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Case Report: A 47-Year-Old Man with Coagulopathy Due to a Snakebite

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ABSTRACT
Venomous snakebite is a medical emergency commonly occurring in tropical regions and can lead to severe systemic complications, including Venom-Induced Consumption Coagulopathy (VICC). This condition is characterized by activation of the coagulation pathway by snake venom enzymes, leading to massive consumption of clotting factors. A 47-year-old male presented with severe pain, progressive swelling, and subcutaneous bleeding of the left lower limb following a suspected snakebite while working in a forest. Laboratory examination revealed an unmeasurably prolonged prothrombin time (>150 seconds), indicating severe coagulopathy. The suspected envenomation was caused by Trimeresurus insularis, a venomous pit viper endemic to East Nusa Tenggara, Indonesia. Due to the unavailability of antivenom, the patient was managed supportively with Fresh Frozen Plasma (FFP) transfusion and vitamin K before self-discharging against medical advice. This case highlights the critical importance of early recognition and timely antivenom administration in managing venomous snakebites. Without antivenom, the risk of life-threatening complications such as hemorrhage, organ failure, and death increases significantly. Equitable distribution of antivenom and enhanced education for healthcare providers and the community are essential to reducing snakebite-related morbidity and mortality in Indonesia.

INTRODUCTION

Snake bites or snakebite are a global health problem that remains classified as a neglected tropical disease (Neglected Tropical Disease), particularly in tropical and subtropical countries such as Indonesia (WHO, 2024; Kasturiratne et al., 2023). Based on WHO data, approximately 5.5 million cases of snakebites occur globally each year, resulting in more than 94,000 deaths (WHO, 2024; Chippaux et al., 2023). In Indonesia, it is estimated that up to 135,000 cases of snakebites occur annually, with a mortality rate of around 10% (Maharani, 2016; Egge & Maharani, 2020)., This makes snakebites a serious public health problem, especially in rural areas and among high-risk farming communities (Ratnapradipa et al., 2021; Nugraha et al., 2022).

In Indonesia alone, of about 370 snake species, at least 77 are classified as venomous and can cause complex clinical manifestations, including neurotoxic, cytotoxic, and hemotoxic disorders, as well as serious complications such as coagulopathy due to venom-induced consumption (Venom-Induced Consumption Coagulopathy / VICC), acute kidney failure, and death due to multi-organ failure (Prasetiyanti et al., 2024; Sasmito et al., 2025; Park, Choi, Kim, & Jung, 2020; Slagboom, van den Berg, & Kool, 2017; Hutauruk, 2024).,

The management of snakebite cases is challenged by various factors, including delays in the administration of antivenom (Barnes et al., 2021) (Serum Anti Bisa Ular / SABU),

limited antivenom distribution, and variations in the competence of healthcare professionals in assessing and managing envenomation severity (Dalhat et al., 2023; Yuan et al., 2021). Furthermore, community attitudes and behaviors toward snakes—often driven by fear and misinformation—can hinder appropriate medical treatment efforts and adversely affect snake conservation (Uyeda et al., 2022; Ten Have et al., 2023). Here, we report a case of coagulopathy resulting from a snakebite.

The management of snakebite cases in Indonesia continues to face multiple obstacles, including delays in administering specific antivenom (Anti-Snake Venom Serum / SABU), its limited availability and distribution, and varying levels of healthcare provider competence in evaluating and treating envenomation (Potet et al., 2021; Patikorn et al., 2022). Compounding these clinical challenges are widespread community attitudes toward snakes — often characterized by fear and misinformation — which can impede timely medical intervention and complicate conservation efforts (Uyeda et al., 2022; Perspectives of snake owners in Indonesia, 2024; Malhotra et al., 2021).

This case report aims to illustrate these systemic challenges through the presentation of a patient with severe coagulopathy following a snakebite. By detailing the clinical course and management difficulties encountered, this report highlights the urgent need for improved antivenom accessibility, enhanced training for healthcare providers, and targeted public education to reduce snakebite-related morbidity and mortality in Indonesia.

Method

Case Report

A male patient Mr. MJB (47 years old) came to the emergency room of WZ Johannes Hospital due to a wound on the left leg from animal bite marks since 3 days SMRS (2/07/2025) at 08.00 WITA, the patient said that suddenly the left leg was painful and swollen and redness appeared on the inner thigh. When looked at, it turned out that there were 2 holes with bite marks resembling snake bites. The patient cannot be sure that the animal is biting, but after being bitten blood comes out. The incident began when the patient wanted to cut a branch in the forest. The patient said that he was bitten 1 time, currently the patient complains of pain and swelling that radiates from the bite area to the patient's left knee, dizziness (-), headache (-), nausea (+). vomiting (-), difficult to bowel several days (+). On Wednesday, 2/07/2025 at 08.00 WITA, the patient was cutting branches in the forest behind the house, suddenly the patient's left leg felt pain and bleeding but did not see any snakes.

The patient appeared moderately ill with GCS E4V5M6 (compos mentis), blood pressure of 130/70 mmHg, pulse of 80x/min, breathing of 20x/min, temperature of 36.8 °C and SpO_2 of 99% RA. There is a contusion in the dorsum pedis sinistra area and the inner thigh of the left leg. There is a subcutaneous vulnus contusio in the dorsum area of the pedis sinistra with a size of 4 cm x 2 cm purplish-red with edema of the lower limbs to the dorsum pedis. There is a subcutaneous vulnus contusion in the femoral area of the sinistra media with a size of 20 cm x 10 cm. The patient was diagnosed with *Venom-Induced Consumption Coagulopathy* (VICC) dd/ *Disseminated Intravascular Coagulation* (DIC).

Figure 1. Clinical Manifestations in the Lower Extremities of the Patient's Sinistra. (A) Edema and ecchymosis of the dorsum pedis sinistra. (B) Subcutaneous hemorrhage and hematoma extending to the femoral region of the sinistra media. (C) Edema and skin discoloration on the left thigh indicating the progression of envenoma.

Source: Author's Personal Documentation

In this patient, 3x laboratory examinations were carried out on July 5, 2025, July 6, 2025 and July 8, 2025. When the patient was in the emergency room, the results of the laboratory examination included hemoglobin levels of 14.1 g/dL, RBC 5.29 x 10^6/uL, HCT 40.5%, WBC 10.65x10^3/uL, platelets 273.70x10^3/uL, PT >150 seconds, and APTT 30.70 seconds.

Result and Discussion

The patient Mr. JMB, a 47-year-old male, came to the hospital with complaints of pain and swelling in his left leg after a history of animal bites suspected to be snakes. Symptoms develop into swelling that extends to the thighs, accompanied by nausea and difficulty defecating. Although the patient did not see the biting animal directly, the clinical symptoms that appeared such as severe pain, extensive edema, as well as laboratory findings in the form of unread prothrombin (PT) time (>150 seconds) led to the diagnosis of a venomous snakebite with severe complications of coagulopathy.

The functional diagnosis of "snakebite degree III" in this patient corresponded to the criteria of severe systemic envenomation, which included extensive swelling beyond two joints, systemic symptoms (nausea), as well as severe coagulation abnormalities confirmed through laboratory results. Grade III snakebite according to the WHO includes severe local

symptoms, systemic hemorrhage, and coagulation abnormalities such as VICC (*Venom-Induced Consumption Coagulopathy*). (Paramadika et al., 2022)

Figure 2. Trimeresurus insularis
Source: Author's Personal Documentation

A common snake in the East Nusa Tenggara area is the red-tailed green snake or its Latin name *Trimeresurus insularis* which belongs to the group Viperidae, subfamily Crotalinae (Pit Viper). Its body length can reach 70-80 cm, with a slender body and a distinctive triangular-shaped head, indicating the presence of poisonous glands. Its bright green skin, sometimes with shades of blue or yellow, makes it easily recognizable among the foliage of tropical forests. Its rough scales provide additional protection while also aiding in movement. Large eyes with vertical pupils show its ability to hunt at night.(Panjaitan et al., 2021)

The patient appeared moderately ill with GCS E4V5M6 (compos mentis), blood pressure 130/70 mmHg, pulse 80x/min, breathing 20x/min, temperature 36.8 °C and SpO2 99% RA. There is a contusion in the dorsum pedis sinistra area and the inner thigh of the left leg. There is vulnus contusio in the dorsum pedis sinistra area with a size of 4 cm x 2 cm purplish-red with edema of the lower limbs to the dorsum pedis. There is a subcutaneous vulnus contusion in the femoral area of the sinistra media with a size of 20 cm x 10 cm.

After being bitten by a snake *Trimeresurus insularis*The patient complains of pain, swelling, redness in the inner thigh and radiates from the bite area to the patient's left knee. There was bleeding in the dorsum area of the pedis sinistra due to the snake bite. There is swelling on the patient's left leg because the snake venom is hemotoxic and cytotoxic which can damage local tissues. Snake venom of the group Viperidae, such as *Trimeresurus insularis*, contains a variety of toxic components that act locally and systemically. The main components of its toxins are cytotoxins, hemotoxins, proteolytic enzymes, and phospholipase A2, which cause direct tissue damage and cause intense inflammatory reactions. Cytotoxins damage cells around the bite site, including muscle cells, fibroblasts, and capillary endothelium, resulting in tissue necrosis and the release of inflammatory cell content. Meanwhile, proteolytic enzymes and phospholipase A2 break down the extracellular matrix and cell membrane, causing vasodilation and increased capillary permeability. As a result, fluids and proteins leak from the blood vessels into the interstitial tissues, resulting in local edema (swelling).(Puspaningtyas et al., 2022)

In addition, the toxin also activates the complement system and triggers the release of inflammatory mediators such as histamine, prostaglandins, and bradykinins, which exacerbate inflammatory processes and swelling. When toxins enter the systemic circulation, consumptive

coagulopathy (VICC) can occur which causes subcutaneous bleeding and hematoma, which also appears as swelling. Thus, swelling in patients due to snake bites is the result of a combination of direct cell damage, inflammatory reactions, and coagulation disorders.(Paramadika et al., 2022)

VICC itself is a severe coagulopathy condition due to excessive activation of the coagulation pathway by snake toxin enzymes such as thrombin-like enzymes, causing massive consumption of clotting factors. This condition is characterized by elongated PT and aPTT, high INR, and low or undetectable fibrinogen levels. In Mr. JMB patients, the PT value of >150 seconds indicates a very severe degree of coagulation disorder, typical of VICC, and leads to potential complications of disseminated intravascular coagulation (DIC).(Paramadika et al., 2022)

Snakebite treatment aims to neutralize toxins, prevent symptom progression, and avoid severe complications such as bleeding and organ failure. The main therapy is the giving **Anti-Snake Poison Serum (SABU)** As soon as possible, accompanied by supportive therapy such as IV fluids, analgesics, antibiotics, and transfusions in the event of coagulopathy. In this case, SABU is not given because it is not available in the hospital. Surgical actions include rehydration (NaCl 0.9%), antibiotics (ceftriaxone), antiemetics (Antrain), antihistamines (diphenhydramine, cetirizin), corticosteroids (dexamethasone), analgesics (morphin), gastric guards (ranitidin, omeprazole), and hematopoiesis (folic acid) supporters. The Actions of Internal Medicine Giving Transfusions **FFP** to treat coagulopathy and **vitamin K** to aid in the synthesis of clotting factors. **NSAID dilarang** because it risks worsening coagulation and kidney function.(Simangunsong et al., 2024)

In this case, the therapy given is in the form of a transfusion *Fresh Frozen Plasma* (FFP) and vitamin K are intended to replace clotting factors and aid in the correction of coagulopathy. This therapy is in accordance with the VICC management approach, especially in cases with limited antivenom stocks (SABU), as is the case in patients.(Maduwage & Isbister, 2014) Although SABU is the first line of therapy and has been shown to be effective in binding toxins and reversing coagulation disorders, the delay or absence of SABU increases the risk of complications and prolongs recovery (Kinanti & Kusumanegara, 2024).

In addition, it is important to note that the patient's delay in seeking medical attention, i.e. three days after the bite, is a factor that worsens the condition and increases the risk of complications such as DIC, acute kidney failure (AKI), and death. Previous studies have shown that treatment within <4 hours of envenomation is essential for lowering mortality (Kinanti & Kusumanegara, 2024).

In this case, the patient did not get SABU due to limited stock and chose to go home forcibly before the therapy was complete. Although supportive therapies such as FFP administration have slightly improved the disorder of hemostasis, without neutralization of toxins through SABU, pathophysiological processes persist. Toxins remaining in the body can still trigger consumptive coagulopathy, internal hemorrhage, organ failure, or secondary infections from poorly handled local wounds. In addition, progressive edema in the extremities can give rise to compartment syndrome, tissue necrosis, or even amputation if not treated promptly.

Taking into account the patient's condition that is not stable and does not receive definitive therapy and stops treatment abruptly, the patient's prognosis is assessed as dubia et

night, which means that it is uncertain and tends to be poor. The risk of severe complications, permanent disability, and death remains, especially if the patient does not return for control and does not receive follow-up treatment in a timely manner.

CONCLUSION

Snakebite is a critical medical emergency that can lead to both local and systemic complications, including pain, edema, coagulopathy, neurotoxicity, acute kidney failure, and even death, with severity influenced by snake species, venom dose, and the timeliness of treatment. Diagnosis relies on thorough anamnesis, physical examination, and coagulation tests, while management primarily involves antivenom administration, supportive therapy, and transfusions when necessary. Strengthening public education, ensuring equitable antivenom distribution, training healthcare workers, and establishing effective referral systems are essential to reducing morbidity and mortality. Future research should focus on developing more effective, region-specific antivenoms, optimizing treatment protocols, and assessing the impact of community education programs on snakebite outcomes.

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