

Bite by *Bothrops pictus* in an adult patient from a district in Lima: a case report

Atencio Paulino Joel Isaac^{1,a}; Galarza Caceres Deivi Nick^{2,b}; Jhonatan Crispin Ayala^{2,b}; Bendezu Meza Jeampier^{2,b}; Sanabria Huamán Alvaro Daniel^{2,a}

1 Universidad de San Martín de Porres. Lima, Peru.

2 Universidad Nacional del Centro del Perú. Huancayo, Junín, Peru.

^a Doctor of Medicine; ^b Medical student.

ABSTRACT

Snakebites, particularly those from the genus *Bothrops* spp., represent a public health concern in Latin America due to their high incidence and significant clinical variability. We present the case of a 44-year-old male patient, a gardener by occupation, who was bitten on the left third finger by a snake in Cieneguilla. Initially, no antivenom was available at the nearest health center; therefore, he was transferred to Hospital Edgardo Rebagliati Martins on the same day. Despite receiving immediate medical attention and antivenom treatment upon arrival at the hospital, he developed common local symptoms such as pain, edema, and ecchymosis, but did not exhibit any severe long-term complications. Although the patient did not present with serious complications, the variability in the clinical presentation of snakebites can complicate their management, highlighting the importance of individualized evaluation and treatment. The patient experienced a favorable recovery and was discharged after six days, with no complications. This case emphasizes the importance of prompt medical attention and access to antivenom, especially in areas where snakebites are endemic. In addition, it underscores the need for increased community education on local species and bite prevention, particularly for agricultural workers who face a higher risk. The definitive diagnosis of envenoming caused by *Bothrops pictus*, recorded in the medical history, was made based on the characteristic clinical presentation, laboratory findings, the features of the snake described by the patient, and the geographic-epidemiological characteristics.

Keywords: Snake Bites; Bothrops; Public Health; Peru (Source: MeSH NLM).

INTRODUCTION

Vipers of the genus *Bothrops* spp. belong to the family Viperidae, which comprises around 200 species of snakes ⁽¹⁾. Every year, 15,000 cases of snakebite envenoming are reported in Latin America, resulting in 3,400-5,000 deaths ⁽²⁾. In South America, *Bothrops* spp. is responsible for 80 %-96.6 % of snake accidents ^(3,4). In Peru, 47 species of venomous snakes have been identified; the genera *Bothrops* (24 species), *Lachesis* (one species), and *Crotalus* (one species) stand out in the family Viperidae ⁽⁵⁾. Specifically, the species *Bothrops pictus*, known as the “coastal lancehead,” is found exclusively on the central coast, northern Peru, Huánuco, and Huancavelica ^(5,6). In 2021, 1,837 cases were reported, with an incidence of 5.4 per 100,000 inhabitants ⁽⁶⁾.

Since 1990, in relation to the clinical report, Henríquez-Camacho et al. reported 23 cases of snakebite envenoming at Hospital Nacional Cayetano Heredia; in all of them, the attacking snake was identified as the “coastal lancehead,” and in five cases the snake was captured and classified as *Bothrops pictus* ⁽⁷⁾. Of the affected individuals, 82.6 % were male, with a mean age of 38 years; the most common symptoms were pain and local edema, and the predominant clinical signs were local swelling (95.7 %), erythema (87 %), and ecchymosis (47.8 %) ⁽⁷⁾.

The pathophysiology of envenoming caused by the bite of *Bothrops* spp. is complex; it involves enzymes such as zinc-dependent metalloproteins, which cause hemorrhage. Clinically, it presents with local symptoms and signs such as edema, pain, erythema, and necrosis, as well as systemic manifestations characterized by coagulation disorders, thrombosis, renal failure, and hemorrhage. ⁽⁷⁾.

Corresponding author:

Jhonatan Crispin Ayala
jhonatancripsin2018@gmail.com

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Given the limited material and its age, this study addresses the clinical and narrative characteristics of the patient, with the aim of encouraging future research. We report the case of a patient hospitalized in the infectious diseases department of a level IV hospital in Lima, Peru.

CLINICAL CASE

This is a 44-year-old male patient from Apurímac, currently residing in the district of Cieneguilla, who works as a gardener and has no relevant medical history. He presented with a three-hour history of illness and was referred to the Emergency Department of Hospital Edgardo Rebagliati Martins for antivenom treatment.

The clinical course is as follows: according to the patient's chronological account, at approximately 8:00 a.m., while working in the undergrowth, he felt a lancinating pain in the third left finger. Upon withdrawing the limb, he saw a snake about 30 cm in length, gray in color, with brown spots and a triangular head. He went to the nearest health post, where intramuscular ketorolac was administered, after which he was referred to the nearest hospital due to the unavailability of antivenom. Upon arrival at the emergency department, he received hydration and antibiotics (ceftriaxone 2 g IV every 24 hours and clindamycin 600 mg IV every 8 hours), in addition to placement of a Foley catheter. Laboratory tests on admission showed a slightly turbid urinalysis, with a pH of 5.5, blood 1+, 11-15 red blood cells per field, and 0-3 epithelial cells per field. The other test results are shown in Table 1.

Table 1. Laboratory tests on the day of admission

Abnormal laboratory test	Result	Normal range
Hemoglobin	16.7 g/dL	13-18 g/dL
Hematocrit	47.7 %	42 %-52 %
Leukocytes	11,600 cells/ μ L	6,000-10,000 cells/ μ L
Segmented neutrophils	8,810 cells/ μ L	1,500-8,000 cells/ μ L
Monocytes	1,370 cells/ μ L	200-1,000 cells/ μ L
Platelets	138,000 cells/ μ L	150,000-450,000 cells/ μ L
INR	1.31	0.8-1.2
PT	17.2 s	11-13.5 s
Urea	39 mg/dL	7-20 mg/dL
AST	34 U/L	5-40 U/L
ALT	45 U/L	7-56 U/L
Fibrinogen	284 mg/dL	200-400 mg/dL
aPTT	47.1 s	25-35 s

INR: international normalized ratio; PT: prothrombin time; AST: aspartate aminotransferase; ALT: alanine aminotransferase; aPTT: activated partial thromboplastin time.

Biological functions were preserved, with a fair general condition. No lymphadenopathy was palpated. Blood pressure was 100/70 mmHg, HR 95 beats/min and RR: 12 breaths/min. Body temperature was 36.6 °C. Regarding the skin, edema was observed in the left upper limb, mainly in the distal part. In addition, an erythematous lesion (approximately 2 x 3 cm) was identified in the inner region of the left biceps brachii, an ecchymotic lesion (3 x 4 cm) in the lateral region of the left pectoralis major, and a violaceous lesion on the nail fold of the third left finger (Figure 1).



Figure 1. Violaceous lesion on the nail fold of the third left finger following a bite of *Bothrops pictus*.

Physical examination revealed no abnormalities in the chest, lungs, cardiovascular system, abdomen, or genitourinary system. Neurological examination showed that the patient was alert, with a Glasgow Coma Scale score of 15/15. Motor examination revealed decreased mobility of the fingers of the left hand, with pain during abduction of the left arm. Deep tendon reflexes were positive (+) and the Babinski reflex was negative (-). A single intramuscular dose of tetanus antitoxin and 10 mL of polyvalent antivenom (two vials) was administered.

On the second day of hospitalization, a follow-up complete blood count was requested. The results showed hemoglobin 14.4 g/dL, platelets 198,000 cells/ μ L, leukocytes 6,610 cells/ μ L, segmented neutrophils 4,430 cells/ μ L, creatinine 0.99 mg/dL, glomerular filtration rate 95 mL/min/ m^2 , urine output 1.28 cc/kg/h, urea 14.8 mg/dL, C-reactive protein (CRP) 4.08 mg/L, fibrinogen 419.3 mg/dL, prothrombin time 13.6 s, INR 1.07, and creatine kinase 172 U/L. In addition, a Doppler ultrasound revealed edema of the subcutaneous tissue in the left upper limb, with no evidence of deep or superficial venous thrombosis. An expansion of the ecchymotic lesions was observed (Figure 2).



Figure 2. Expansion of the ecchymotic lesion on the second day of hospitalization in the lateral region of the left pectoralis major and biceps brachii.

On the fourth day of hospitalization, a complete urinalysis was requested; the result was yellow and transparent urine, with a pH of 6.0, no blood, 0-3 leukocytes and 0-2 red blood cells per field, and no epithelial cells. In the last complete blood count, the following values were obtained: fibrinogen 455 mg/dL, prothrombin time 12.7 s, INR 1.0, activated partial thromboplastin time 33.10 s, hemoglobin 14.5 g/dL, leukocytes 6,200 cells/ μ L, segmented neutrophils 4,400 cells/ μ L, and CRP 1.91 mg/L. Over the following days, edema of the lesions decreased in the wrist, forearm, and arm, and the patient was discharged on the sixth day of hospitalization without complications, with a diagnosis of envenoming by *Bothrops*

pictus, consistent with the clinical presentation, laboratory findings, features of the snake described by the patient, and geographic-epidemiological characteristics.

DISCUSSION

Snakebites represent a significant public health problem in Latin America due to their potential to cause severe envenoming and their wide geographic distribution, including coastal areas of Peru, where *Bothrops pictus*, commonly known as the “coastal lancehead,” is found ^(8,9). Although these bites can lead to severe physical sequelae such as amputations, paralysis, and permanent disabilities, as well as impact psychological well-being ⁽¹⁰⁾, the patient in this case did not develop long-term complications, which is an atypical outcome.

In Peru, 22,564 cases of snakebite envenoming have been reported, with the highest prevalence in the departments of Loreto (28.4 %), San Martín (19.7 %), and Ucayali (13.3 %). However, the case discussed here occurred in Lima, highlighting the geographic variability of these incidents ⁽¹¹⁾. It has also been found that men are more susceptible to snakebites ⁽¹¹⁾, which is consistent with our report.

The literature suggests a high variability in the clinical presentation of snakebite envenoming, which complicates its management ⁽¹²⁾. Melo et al. described the most common clinical manifestations as pain, edema, and ecchymosis ⁽¹³⁾, symptoms also observed in our patient. Although severe cases may result in tissue necrosis and blister formation ⁽¹⁴⁾, our patient did not develop these severe symptoms, likely due to prompt medical care and the effective administration of antivenom.

The patient's occupation in an agricultural setting suggests a high risk of snakebites, an observation supported by Babo Martins et al., who indicate that agricultural workers frequently face such hazards ⁽¹⁵⁾. Despite prompt medical attention, the snake could not be specifically identified, underscoring the need for greater community education on local species and bite prevention.

Limited access to antivenom in resource-constrained settings can increase snakebite-related morbidity and mortality, as demonstrated in the study by Oliveira et al. ⁽¹⁶⁾. This case underscores the importance of improving the availability of specific treatments and medical training in endemic areas.

Laboratory findings and imaging studies are consistent with the existing literature on *Bothrops* spp. envenoming, showing mild alterations in urinalysis, including hematuria and proteinuria, as well as elevated inflammatory markers ^(17,18). However, the absence of significant alterations in hematological and coagulation parameters in our case is noteworthy and may indicate an individual response to the venom.

Initial treatment included adequate hydration, placement of a Foley catheter to monitor renal function (because some

Bothrops species can cause acute renal injury secondary to envenoming), and empiric antibiotic therapy, which were essential to prevent secondary infections. However, the need for empiric antibiotics in snakebite envenoming remains a subject of debate ⁽¹⁹⁾. The patient's favorable clinical course suggests an adequate response to treatment, although it would be useful to document further details on the administration of antivenom and other supportive care measures used. In addition, this case emphasizes the need to improve the availability of antivenom and to strengthen public education on the prevention and management of such incidents in endemic areas.

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