EXPERIENCE OF SNAKE BITE CASES IN HAZARA DIVISION, KP, PAKISTAN

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ABSTRACT

Background: Snake bite is one of the important public health problems. The objective of the study was to assess the demographic and clinical features of snake bite patients.

Material & Methods: This cross-sectional study was conducted in the Department of Medicine, Ayub Teaching Hospital, Abbottabad from July, 2016 to June, 2017. Sample size was 52 selected through consecutive sampling technique. Demographic variables were sex, age, residence, districts and months. Research variables were site of snake bite, presence of fang marks, snake eye witnessed, time period to reach hospital, signs and symptoms, complications, anti-snake venom (ASV) administration, length of hospital stay and incidence of death. Data being categorical was analyzed by SPSS-16 as count and percentages and numeric by mean and SD.

Results: Among 52 patients, 57.70% were male. Patients belonging to rural area were 96.15%. Mean age was 30 years and mean hospital stay was two days. The modal site of snake bite was foot and ankle in 42.30%. Fang marks were seen in 76.92% and snake was eye witnessed in 73.07%. Bleeding complications were seen in 30.76% patients, Four patients died.

Conclusion: Snake bite is common in young males from Mansehra, especially in July and August. Foot and legs were most common area receiving bite with fang marks and snake eye witness in majority of cases. Swelling, pain and tenderness were the most common signs and symptoms with bleeding as common complication. Half of the patients reached hospital in 6 hours. Mortality is significantly high in victims who presented after 48 hours of the bite.

KEY WORDS: Snake bites; Venoms; Public health.

INTRODUCTION

Snake bite is one of the most neglected tropical diseases in poor communities living in Southeast Asian countries.[1] The true worldwide statistics are not available because of underreporting. Southeast Asian countries like Pakistan & India are the heavily affected region due to multiple reasons like high population density, widespread agricultural activities, numerous venomous snake species and lack of reasonable snake bite control programs. Latest figures about incidence and annual mortality rate due to snake bite in Pakistan are not available but an old survey reports that mortality is around 1.9 per 100,000 populations.[2] Anti-snake venom (ASV), a definitive treatment in snake bite victims is produced by many public and private manufacturers is costly and not widely available. Due to a variety of reasons, the incidence and mortality of snake bite cases are very high in villages. Lack of availability of anti-venom and late presentation to the main facility are two major reasons contributing towards high mortality in victims with snake bite.[3]

Snake bite is one of the important public health problems. It is a medical emergency, carries high mortality and it may leave lifelong disabilities in survivors.[4] Like elsewhere in Pakistan, we too get a significant number of cases of snake bites in Ayub Teaching Hospital, Abbottabad which is a tertiary care and main referral center for six districts (Haripur, Abbottabad, Mansehra, Batgram, Kohistan and Kala Dhaka) of Hazara region of Northern Pakistan.

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Date Submitted: 09-07-2017
Date Revised: 13-09-2017
Date Accepted: 21-09-2017

The incidence of these cases is particularly high in summer because of heavy rain, and peak agricultural activities. Patients living in remote areas often visit traditional healers and primary health care where they are managed by untrained staff and when they come to Ayub Teaching Hospital (ATH), they have already developed complications. The objective of the study was to assess the demographic and clinical features of snake bite patients in Hazara division, KP, Pakistan.

MATERIAL AND METHODS

This record-based, cross-sectional study was conducted in the Department of Medicine, Ayub Teaching Hospital, Abbottabad from July, 2016 to June, 2017. Sample size was 52 snake bite cases selected through consecutive sampling technique. The bite was considered to be confirmed when the snake was eye-witnessed or fang marks were observed. After admission, clinical examination was performed in each patient to look for signs of local and systemic envenomation. Blood samples were sent to the hospital laboratory for estimation of Hb, TLC, DLC, platelet count, renal & liver function tests, coagulation and bleeding profile for every patient. Urinalysis, echocardiogram and chest X-Ray were also done. Demographic variables were sex, age, residence (urban, rural), districts, months. Research variables were site of snake bite (foot, ankle, leg, other areas), fang marks (yes, no) snake eye witnessed (yes, no), time period to reach hospital (within 6 hours, 6-12 hours, 12-48 hours and after 48 hours), signs and symptoms, complications, anti-snake venom (ASV) administration (yes, no), length of hospital stay and incidence of death (yes, no).

All demographic, clinical and laboratory parameters were entered in a performa designed for this purpose. Frequencies and percentages were used to describe the categorical data, except age and length of stay, being numeric were calculated as mean. All information was entered and then processed in SPSS-16.

RESULTS

Among 52 patients, 30 (57.70%) were male and 22 (42.30%) were female. Fifty (96.15%) patients belonged to rural and two (03.85%) patients to an urban setting. Mean age was 30 years and mean hospital stay was two days. The site of snake bite was foot and ankle in 22 (42.30%) cases, leg in 14 (26.92%), hand in 13 (25.00%) and other areas in three (5.75%) cases. Fang marks were seen in 40 (76.92%) and snake eye witnessed in 38 (73.07%) cases. Twenty three (44.23%) patients reached to ATH within 06 hours, 13 (25.00%) within 6 to 12 hours, another 13 (25.00%) within 12 to 48 hours and 03 patients reached after 48 hours of the snake bite. Common clinical features are presented in the table 1.

Table 1: Frequency/ Percentage of signs and symptoms in snake bite cases in Hazara division, KP, Pakistan.

Symptom/Sign	Frequency	Percent
Swelling	48	92.30
Pain at the site of bite	43	82.69
Erythema	25	48.07
Tenderness	40	76.92
Paresthesia	07	13.50
Bleeding complications	16	30.76
Vomiting	13	25.00
Diarrhea	01	1.92
Mental changes	03	5.76
Respiratory involvement	01	1.92
Other neurological features	00	00

District and month wise distribution is shown in figures 1 and 2.
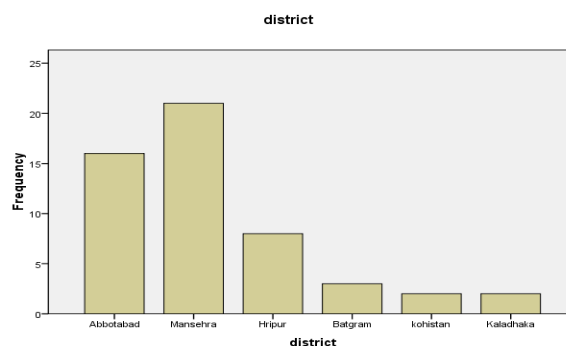
Figure 1: District-wise distribution of snake bite cases in Hazara division, KP, Pakistan.
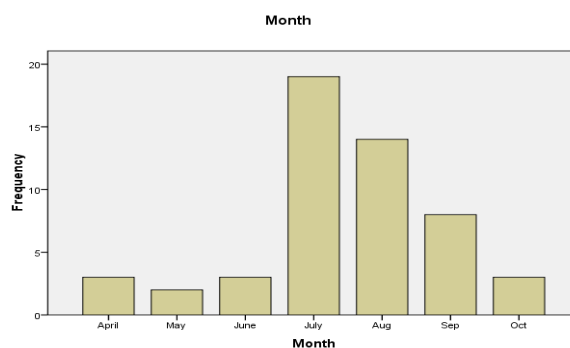
Figure 2: Month-wise distribution of snake bite cases in Hazara division, KP, Pakistan.

Bleeding complications were seen in 16 (30.76%) patients, 02 patients had compartment syndrome followed by fasciotomy. Four patients

died, three due to septicemia, DIC and ARF, and one patient due to respiratory paralysis.

DISCUSSION

As found in earlier studies,[5,6] the peak age group affected by snake bite was 15-39 years (73% or 38/52). This is obvious because young people are physically more active, involve in outdoor activities and hence are more exposed to the risk of the snake bite. A high female to male ratio (42 vs. 58%) was observed in our series in contrast to other studies where this ratio was low.[7] This is because of the fact that most of the population studied was from village setup (96%). Owing to poor socioeconomic conditions the females, in addition to their household work, have to help their male counterpart in activities like working in fields, bringing woods for fire and cutting grass for cattle.

A large number of cases were recorded (81%) in the months from July to September; a finding similar to what has been observed in other studies.[8-10] The incidence of snake bites depends critically on the frequency of contact between snakes and humans. Due to heavy rainfall in summer, the crop and grass grow exuberantly in the region, snakes leave their habitats and a victim while cutting or walking in the grass may come across the bite of a hidden snake. Strangely, no case of snake bite was recorded from November to March. During these months the weather is extremely cold here and snakes, being the cold-blooded animal, cannot stay active and maintain their body temperature in the extreme cold outside.

Among the six districts of the region, 86% cases were recorded from Mansehra, Abbottabad, and Haripur and only 14% from Batgram, Kohistan and Kala Dhaka. The fundamental reason for these low figures from the latter three districts is under-reporting of cases because of multiple reasons like lack of transportation facilities, treatment seeking from traditional healers, illiteracy and lack of proper recording system by health authorities. The same problem exists throughout much of the Southeast Asian countries so that a large number of snake bite victims are not seen or recorded for one or other reasons.

Majority of snake bite victims (76%) were able to reach the main facility (ATH) within 12 hours of the bite. Most of these patients belonged to the areas which were located along the main highway and therefore they did not have problem of transport. These patients either reached to ATH directly or were referred from basic health facilities after getting first aid.

Most bites were seen on legs (69.23%). Majority of the snake bite incidences happened with agricultural workers and pedestrians while working in fields or walking in the grass when they suddenly trod on a snake inadvertently. Snakes species differ in their inclination to strike when disturbed. Notoriously irritable species include Russell viper and saw-scaled vipers. Kraits leave their habitats at night, enter human dwellings in search of food and bite a person sleeping on ground.

Recommended first aid methods emphasize reassurance, application of a pressure-pad over the bitten area, immobilization of the affected limb and transport of the patient to a place where they can receive medical care without delay. Most of the familiar methods for first aid treatment, both western and traditional, although obsolete, are still prevailing in our community. In our study, a tight tourniquet was applied to 65.38% and incision was made in 31.48% of the cases. Both of these methods are potentially harmful and lead to undue bleeding and tissue damage.

Species identification was not possible in our study as none of the patients brought dead snake or its mobile image, verbal description about the color, shape, and size of the snake was also unreliable and misleading. One way to identify the culprit snake is through syndromic approach, i.e. by identifying the clinical and laboratory features specific to a particular species. It is important to realize that species diagnosis is necessary when mono-specific anti-venom is available only. Where a polyvalent vaccine is being used, like in Pakistan, species diagnosis becomes immaterial. Since most of our patients presented with cytotoxic and haemostatic abnormalities, most likely species responsible for bite was vipridae.

Fang marks are two puncture wounds and indicate a bite by poisonous snake. In the case of a non-venomous snake bite, similar puncture wounds are present but they are small and arranged in an arc. In our series, 77% of the patients had typical fang marks present at the time of admission.

Swelling, tenderness and erythema were the commonest clinical features (88.46%) observed in our study. Bleeding tendencies were seen in 31%, mainly from gums, skin and the incision site and from the urethra. Similar signs and symptoms were reported from other studies.[11,12]

All patients who received anti-venom tolerated it well, without significant untoward reaction. Excellent tolerability and rapidity of improvement in clinical and laboratory parameters reflect the good quality and efficacy of ASV used (both locally made and imported) in our series.

Twenty minutes whole blood clotting test is very useful and informative bedside test requires, very little skill and one piece of a new, clean and dry vessel. This test was not performed in our study because of availability of more sensitive tests (PT, APTT and INR) in the hospital laboratory.

Among four patients (7.69%) who died, 03 patients presented very late (48 to 72 hours after bite) and they already had developed a number of complications like DIC, septicemia, acute renal failure, and coagulopathies. The fourth patient, although reached early (within 08 hours of the bite), developed respiratory paralysis soon after admission and later on expired before a ventilator support could be arranged for him.

The result of the study cannot be extrapolated to calculate the true burden of the problem in the area because our study was focused on the cases who presented to ATH only. In fact, we believe that if a community-based survey is carried out in the area the incidence will be much higher as many victims of snake bite choose village-based traditional therapies and do not report to government hospitals.

CONCLUSION

Snake bite is common in young males from Mansehra, especially in July and August. Foot and legs were most common area receiving bite with fang marks and snake eye witness in majority of cases . Swelling, pain and tenderness were the most common signs and symptoms with bleeding as common complication. Half of the patients reached hospital in 6 hours. Mortality is significantly high in victims who presented after 48 hours of the bite.

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AUTHORS' CONTRIBUTION

Conception and Design:	AR,
Data collection, analysis & interpretation:	AR, A, SM, HZ
Manuscript writing:	AR, SG