

TRIMERESURUS TRUONGSONENSIS BITE: A CASE REPORT FROM VIETNAM

Dang Duc Nguyen¹, Nguyen Hong Anh Lam² and Dang Bach Nguyen³

¹Poison Control Center, Bach Mai Hospital, Hanoi, Vietnam;

²Thai Nguyen University of Medicine and Pharmacy, Thai Nguyen, Vietnam;

³Hanoi Medical University, Hanoi, Vietnam

Abstract. *Trimeresurus truongsoneensis* is a species of venomous snake belonging to the viper family. In this study we report a case of a *T. truongsoneensis* bite. The study subject is a 20-year-old male who was mountain climbing in Quang Binh Province, Vietnam when he found, caught and brought home a *T. truongsoneensis* viper to keep as a pet. He was feeding the snake on 9 January 2025 when he was bitten on the back of his right hand by the snake. Two hours and forty-five minutes later he presented to Bach Mai Hospital Poison Control Center with pain and swelling at the bite site. He was admitted to hospital and liver and kidney function tests, electrolyte levels, CK (creatin kinase) level and highly sensitive troponin T tests were performed and all the results came back normal but on a complete blood count the white blood cell count was elevated (13.46 g/l), as was the percent neutrophils (81.27%) and the fibrinogen level was low (1.58 g/l; normal range: 2-4 g/l). The fibrinogen level continued to decrease until it reached a nadir at 10 hours post snake bite (1.44 g/l) and then gradually increased to normal (2.07 g/l) 34 hours post snake bite. The patient was supported with intravenous fluids; he was given a dose of anti-tetanus serum, and given prophylactic clindamycin intravenously at a dose of 1,800 mg/day. The patient was not given antivenin. He was discharged home 48 hours post snake bite with no pain and normal blood tests. We review the clinical management of this type of snake below.

Keywords: *Trimeresurus truongsoneensis*, Vietnam, snake bite, coagulation disorder, hypofibrinogenemia

Correspondence: Dang Duc Nguyen, Poison Control Center, Bach Mai Hospital, 78 Giai Phong Street, Hanoi, Vietnam

Tel: +84 976518984 E-mail: dangducnguyen79@gmail.com

INTRODUCTION

Vietnam has about 30,000 cases of snake bites every year, mainly occurring in rural and mountainous areas, usually due to accidentally stepping on a snake while walking in the forest, doing farming or due to direct contact, such as catching, playing with or feeding the snake (Patra and Mukherjee, 2021). There are an estimated 80 deaths due to snake bite per million population per year worldwide (GBD 2019 Snakebite Envenomation Collaborators, 2022). In Vietnam, there are 230 species of snakes; 60 species of which are venomous (Le *et al*, 2025). *Trimeresurus truongsonensis* is a carnivorous snake belonging to the viper family, typically hunting at night (Ngo *et al*, 2022). This snake species was first found in in 2004 in the tropical forest of Quang Binh Province in the Truong Son Mountain Range along the Vietnamese/Laotian border (Orlov *et al*, 2004). No studies have reported this snake species outside the tropical forest of the Truong Son mountains in Vietnam (Orlov

et al, 2004). This snake is green and brown in color (Ngo *et al*, 2022), can grow 1-2 meters long and it inhabits moist areas, is good at climbing and prefers to live in trees (Ngo *et al*, 2022) at an altitude of 500-600 meters (Ngo *et al*, 2022). It has a slender body, a distinct, sharp head and large eyes (Ngo *et al*, 2022). Its venom mainly causes swelling, pain and a coagulation problem (Biakzuala *et al*, 2024; Nguyen *et al*, 2024). The coagulation problem is characterized by thrombocytopenia or hypofibrinogenemia or both (Rojnuckarin *et al*, 1999; Tiyawat *et al*, 2022). *T. truongsonensis* bites cause clinical and laboratory characteristics similar to other pit vipers (Lee *et al*, 2020).

CASE REPORT

A 20-year-old male patient went mountain climbing in the tropical forest of Quang Binh Province, in the Truong Son Mountain range of Vietnam, where he caught a snake and brought it home to keep as a pet (Fig 1). While feeding the snake, he was bitten on the back of his right hand at 11:00 AM on 9 January 2025.



Fig 1 - *Trimeresurus truongsoneis*

Two hours and forty-five minutes later the patient presented to the Poison Control Center, Bach Mai Hospital, with pain in the back of the right hand. His past medical history was negative for any abnormalities.

On presentation, his blood pressure was 130/80 mmHg, his pulse rate was 89 beats/ minute, his respiratory rate was 20 breaths/ minute, his temperature was 37.2 °C and his pain level was 4/10. He had mild swelling on the back

of the right hand and no visible bleeding (Fig 2).

The patient's liver and kidney function test, electrolyte levels (sodium, potassium and chloride), CK (creatinine kinase) and highly sensitive troponin T levels were all normal. The only laboratory abnormalities found on admission were an elevated white blood cell count (13.46 g/l), an elevated percent neutrophils (81.27%) (Tables 1 and 2) and a low fibrinogen level (1.58 g/l; normal range: 2-4 g/l).



Fig 2 - Swollen right hand of the patient

Table 1
Complete blood count results by time after snake bite

Time after snake bite	Blood count indicators							
	Red blood cells ($\times 10^{12}/l$)	Hemoglobin (g/l)	Hematocrit (%)	White blood cells ($\times 10^9$ cells/l)	Neutrophils ($\times 10^9$ cells/l)	Monocytes ($\times 10^9$ cells/l)	Lymphocytes ($\times 10^9$ cells/l)	Platelets ($\times 10^9$ platelets/l)
2 hours	5.27	162	0.48	13.46	10.94	0.57	1.75	261
10 hours	5.11	154	0.46	13.49	8.74	0.54	3.75	262
18 hours	4.8	144	0.44	12.49	6.89	0.77	4.28	236
34 hours	5.25	167	0.50	10.01	6.10	0.51	3.25	239
48 hours	5.15	159	0.49	9.8	5.90	0.55	2.75	289

g/l: grams per liter; l: liter

Table 2
Serum results by time after snake bite

Time after snake bite	Blood biochemistry								
	Urea (mmol/l)	Creatinine (μ mol/l)	SGOT (U/l)	SGPT (U/l)	Sodium (mmol/l)	Potassium (mmol/l)	Chloride (mmol/l)	hs-cTnT (U/l)	Creatinine kinase (ng/l)
2 hours	3.4	70	23	17	140	3.8	104	3.68	153
10 hours	3.8	74	28	18	141	3.8	105	3.62	158
18 hours	4.2	76	31	12	139	3.5	105	4.73	120
34 hours	4.1	72	29	19	142	3.6	106	4.97	132
48 hours	3.6	68	26	16	141	3.7	105	4.02	146

hs-cTnT: highly sensitive troponin T; mmol/l: millimoles per liter; ng/l: nanograms per liter;
SGOT: serum glutamic oxaloacetic transaminase; SGPT: serum glutamate pyruvate transaminase;
U/l: units per liter; μ mol/l: micromoles per liter

The patient was given a dose of anti-tetanus serum and prophylactic clindamycin 600 mg intravenous every 8 hours (WHO SEARO, 2016).

We continued to monitor the fibrinogen level which reached a nadir at 10 hours post snake bite (1.44 g/l) and then gradually returned to normal by 34 hours post snake bite (2.07 g/l) (Table 3 and Fig 3). At 48 hours post snake bite the test results were normal and the patient was discharged home.

DISCUSSION

In our patient the fibrinogen level was low by 3 hours post snake bite and then decreased to the nadir 10 hours post snake bite and returned to normal by 34 hours post snake bite. This time frame is similar to other pit viper bites (Lee *et al*, 2020; Mitrakul and Impun, 1973; Tiyawat *et al*, 2022). The mechanism for the low fibrinogen level seen among pit viper bites has not been well studied but one study suggested the venom activates plasminogen, leading to fibrinolysis and subsequent fibrinogen depletion (Lam *et al*, 2017).

The clinical presentation in our patient was mild, unlike some previously reported severe cases (Boyer *et al*, 1999; Lajoie *et al*, 2024; Lam *et al*, 2017). This shows the degree of envenomation can vary among pit viper bites. The snake that bit our patient was probably an adult snake and it did not feel strongly threatened since it was being cared for by our patient, so it injected only a small amount of venom, leading to milder symptoms and a quicker recovery. The severity of envenomation with viper bites varies.

In conclusion, we presented a case of *T. truongsoneensis* snake bite which was mild. This adds to the limited data regarding *T. truongsoneensis* snake bites. We conclude it is important to monitor coagulation levels frequently and regularly until they return to normal.

CONFLICT OF INTEREST DISCLOSURE

The authors declare no potential conflicts of interest with respect to the research, authorship and publication of this article.

Table 3
Coagulation levels by time after snake bite

Time after snake bite	Coagulation results		
	INR	Fibrinogen (g/l)	APTT (seconds)
2 hours	1.18	1.58	27.5
10 hours	1.18	1.44	27.4
18 hours	1.15	1.78	31
34 hours	1.07	2.07	29.4
48 hours	1.12	2.32	28.9

APPT: activated partial thromboplastin times; INR: international normalized ratio; g/l: grams per liter

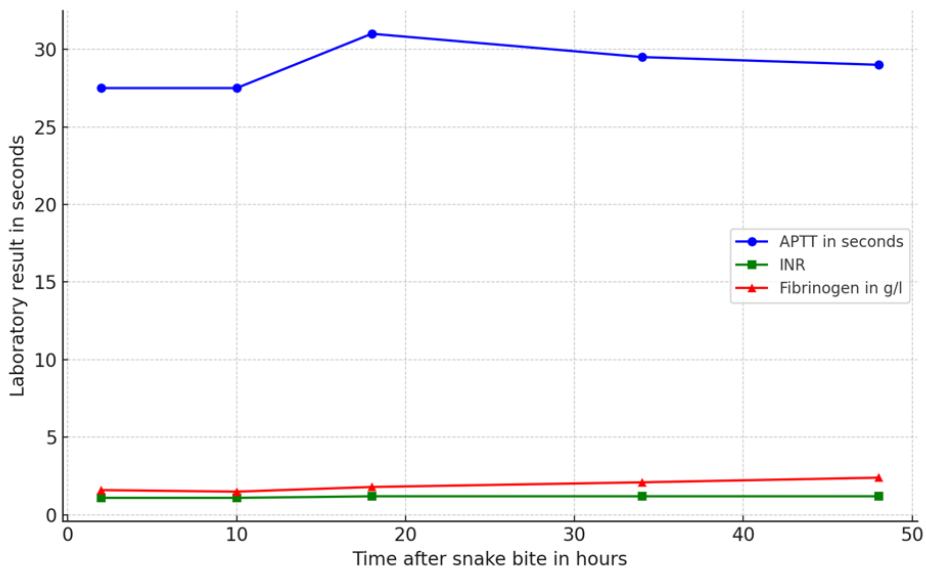


Fig 3 - Changes in coagulation over time after the snakebite

APTT: activated partial thromboplastin time; INR: international normalized ratio; g/l: grams per liter

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