Rev. Inst. Med. trop. São Paulo
34 (6): 499-503, novembro-dezembro, 1992

NON-VENOMOUS SNAKE BITE AND SNAKE BITE WITHOUT ENVENOMING IN A BRAZILIAN TEACHING HOSPITAL. ANALYSIS OF 91 CASES.

Paulo Vitor Portella SILVEIRA & Sérgio de Andrade NISHIOKA

SUMMARY

A retrospective survey of 473 cases of snake bite admitted to a Brazilian teaching hospital from 1984 to 1990 revealed 91 cases of bite without envenoming and/or caused by non-venomous snakes. In 17 of these cases the snake was identified, and one patient was bitten by a snake-like reptile (**Amphisbaena mertensii**). In 43 cases diagnosis was made on clinical grounds (fang marks in the absence of signs of envenoming). The other 30 cases were of patients who complained of being bitten but who did not show any sign of envenoming or fang mark. Most cases occurred in men (66;73%), in the 10-19 years age group (26;29%), in the lower limbs (51/74;69%), between 6 A. M. and 2 P.M. (49;61%) and in the month of April (16;18%). One patient bitten by **Philodryas olfersii** developed severe local pain, swelling and redness at the site of the bite, with normal clotting time. The patient bitten by **Drymarcon corais** was misdiagnosed as being bitten by a snake of the genus **Bothrops**, was given the specific antivenom, and developed anaphylaxis. One patient bitten by **Sibynomorphus mikanii** presented prolonged clotting time, and was also given antivenom as a case of **Bothrops** bite. Correct identification of venomous snakes by physicians is necessary to provide correct treatment to victims of snake bite, avoiding unnecessary distress to the patient, and overprescription of antivenom, which may eventually cause severe untoward effects.

KEY WORDS: Non-venomous snakes; Snake bite.

INTRODUCTION

Snake bite is an important medical problem, not only in the tropics, but also in developed countries like Australia and the United States. In Brazil, about 20.000 cases of venomous snake bite are reported annually to the health authorities (Brazilian Ministry of Health, mimeogr. document).

Non-venomous snakes may be defined, from a clinical point of view, as the ones whose bite generally cause no harm to man, in spite of the fact that some of them have both venom glands and fangs. In Brazil, except for pit vipers (genus **Bothrops, Crotalus** and **Lachesis**) and coral snakes (**Micrurus**), all snakes are currently considered non venomous[8]. Little attention has been given to non-venomous snake bite in the literature, although it is an important percentage of all snake bites. At the Hospital Vital Brazil, in São Paulo, Brazil, for instance, about 40% of all observed cases of snake bite are attributed to non-venomous species[10].

Occasionally, bites of so-called non-venomous snakes cause signs of envenoming, as has been shown in several reports in the literature [7, 11, 12]. On the other hand, people bitten by venomous snakes may show no sign of envenoming ("dry-bite")[5], which is estimated to occur in 20-30%[9] or about 50%[4] of the cases in the United States.

This article aims at describing the clinical and epidemiological aspects of non-venomous snake bite and snake bite without envenoming in a Brazilian teaching hospital. Aspects of the differential diagnosis with bite of venomous snakes and indication of antivenom administration are also discussed.

Centro de Ciências Biomédicas, Universidade Federal de Uberlândia
Address for correspondence: Dr. Paulo Vitor Portella Silveira, Av. Amazonas 2392, Umuarama, 38405-380 Uberlândia - MG, Brazil.

MATERIAL AND METHODS

The records of all patients admitted to the Hospital de Clínicas of the Universidade Federal de Uberlândia, southwestern Minas Gerais state, southeastern Brazil, with the diagnosis of snake bite from January 1984 to December 1990 were retrospectively surveyed. Charts of patients bitten by snakes who showed no sign of envenoming and of patients bitten by identified non-venomous snakes were examined. Data were obtained on snake species, distribution of cases by sex, age, time and place, site of the bite, and clinical picture.

RESULTS

Eighteen specimens were captured or killed and brought for identification. In one case the animal was identified as **Amphisbaena mertensii**, known in the region as "cobra-cega" (blind snake), which actually is a snake-like reptile, not a snake. Scientific and popular names of identified snakes are shown in Table 1. In 43 cases there was presence of marks at the site of the bite without signs of envenoming. Thirty patients complained of being bitten by snakes but showed no local or systemic evidence for that.

Tabela 1
Identified non-venomous snakes and number of accidents verified

Scientific name	Common name (*)	Number
Sibynomorphus mikanii	Dormideira	3
Oxyrhopus trigeminus	Coral	3
Mastigodryas bifossatus	Jaracuçu do brejo	2
Philodryas olfersii	Cobra verde	2
Waglerophis merremi	Boipeva	2
Simophis rhinostoma	Coral	1
Philodryas patagoniensis	Jaracuçu dourado	1
Drymarcon corais	Papa-pinto	1
Boa constrictor	Jibóia	1
Liophis sp	Cobra capim	1

(*) According to BRITES & BAUAB (reference 2)

Patients came from 13 municipalities of the Triângulo Mineiro region and southern Goiás state (Table 2). Most cases came from Uberlândia (68; 75.6%), and at least 5 among them took place in the urban area. Males (66 cases; 71.7%) were more frequently bitten than females. Age of bitten patients ranged from 6 months to 74 years. Most cases occurred in the 10-19 years age group (26 cases; 29%), as shown in Table 3. Most bites were observed in April (Figure 1), and between 6 A.M. and 2 P.M. (49;61%). Lower limbs were the most common site of bite (Table 4).

Table 2
Distribution of cases by place

Municipalities	Number
Uberlândia	68
Monte Alegre de Minas	4
Tupaciguara	4
Indianópolis	3
Araguari	1
Cachoeira Dourada	1
Canápolis	1
Cascalho Rico	1
Centralina	1
Corumbaíba	1
Ituiutaba	1
Nova Ponte	1
Prata	1

One patient bitten by **Philodryas olfersii** showed severe local pain, swelling and redness, while the clotting time was normal. The signs and symptoms started to improve after 2 days.

A specimen of **Drymarcon corais** was misdiagnosed as being a venomous snake, and the child bitten by it was given specific antivenom against **Bothrops.** She developed anaphylactic shock, but fortunately recovered after appropriate treatment.

One patient bitten by **Sibynomorphus mikanii** had a clotting time of 18 minutes, and because of that was given antivenom, without side effects.

Table 3
Distribution of cases by age group

Age group (years)	Number of cases (%)
0-9	17 (18.7)
10-19	26 (28.6)
20-29	20 (22.0)
30-39	16 (17.6)
40-49	7 (7.7)
50-59	4 (4.4)
60-69	0 (0)
> 70	1 (1.1)
Total	91 (100)

Table 4
Distribution of cases by site of bite

Site	Number(%)
Lower limb (total)	**51 (69)**
Foot	30 (41)
Ankle	9 (12)
Calf/Shin	8 (11)
Thigh	1 (1)
Unspecified	3 (4)
Upper limb (total)	**21 (28)**
Hand	19 (25)
Unspecified	2 (3)
Abdomen	**1 (1)**
Face	**1 (1)**
Total	74(100)

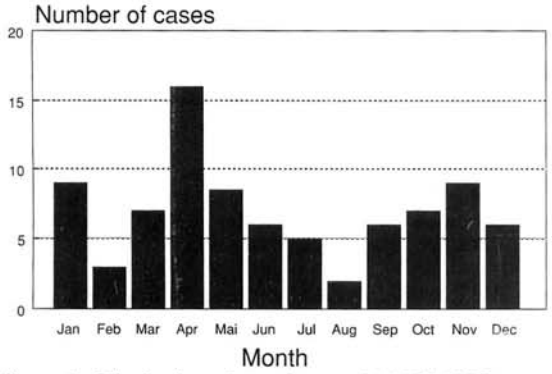

Figure 1 - Distribution of cases by month (1984-1990)

DISCUSSION

The ratio of venomous to non-venomous snakes in Brazil is about 1:4 or 1:5[1]. Although most of the reported cases of snake bite are by venomous species, non-venomous snakes still represent an important percentage of them[10].

According to the presence and localization of the fangs non-venomous snakes are either aglyphous (without fangs) or opistoglyphous (back-fanged). The former group include snakes of the family Boidae ("jibóia", "sucuri") and some of the family Colubridae. The bite of these snakes leave characteristic marks (Figure 2). In Brazil, signs of envenoming have been described in patients bitten by opistoglyphous colubrids of at least 2 species (**Clelia clelia plumbea** and **Philodryas olfersii**)[11,12]. Both snakes have venoms with proteolytic effect, and the latter has also an haemorrhagic effect. Obviously, they cannot be properly called non-venomous, but they are usually seen as such, and there is seldom any reference to them in the Brazilian literature about venomous snakes.

BRITES et al.[3] decribed 31 species of non-venomous snakes in the Triângulo Mineiro region. We identified 10 of them biting man. The snakes most frequently brought to us were **Sibynomorphus** and **Oxyrhopus**, small and non-agressive snakes. Our view is that they were the most commonly brought not necessarily because they caused most of the bites but because they were the most easily captured.

In the management of snake bite, from a clinical point of view, a key issue is to know if the snake is venomous or not. If a wrong diagnosis is made, and a patient bitten by a venomous species is left untreated, or antivenom administration is delayed, this patient can have severe complications or even die. On the other hand, antivenom administration is not harmless, and although modern preparations are nowadays relatively safe, there is always the risk of side effects. We describe the case of a patient who nearly died of severe anaphylaxis after being given antivenom unnecessarily.

In our cases diagnosed only on clinical grounds it was not possible to distinguish between bites of non-venomous and venomous snakes without envenoming, although in practice this can be considered irrelevant, as in both situations antivenom is not indicated. The marks at the site of the bite can sometimes suggest the diagnosis, but the quality of our data was not reliable in this respect.

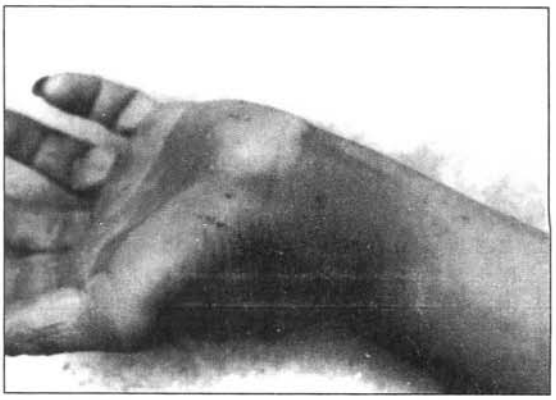
Figure 2 - Non-venomous snake bite: marks at the site of the bite.

For Brazilian snakes, when they are available for identification, there are criteria to distinguish venomous from non-venomous species that are accessible to the ordinary physician[1]. Identification of the Crotalinae can be easily done by the presence of the pit between the eye and the nostril. Distinction between venomous and non-venomous coral snakes is more difficult to be made by people without training in Herpetology. The clinical aspects are also useful in the differential diagnosis between venomous and non-venomous snakes, and within venomous species[6].

Immunoassays have been developed to determine the species or genus of snake responsible for the envenoming by detection of the specific venom in body fluids[13]. A test that is sensitive, specific, rapid and easy to perform is still not available. The development of such test will be a considerable contribution for the adequate diagnosis and management of snake bite in Brazil.

RESUMO

Acidentes por serpentes não-peçonhentas e acidentes por serpentes peçonhentas sem envenenamento em hospital universitário brasileiro. Análise de 91 casos.

Um levantamento retrospectivo de 473 casos de acidentes ofídicos admitidos em um hospital-escola brasileiro de 1984 a 1990 revelou 91 casos sem envenenamento e/ou causados por serpentes não-peçonhentas. Em 17 casos a serpente foi identificada e um paciente foi mordido por um réptil que se assemelha às serpentes (**Amphisbaena mertensii**). Em 43 casos o diagnóstico foi clínico (sinal das presas na ausência de sinais de envenenamento). Os demais 30 casos foram de pacientes que se queixavam de terem sido mordidos mas que não apresentavam nem sinal de envenenamnto nem marca de presa. A maioria dos acidentes ocorreu no sexo masculino (66;73%), no grupo etário de 10-19 anos (26;29%), nos membros inferiores (51/74; 69%), entre 6 e 14 horas (49; 61%) e no mês de abril (17; 19%). Um paciente mordido por **Philodryas olfersii** desenvolveu dor intensa, edema e eritema locais, com tempo de coagulação normal. O paciente mordido por **Drymarcon corais** foi tratado como acidente botrópico e desenvolveu reação anafilática após ter recebido soro antibotrópico. Um paciente mordido por **Sibynimorphus mikanii** apresentou tempo de coagulação prolongado, e também foi tratado com soro antibotrópico. Capacidade de distinguir serpentes peçonhentas de não-peçonhentas por parte dos médicos é necessária para que as vítimas de acidentes ofídicos sejam tratadas corretamente, evitando tanto que pacientes se angustiem desnecessáriamente quanto o uso de soro antiveneno não indicado, que pode, eventualmente, levar a graves efeitos indesejáveis.

ACKNOWLEDGEMENTS

To Vera Lúcia Campos Brites, from the Departamento de Biociências, Centro de Ciências Biomédicas, Universidade Federal de Uberlândia, for the identification of the snakes.

REFERENCES

1. BELLUOMINI,H. E. - Conhecimento sobre as serpentes brasileiras e medidas de prevenção de acidentes. **Rev. bras. Saúde Ocup.**, 45: 82-95, 1984.

2. BRITES, V. L. C. & BAUAB, F. A. - Fauna ofidiana do município de Uberlândia, Minas Gerais, Brasil. I. Ocorrência na área urbana. **Rev. Cent. Ciênc. Bioméd. Univ. Fed. Uberlândia**, 4: 3-8, 1988.

3. BRITES, V. L. C. BAUAB, F. A.; FERREIRA, V. L.; LIMA, P. R. D.; NASCIMENTO, M. C. O.; PIRES, V. L.; SOUZA, L. G. & YUKI, R. N. - Levantamento prévio das espécies de serpentes na região do Triângulo Mineiro. In: CONGRESSO BRASILEIRO DE ZOOLOGIA, 14, Juiz de Fora, 1987. **Resumos.** p.140.

4. DREISBACH, R. H. - Poisons. In: KRUPP, M. A. & CHATTON, M. J., ed. Current medical diagnosis and treatment. Los Altos, Lange Medical Publications, 1977. p.922-950.

5. JOHNSON, C.A. - Management of snakebite. **Amer. Fam. Phycn.,44:** 174-180, 1991.

6. JORGE, M. T. & RIBEIRO, L. A. - Acidentes por animais peçonhentos e outros animais. In: FELLIPE Jr., J., ed. Pronto-Socorro: fisiopatologia, diagnóstico, tratamento. Rio de Janeiro, Guanabara-Koogan, 1990. p.846-852.

7. NICKERSON, M. A. & HENDERSON, R.W. - A case of envenomation by the South American colubrid, **Philodryas olfersii. Herpetologica, 32:** 197-198, 1976.

8. ROSENFELD, G. - Symptomatology, pathology, and treatment of snake bites in South America. In: BUCHERL, W.; BUCKLEY, E. & DEULOFEU, V., ed. Venomous animals and their venoms. New York, Academic Press, 1971. p.345-384.

9. SANFORD, J. P. - Snake bites. In: WYNGAARDEN, J.B. & SMITH Jr., L. H., ed. Cecil Textbook of Medicine. 17. ed. Philadelphia, W.B. Saunders, 1985. p. 1841-1843.

10. SÃO PAULO. SECRETARIA DE ESTADO DA SAÚDE. Coordenadoria de Serviços Técnicos Especializados. Instituto Butantan (Hospital Vital Brazil) - Manual para atendimento dos acidentes humanos por animais peçonhentos. São Paulo, Instituto Butantan, 1982. p.16.

11. SILVA, M. V. & BUONONATO, M. A. - Relato clínico de envenenamento humano por **Philodryas olfersii. Mem. Inst. Butantan, 47/48:** 121-126, 1983/84.

12. SILVA Jr., N.J.; PINTO, R.N.L. & AIRD, S.D. - Human envenomation by the South American opistoglyph **Clelia clelia plumbea** (Wied) and a preliminary fractionation of its venom. **Rev. Soc. bras. Med. trop., 24** (supl. 2): 145-146, 1991.

13. THEAKSTON, R. D. G. - Snake venom in science and clinical medicine. 2. Applied immunology in snake venom research. **Trans. roy. Soc. trop. Med. Hyg.,83:** 741-744, 1989.

Recebido para publicação em 22/4/1992
Aceito para publicação em 14/10/1992