V. ammodytes*). Among the 26 enzymes discovered in snake venom, 12 are common to all

species in the world. The main enzymes are phospholipase A₂ (absent in viper berus), hyaluronidase, metalloproteinases and proteases.⁷⁻¹⁰

Of 57 patients presenting with haemostatic abnormalities, bleeding from the viper's bites was most frequent followed by intravascular haemolysis and haematuria. In other studies, haemorrhagic syndromes after snake bites have occurred in 47.8% to 90%.¹¹

The low rate of complications during this study appears to be due to public recognition of the value of early presentation to tertiary care hospital and to standardised regimen of therapy, enacted regardless of shortage of medical personnel and deficiencies in medical infrastructure. During this study, 50% of recipients of ASV had received it within 3 hours of bite, whereas in one north Indian hospital, the median time for arrival to hospital was 9 hours.¹²

Only 4 victims died during this study, compared with a national death rate of 1.9 per 100,000 populations. The overall mortality rate during this study was 4%, which is very closer to mortality rate (3.5%) of north Indian hospital. Case fatality rates greater than 20% have been reported in hospitalized victims in Nepal.¹³

CONCLUSIONS

In conclusion, snakebite mainly affects the rural men of developing countries. Availability of anti-venom at primary healthcare centres and rapid transportation facilities may change the morbidity associated with snakebites. Early administration of the polyvalent anti-venom has reduced morbidity and mortality but

is associated with anaphylaxis in small group of patients. There is need to educate the rural population about the hazards and treatment of snake bites. Also, randomized controlled trials are needed to investigate the issue of rationale of anti-venom treatment.

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