SNAKE BITE: EXPERIENCE IN BUKIT MERTAJAM DISTRICT HOSPITAL, PULAU PINANG

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SYNOPSIS

A retrospective study of 224 cases of snake bites in Bukit Mertajam Hospital over a two year period is reported. Snake bites formed 0.5% of the total and 1.7% of the Medical and Paediatric admissions and accounted for 0.3% of the total hospital deaths. The commonest snake species involved was the Malayan pit viper. 89% of the patients escaped with negligible poisoning and went home in less than seven days. Most of the bites were inflicted in the lower limbs and occurred in the dark. Only 5% of the patients were given anti-venom, of whom one-third had adverse reaction.

SING MED J. 1988; 29: 383-386

INTRODUCTION

Most snake species are non-venomous. Even bites of venomous snakes do not endanger life in man unless sufficient venom is injected at the time of bite.[1] More than half of the victims will have animals or no poisoning. Hence poisonous snake bite is not synonymous with snake bite poisoning. However the fear of snakes and their bites is well known to both the patients and the doctors.[2] The danger to snake bites is often exaggerated.

Studies on epidemiology of snake bites in Kedah and Penang Island have been done before.[2] There was no such study carried out in Mainland Penang. Hence a retrospective study of snake bites in Bukit Mertajam Hospital was undertaken to assess the magnitude of the problem in this locality.

MATERIAL AND METHODS:

A retrospective study of patients admitted with snake bites to Bukit Mertajam Hospital over a two-year period commencing 1.1.1985 till 31.12.1986 was done. There were 257 cases of alleged snake bites. Of these, 33 cases were excluded as the diagnoses were doubtful. Only 224 cases were included in this study. Various parameters were analysed from the case records. Certain parameters like occupation, location or circumstances of bite and coagulation study were not recorded or were incomplete in most cases and therefore difficult to assess.

RESULTS:

During the period of study there were 43427 admissions to the hospital. There were 590 hospital deaths of which 339 were Medical (including Paediatric) deaths. Of the hospital admissions, snake bite formed 0.5% of the total and 1.7% of the medical and paediatric admissions. Snake bites formed 0.5% of the Medical deaths and 0.3% of the total hospital deaths.

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Sex, Age, Race of Victim

The risk of males getting bitten is about twice that of females. The youngest victim was aged 2 years and the oldest was 78 years. The highest incidence was in the age groups of 10-29 years forming 42.4% of the total.

The incidence is significantly higher among the Malays than among other races. The incidence per 1000 hospital admissions is 7.5 for Malays, 4.7 for Chinese and 2.2 for Indians.

Identification of Snakes

Identification of the snakes was either done by inspection of the dead snakes brought by the patient or by the patient's description of the snake.

The overwhelming majority of bites due to Malayan pit viper (Ancistrodon rhodostima) (Table 1). Of the identified snake bites, Malayan pi viper, common cobra (N.naja), non-poisonous snakes and Banded Krait form 79.4%, 8.8%, 11.0% and 0.8% respectively.

Although 37 dead snakes were brought in by the patients. Of these 27 were Malayan pit viper, 2 were cobra, 7 were non-poisonous snakes and one was Banded Krait. A big group of bites was formed by unrecognised or unseen snakes contributing to 39.3% of the total bites.

Location and Circumstances of Bite

Twenty-two of the 224 bites took place in Bukit Mertajam town locality. There are pockets of small kampongs ans squatter settlements, surrounded by small farms and bushes which form suitable breeding grounds for snakes. Most of the victims were bitten in such areas

Our records showed that 19 patients were definitely bitten in the house proper, 18 at work, 7 in the house compound, 6 while walking along roads or paths, one while in school and another in banana groove. It is very probable that many patients were bitten in the house compound or along paths as most bites took place in the dark hours.

Time and Month of Bite

Tome of bite was only recorded in 150 cases. In another 11 cases it was stated that the bite took place in the dark hours. Therefore in only 161 cases could the results be analysed. Most bites took place in the dark hours forming 63.2% of the 161 bites. The highest average bite took place in February and the lowest in September (Table 2).

Table 1
SEVERITY OF POISONING IN THE VARIOUS TYPES OF SNAKE BITES

Degree of Poisoning	Snake Species						Total	%
	Malayan pit viper	Common Cobra	Banded Krait	Non-Poisonous	Not Recognised	Not Seen		
Negligible or Nil	67	5	0	14	55	20	161	71.9
Slight	25	1	1	1	8	3	39	17.4
Moderate	6	4	0	0	0	0	10	4.5
Severe	10	1	0	0	0	1	12	5.3
Fatal	0	1	0	0	1	0	2	0.9
Total	108	12	1	15	64	24	224	100.0
%	48.2	5.3	0.5	6.7	28.6	10.7	100	

Table 2
MONTHLY DISTRIBUTION OF SNAKE-BITE

Month	No.	%
January	25	11.2
February	30	13.4
March	28	12.5
April	18	8.0
May	20	8.9
June	11	4.9
July	17	7.6
August	12	5.4
September	10	4,5
October	18	8.0
November	15	6.7
December	20	8.9
Total	224	100

Interval between Bite and reaching Hospital
Time of bite was only recorded in 150 cases. Time of arrival in the hospital was recorded in all cases. Of the 150 cases most cases reached hospital within a very short period of time — 44.7% within the first hour and 76.7% within the first two hours. All reached hospital within the first 20 hours.

Site of Bite
Though there were only 224 cases, there were 225 anatomical sites of bites. This was because one victim was bitten at two different parts of the body (foot and hand). Of the 225 bites 56.9% was on the foot. Most bites were in the lower limbs (toe, foot or leg) comprising 83.6% of the total (Table 3).

Symptoms and Signs of Snake Bite
The main findings were: pain in 56.7%, swelling in 71.9%, and local bleeding in 46.9% of cases. Local swelling was found in 78.7% of the viper bites and 58.3% of cobra bites. Local bleeding was found in 60.2% of viper bites but only in 16.7% of cobra bites, pain was noted in 53.7% of viper and 75.0% of cobra bites.

Of cobra bites five developed severe local necrosis — all in the feet. Of these, one developed local abscess.

Severity of poisoning following bite
Severity of envenoming in land snake bites were graded clinically as:—[2]

1. Negligible or no envenoming (nil): Local swelling one cm. or less increase in circumference.
2. Slight: Local swelling less than four cm. increase no necrosis or systemic symptoms.
3. Moderate: Local swelling four cm. or more and/or no necrosis.
4. Severe: Clinically evident systemic poisoning.
5. Fatal.

It is noted that 89.3% of the patients escaped with negligible or slight poisoning. Only 5.4% had severe poisoning. There were two deaths, forming 0.9% fatality rate. One patient died from cobra bite and the other from bite of unrecognised snake. The later died within 30 minutes of admission to the hospital. Even though Malayan pit viper formed 83.3% of the severe bites there was not a single death from its bite in this study (Table 1).

Days of Hospital Stay:
Majority of patients went home after a short stay. It was noted that 89.7% of the patients went home in less than a week. Only 10.3% were required to stay more than seven days. The longest stay was 55 days by a 11 year-old boy bitten by a cobra. He developed severe necrosis needing desloughing and skin grafting. The longest stay for viper bite was 25 days by a 42 year-old man who had severe poisoning with haemorrhagic blisters and infection in the foot. All the 15 cases of non-poisonous snake bite patients went home after a day's stay.

Table 3
SITE OF BITE AND SPECIES OF SNAKES IDENTIFIED

Site of Bite	Malayan pit viper	Common Cobra	Banded Krait	Non-Poisonous	Not Recognised	Not Seen	Total	%
Foot	63	2	1	6	42	14	128	56.9
Toe	14	5	0	2	13	6	40	17.8
Leg	8	1	0	4	5	2	20	8.9
Finger	12	4	0	0	3	2	21	9.3
Hand	10	0	0	2	2	0	14	6.2
Other	1	0	0	1	0	0	2	0.9
Total	108	12	1	15	65	24	225	100.0

Treatment

Only three (1.3%) patients were recorded to have applied a tournquet after the bite before coming to the hospital. None oncised and sucked the wound before arrival. None sought the service of the traditional medicine-man before coming to the hospital, though three patients (1.3%) sought his help while in hospital.

Most patients were only treated with simple analgesics, bed rest and tranquilizers for anxiety. Only 12 (5.4%) of the 224 patients were given anti-venom. The anti-venom given was monospecific, either imported from Thailand or West Germany. Viper anti-venom produced by I.M.R. (Malaysia) was also used in some cases depending on the availability at the time.

The amount used varied from 10 ml to 60 ml for viper and 10 ml to 80 ml for cobra bite. The anti-venom was given intravenously after taking stringent precautions. None of the patients developed anaphylactic reaction. Serum sickness developed in four patients — forming one-third of the treated group. Urticaria and fever developed between the sixth and ninth day after administration of anti-venom. Of these four patients, two reacted to viper anti-venom and two to cobra anti-venom forming 20% and 100% of the respective treated group. All responded to anti-histamines. Severe local necrosis developed at bite site in five patients with cobra bite. Of these, three needed desloughing and two of these required skin grafting. One developed abscess and required incision and drainage. In the fifth case, amputation was contemplated but the patient discharged herself against medical advice.

Antibiotics were needed only in sixteen (7.1%) cases, most of them had infected wounds.

One patient needed blood transfusion as the patient developed D.I.V.C. after severe poisoning with viper bite.

Anti-tetanus toxoid were given in 164 patients.

DISCUSSION

The present study shows that snake bite is not an uncommon problem in our community. In a survey of hospital patients in South-East-Asia, Sawai et al[3] have noted considerable variations in the mortality rates of snake bite victims, in Malaysia the average was 0.3%, in Thailand 1.3%, in Taiwan 5.4%, and in the Philippines 5.9%. The rate observed in Bukit Mertajam Hospital was only 0.3% and this is similar to what was observed by Sawai.

Males were exposed more, the ratio being 2:1. A similar trend was reported from some Asian and South-east-Asian cuntries.[2, 3, 4]

As has been observed by others (1, 2, 3) snake bite is a rural problem — forming 91.2% in this series. The Malays were vulnerable due to their rural distribution.

In this series the Malayan pit viper (A. rhodostoma) is the most common species involved. This was similarly observed by Reid et al.[2] As this snake is confined to the North in West Malaysia, over two-thirds of all snake bites in the country took place in this region. Malayan pit viper is not found south of Penang Island latitude and does not occur in Penang Island.[5] Unlike other snakes it does not move away easily and therefore is easy to identify. Other viper species were not implicated in this series. Malayan pit viper is a more common cause of severe poisoning than cobras. Nevertheless not a single death was attributed to this. Bites due to cobra is more lethal. Sawai et[3] noted in their survey more than half the fatalities were caused by cobra bites, although viper bites were three to four times commoner than cobra bites. Throughout the S.E.A. region, mortality rates for cobra bites averaged 7%.

Victims of cobra bites who had evidence of severe envenomation seem to die within a short time.[3]

Fear of snake bite is real and often over exaggerated. The low morbidity and mortality in human snake bite is remarkable. This further affirms that snake bites in human is a

In systemic snake bite poisoning, specific anti-venom is the most important therapeutis agent available, but, since only a minority of human beings bitten by venomous snakes develop poisoning, only a small percentage require anti-venom. This is more important because anti-venom is expensive and can cause adverse reaction, occasionally even fatal reactions. In this study only 5.4% of the cases were given anti-venom but not without untowards reactions. Serum sickness developed in 33.3% of the treated group, though there was no defensive reaction which rarely results in much venom being injected.[2]

It has been found that the application tourniquet has little or no effect on venom absorption in bites by Malayan pit viper. It has the potential complication of gangrene, peripheral neuropathy and increased fibrinolytic activity.[6] It is noted that three patients have applied tourniquet before coming to hospital in this series.

anaphylactic reaction. This should not be taken lightly.

The indications for giving anti-venom in the tropics are, first, in cases with clinical evidence of systemic poisoning — (as listed below for Malayan pit viper).

1. Bleeding from gums
2. Haemetemesis or melena
3. Haematuria
4. Haemoptysis
5. Continuous oozing from bite sites
6. Any bleeding tendency
7. Skin bleeding and mucous membrane haemorrhages

and, second, in bites by snakes with necrotising venom such

as cobra if the patient presents within three hours of the bite and shows local swelling. In the latter instance, the aim is to prevent or minimise local necrosis. Anti-venom should be administrated with utmost precaution.

In conclusion therefore, it is found that snake bite is not an uncommon problem in our locality. Among those victims who were bitten by poisonous snakes, the majority escaped with minimal or no poisoning.

ACKNOWLEDGEMENTS

I would like to thank the Director General of Health, Malaysia for permission to publish this paper. I would also like to thank the staff of the record office, the ward sisters and staff-nurses for their painstaking effort in tracing all the clinical records. Last but not least my thanks goes to Madam Rajamani for typing the manuscripts.

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