

Case Report

Open Access, Volume 2

Clinical report of a human bite by the pelagic sea snake *Hydrophis Platurus* (Serpentes: Elapidae), in the pacific ocean of Costa Rica

Viviana Ramos-Rodríguez¹; Earvin Montero-Carvajal¹; Greivin Corrales²; Aarón Gómez^{2*}

¹Centro Nacional de Control de Intoxicaciones, Caja Costarricense del Seguro Social, San José, Costa Rica.

²Serpentario, Instituto Clodomiro Picado, Universidad de Costa Rica, San José, Apto: 11501-2060, Costa Rica.

*Corresponding Author: Aarón Gómez

Serpentario, Instituto Clodomiro Picado, Universidad de Costa Rica, San José, Apto: 11501-2060, Costa Rica.
Tel: 00506-25117880; Email: aaron.gomez@ucr.ac.cr

Received: Mar 30, 2021

Accepted: Apr 28, 2021

Published: Apr 30, 2021

Archived: www.jcimcr.org

Copyright: © Gómez A (2021).

Abstract

Introduction: The pelagic sea snake, “Serpiente Marina,” *Hydrophis Platurus*, shows a wide-range distribution in the Indo-Pacific Ocean, reaching the Pacific coast of the Americas. Although the snake bite accidents caused by sea snakes are rare, Costa Rica occasionally presents large quantities of sea snakes stranded in the shore, mainly during the dry season.

Discussion: A 12-years-old boy was bitten in Playas del Coco, Sardinal, Guanacaste province, Costa Rica, and almost immediately started to develop pain and paresthesia. A coagulation time test was performed, although its importance is not relevant to the treatment of snakebite accidents caused by sea snakes, mainly due to its neurotoxic characteristics.

Conclusion: Although there is no antivenom available to treat snakebite accidents from the pelagic seasnake, its treatment is frequently misinterpreted, incurring in clinical tests that are not necessary and putting aside the tests that have more relevance to the potential clinical symptoms of the snake bite.

Introduction

The pelagic sea snake, *Hydrophis Platurus*, is the most wide-ranging snake species in the world occurring in the Indian and Pacific Oceans; in the Americas is found along the Pacific coast from California to Chile, and in Costa Rica is found in the Pacific coast including areas surrounding Coco’s Island [1-3]. On windless days during the dry season, these snakes can be found in large quantities floating amid flotsam in slicks and can be quite common (up to 300 individuals) [3].

After storms, individuals sometimes become stranded on beaches where they usually die. This species is not an aggressive snake but is reported to bite and lock onto nets or its body when restrained [3]. Thus, most of the snakebite victims are fishers, and occasionally, bathers and divers are bitten [4]. The mortality rate has been relatively low (10%, according to Reid

[4]), although the administration of specific antivenoms seems to positively impact the mortality rate associated with the sea snake accidents [4-6]. However, there is no antivenom available for the pelagic sea snake *Hydrophis platurus* [1,2].

It has been suggested that *H. platurus* possess little threat to humans, although a death has been reported and other cases have been stated as caused by *H. platurus* [7,8]; nevertheless, human deaths remain unproven even though there are anecdotal reports from Costa Rica, Colombia, and Panama (Campbell & Lamar, 1989). The majority of reports from the region are equivocal, Solórzano [8], and Bolaños [9] reported no sea snake bites from Costa Rica; yet, Solórzano [8] reported the first snakebite accident by *H. platurus* without further complications, and no medical treatment was sought.

Citation: Viviana RR, Montero-Carvajal E, Corrales G, Gómez A. Clinical report of a human bite by the pelagic sea snake *Hydrophis Platurus* (Serpentes: Elapidae), in the pacific ocean of Costa Rica. J Clin Images Med Case Rep. 2021; 2(2): 1091.

Case presentation

Here, we report a snakebite accident on a 12-years-old boy in Playas del Coco, Sardinal, Guanacaste province, Costa Rica. While bathing in the shore, the boy was bitten in the right forearm by a “Black and yellow snake,” which, after the bite, started to swim offshore as referred by the boy’s uncle. The snake was unequivocally identified as *H. platurus* (Figure 1A), mainly because of its characteristic black and yellow coloration. Once the bite occurred, the boy developed, almost immediately, pain and mild edema in the zone bitten and paresthesia in the affected forearm. Emergency protocol was activated, and the case information was addressed to Costa Rica’s “Centro Nacional de Control de Intoxicaciones,” which provide the following advice: Wash the affected area, forearm immobilization, keep the forearm above heart-level, do not apply a tourniquet, sucking devices or any other substances.

The boy was moved to the nearest medical center, and immediately admittance was done. At the medical center, the following symptoms were recorded: no edema, erythema, and mild local pain (Figure 1C). The vital signs were registered: Temperature 37.4°C, respiratory frequency 18.0 rpm, cardiac frequency 88.0 lpm, oxygen saturation 95.0%, arterial pressure 109.0/70.0 mmHg, mean arterial pressure 83.0 mmHg.

A coagulation time test was performed with the following results: Prothrombin 14.1 s; 93%, thromboplastin partial time 29.7 s. After six hours, the boy was hemodynamically stable, and oral antibiotics and analgesics were prescribed. Day two and three after the snake bite, there were no neurotoxicity symptoms, fever, nor pain.

Discussion

Although it is well known that sea snake bites are neurotoxic (myotoxicity), and hematological coagulation abnormalities and hemolysis are uncommon following sea snake bites (Senanayake et al., 2005), a coagulation time test was performed. However, it had to be stressed out that neuro-myotoxicity, rhabdomyolysis, progressive hyperkalemia, electrocardiographic changes, renal tubular necrosis, and renal failure are sequels of this type of envenomations [10].

Sea snake bites are scarce in children and usually painless, and the envenoming does not cause local signs [4-6,10]. Pain, when it is present, is remote and muscular. The myotoxicity is the predominant toxic venom effect, with stiffness and pain in the jaw, neck, and trunk progressing to the limbs, which have been described within 30 min of the bite.

Due to the lack of sea snake bite accidents, a more detailed and comprehensive differentiation in the snakebite protocol applied should be addressed. The envenomation symptoms of *H. platurus* are mainly neurotoxic; therefore, a coagulation time test is not recommended. Instead, checking for rhabdomyolysis, hyperkalemia, and renal failure should be performed and monitored after the bite [10]. Additionally, the “Centro Nacional de Control de Intoxicaciones” plays a major role in registering and providing information related to the snakebite accident. Finally, although without any antivenom available, no fatalities have been reported, and all the sea snake bite accidents in Costa Rica have been treated successfully.

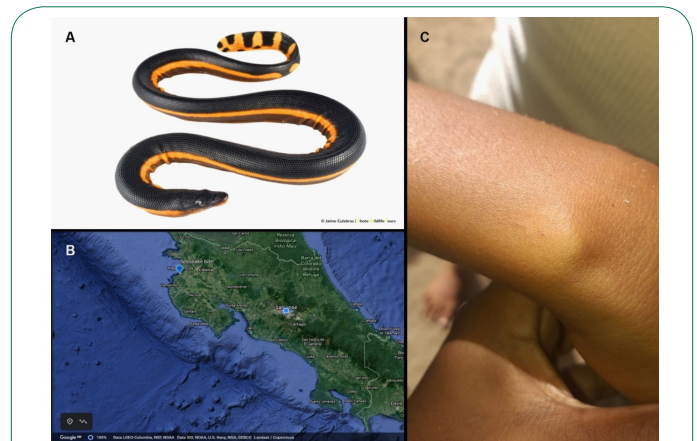


Figure 1: (A). Sea snake, *Hydrophis platurus*, is a widely distributed species, reaching the Pacific coasts of the Americas. It is characterized by distinctly bicolored, black above, yellow or brown below; the dorsal and ventral colors sharply demarcated from one another; ventrally there may be a series of black spots or bars on the yellow or brown background, or the yellow may extend dorsally so that there is only a narrow middorsal black stripe or a series of black crossbars. Total length males 720 mm, females 880 mm; tail length males 80 mm, females 90 mm [1,2]. (B). The site of the sea snake bite is shown, occurring on the northern Pacific coast in Costa Rica, Central America. (C). A specific affected area of the forearm is shown. No evident edema is seen, as well as no bleeding.

Acknowledgements: The authors acknowledge the quick response of the “Cruz Roja Costarricense,” and the service provided by the Emergency Service 9-1-1 and “Centro Nacional de Control de Intoxicaciones.” The authors also thank the photography of *Hydrophis platurus* provided by the professional herpetological photographer Jaime Culebras.

References

1. Savage JM. The Amphibians and Reptiles of Costa Rica. A Herpetofauna Between Two Continents, and Two Seas. The University of Chicago Press, Chicago, USA. 2002; 934p.
2. Solórzano, A. Serpientes de Costa Rica: Distribución, taxonomía e historia natural. Instituto Nacional de Biodiversidad, Editorial INBio. 2004.
3. Leenders T. Reptiles of Costa Rica: A field guide. Cornell University Press. 2019.
4. Reid H A. Antivenom in sea-snake bite poisoning. The Lancet. 1975; 15: 622-623.
5. Reid HA. Symptomatology, Pathology and Treatment of the Bites of Sea Snakes. In: Snake Venoms, ed: C.-Y. Lee. 1979.
6. Tu AT. Biotoxicology of Sea Snake Venom. Annals of Emergency Medicine. 1023-1028.
7. Kropach, C. 1972. *Pelamis platurus* as a potential colonizer of the Caribbean sea. Bull. Soco Washington. 1987; 2: 267-269.
8. Solórzano A. A case of human bite by the pelagic sea snake, *Pelamis platurus* (Serpentes: Hydrophiidae). Rev. Biol. Trop. 1994; 43: 1-3.
9. Bolaños R, Serpientes, venenos y ofidismo en Centroamérica. Editorial Universidad de Costa Rica, San José, Costa Rica. 1984; 136p.

-
10. Senanayake MP, Ariaratnam CA, Abeywickrema S, Belligaswatte A. Two Sri Lankan cases of identified sea snake bites, without envenoming. *Toxicon*. 2005; 45: 861-863.