



## Clinical report

# Forest pit viper (*Bothriopsis bilineata bilineata*) bite in the Brazilian Amazon with acute kidney injury and persistent thrombocytopenia



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## ABSTRACT

There are six species of *Bothriopsis* in Latin America, accidents caused by this genus are unusually reported. A 37-year-old man admitted thirty hours after a snakebite to the emergency department of Santarém City Hospital (SCH), northern Brazil. The patient presented local erythema, edema, increased local temperature and blister with serous fluid in the right arm. He developed acute kidney injury (AKI) and prolonged thrombocytopenia. The blood was incoagulable and he was treated with anti-bothropic antivenom and antibiotics. The patient had complete regression of all clinical and laboratory manifestations at varying intervals. The platelet counts returned to normal almost 2 weeks after administration of specific antivenom. The present report is the first accident caused by a snake of forest pit viper (*Bothriopsis bilineata*) in the Brazilian Amazon forest.

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## 1. Introduction

Although controversy exists regarding the origin and evolution of the South American pit viper as well as taxonomy classification (Salomão et al., 1997; Werman, 1992; Wüster et al., 2002) according Campbell and Lamar (2004) there are six South American species in the genus *Bothriopsis* (formerly *Bothrops*, Family Viperidae), commonly known as forest Pit Vipers, and they range greatly in size. Two species *Bothriopsis bilineata* and *Bothriopsis taeniata* are found in lowland rainforests and both of them are considered semi-arboreal species (Cunha and Nascimento, 1978). A report of an accident caused by forest pit viper (*B. taeniata*) in this region of the Amazon has been published (Torrez et al., 2009). In the Acre state

(Brazil), the sub-species *Bothriopsis bilineata smaragdina*, is most commonly found in upland forests (Turci et al., 2009). Although these are areas without seasonal flooding, this species is always found close to water (streams and rivers) (Turci et al., 2009). *B. bilineata* is considered rare, both in the Brazilian Atlantic rainforest and in Brazilian Amazon forests (Campbell and Lamar, 2004).

Although it is common cause of accidents in Ecuador (Smalligan et al., 2004; Warrell, 2004), in Brazil there is only one case reported of an accident caused by this species, but in the Atlantic Coast (Souza, 2007).

This paper reports the first authenticated accident by *B. bilineata* (according with Campbell and Lamar, 2004) in the Brazilian Amazon rainforest.

## 2. Case report

In 5 September 2013, a 37-year old man was admitted to the emergency department of Santarém City Hospital (SCH),

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State of Pará, 30 h after the accident caused by a *B. bilineata* (Fig. 1), perched on a tree.

Initially the patient walked and used a motorcycle to go to the Juruti City Hospital located 25 km far away, which reached 30 min after the accident. He was bitten in the anterior right forearm while working in the forest. The victim did not apply a tourniquet or cut the bite site. On physical examination at this hospital, the forearm had pain, erythema and discrete edema. The blood was incoagulable. The accident was classified as moderate (Brasil, 2001; Pardal et al., 2004) and he received six vials of anti-bothropic antivenom and chloramphenicol 4 g intravenously in the next day. The pain was treated with weak opioids but edema progressed to the entire upper limb and the patient developed oliguria and for this reason he was transferred to our service (SCH).

On admission at SCH, he was in good general condition, conscious and vital signs were normal. The patient developed oliguria (300 ml in 24 h) with dark urine, evolving to acute renal injury. The left upper limb presented with extensive edema, hindering the movement of the fingers (but the palpation of peripheral pulses were normal), associated with erythema, ecchymosis, increased local temperature and blister with serous fluid (Fig. 2). The antibiotic and intravenous hydration was maintained. The local infectious evolved without local improvement (increased local temperature and fever) and the antimicrobial regimen was changed to clindamycin and ciprofloxacin.

Computerized tomography performed on the 4 day of hospitalization at SCH proved extensive soft tissue edema and the image of a collection consistent with abscess (Fig. 3). There was progressive improvement in renal function, regression of edema and infection control. The patient was discharged after 16 days in the hospital. The laboratory findings are listed in Table 1.

The patient brought the death adult female snake and was identified as a specimen of *B. bilineata*, by the Laboratory of Zoological Collections of the Butantan Institute, São Paulo, Southeastern Brazil.



Fig. 1. *Bothrops bilineata* with a total length of 67 cm.



Fig. 2. Edema, erythema, ecchymosis and blister in the right upper limb.

### 3. Discussion

In Brazil was published only a single accident caused by a juvenile of *B. bilineata* but this accident was mild and occurred in Itacaré (Bahia State), located in the Atlantic Coast rainforest (Souza, 2007). The clinical picture was characterized by local manifestations such as pain, swelling, erythema and increased temperature. Here the same signs occurred, but the two last manifestations are unusual in the beginning of the evolution in *Bothrops* accidents, although these changes could also be attributed to local infection.

*B. bilineata* venom presents a phospholipase A2, called Bbil-TX, capable to cause an inflammatory response which is characterized by local hemorrhage and neutrophil recruitment and activation, partially dependent on the presence of a metalloproteinase (Porto et al., 2007; Carregari et al., 2013; Setubal et al., 2013). Experimental model in mice demonstrated that this toxin increase microvascular permeability and is responsible for the release of various inflammatory mediators, including arachidonic acid metabolites (Carregari et al., 2013).

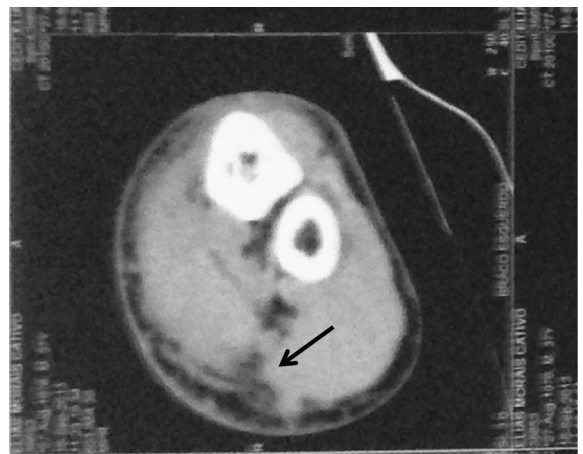


Fig. 3. Computerized tomography of the right arm showed extensive soft tissue edema. Arrow: image of a collection.

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