

RESEARCH ARTICLE



A 36-Year-Old Male with Snake Bite Grade I Manus Dextra Case Report

Ratna Dewi¹, Ayun Pranandari^{2*}, Yanuar Ardani²

*Correspondence: ayunpranandari@gmail.com

¹Klinik Esensia, Semarang, Indonesia

²Psychosomatic and Palliative Division, Department of Internal Medicine, Klinik Esensia, Semarang, Indonesia

Submission April 22, 2025

Accepted May 30, 2025

Available online on October 2025

©2024 The Authors. Published by Stem Cell and Cancer Research, Semarang, Indonesia. This is an open-access article under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike License (CC BY-NC-SA 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

ABSTRACT

Background: Snakebite remains a major global public health concern, particularly in tropical regions like Indonesia. Snake envenomation may lead to local and systemic manifestations including erythema, swelling, pain, hypotension, respiratory distress, and even death. **Methods:** A 34-year-old male presented to the Emergency Department of Esensia Main Clinic with the chief complaint of a traumatic wound on the right hand resembling a snakebite, accompanied by hand swelling, pain, nausea, and dizziness. The patient had applied a cloth bandage prior to arrival. **Results:** The patient was diagnosed with a grade I snakebite of the right hand (manus dextra) based on clinical history and physical examination. Management included administration of anti-snake venom serum (ASVS). **Conclusion:** Venomous snakebites can result in severe outcomes, including death; thus, early and appropriate management is crucial. In this case, medical treatment included administration of ASVS.

Keywords : Snakebite, ASVS, Envenomation, Case report

INTRODUCTION

Snakebites pose a considerable burden of disease globally, especially in tropical and subtropical regions such as South Asia, Southeast Asia, and Sub-Saharan Africa. An estimated 400,000 snakebite incidents occur annually, with up to 20,000 fatalities worldwide. Underreporting is common in Southeast Asia due to reliance on traditional medicine. In 2008, snakebite cases in the Asia-Pacific region were estimated at 237,379 to 1,184,550, with 15,385–57,636 deaths (1.3%–4.86%). South Asia accounted for the highest number of fatalities, estimated between 14,112–33,666 (0.0027%–0.0064% of the population annually).¹

Indonesia, with over 250 million people and a territory comprising more than 17,000 islands, possesses one of the richest biodiversities globally. The country harbors around 450 snake species. Four venomous species frequently found in rural areas Russell's viper, saw-scaled viper, cobra, and krait pose a threat to human life. However, epidemiological data on snakebites in Indonesia remains scarce.²

Since 2009, the World Health Organization (WHO) has classified snakebite as a neglected tropical disease.³ Indonesia reports a high incidence of snakebites due to the predominance of agriculture-related occupations. Despite this, the country lacks comprehensive national epidemiological data, updated clinical guidelines, or policies for snakebite management.⁴

Men are more frequently bitten than women unless in female-dominated occupations. Children and young adults are the most commonly affected age groups. Snakebites can cause local tissue damage, necrosis, internal hemorrhage, muscle dysfunction, edema, hypotension, corneal injury, uveal inflammation, and hemolysis. Rapid diagnosis and treatment are essential, especially in distinguishing venomous bites. One of the most serious complications is coagulopathy, which can lead to fatal bleeding.⁵ Identification of the snake type and clinical symptoms aids in diagnosis and therapy to prevent disability or life-threatening conditions.⁶

CASE PRESENTATION

Case Report

A 34-year-old male presented to the Emergency Department of Esensia Main Clinic with a primary complaint of a traumatic wound on the right hand, suggestive of a snakebite. Approximately one hour prior, the patient was clearing brush behind his house when he felt a bite on the right hand and noticed a green snake approximately 50 cm in length. He observed two puncture marks on the right wrist, consistent with a snakebite. Associated symptoms included hand swelling (+), pain (+), no bleeding (–), nausea (+), vomiting (–), and dizziness (+). The patient wrapped the hand in cloth and was brought to the clinic by his family.

Physical Examination

- Consciousness: Compos mentis
- Vital Signs: Blood pressure 130/90 mmHg, pulse 24 bpm, temperature 36.5°C
- Head and Neck: Mesocephalic, no cranial injury, symmetrical facial features, non-anemic conjunctiva, non-icteric sclera, dry lips, non-pale oral mucosa, no mastoid tenderness, non-hyperemic pharynx, tonsils grade T1-1, midline trachea, no palpable lymph nodes, no jugular venous distension, no thyroid enlargement
- Lungs: Symmetrical chest shape, positive fremitus, normal chest movement, resonant percussion throughout lung fields, vesicular breath sounds, no additional sounds
- Cardiovascular: Ictus cordis palpable at midclavicular line, no cardiomegaly, heart sounds I and II regular, no murmurs
- Abdomen: Hepatic dullness (+), flank dullness (+), shifting dullness (–), normal bowel sounds (+)
- Extremities: Edema on dorsum of left hand; two puncture marks on right wrist; edema extending from wrist to thenar eminence (diameter ± 5 cm within 2 hours), smooth skin surface, no discoloration, warm to touch (+), tender to palpation (+)

Diagnosis

Diagnosis: Grade I snakebite, right hand (manus dextra)

Treatment

Intravenous NaCl 0.9% 100 mL + 1 ampoule of ASVS at 40 drops/min, IV ranitidine 50 mg every 8 hours, IV dexamethasone 10 mg every 8 hours, IV ketorolac 30 mg every 8 hours, vitamin K, and routine blood laboratory tests.

RESULTS

Snakebite envenomation is among the most common toxin-mediated injuries globally, with significant health burdens in rural, tropical, and subtropical regions. Of the approximately 3,000 known snake species, around 15% to 20% are venomous. Snakebites are predominantly an occupational and environmental hazard, especially in agricultural communities, and most often occur on the lower limbs, including the feet and ankles, as noted in global epidemiological studies.⁷

According to the World Health Organization (WHO), approximately 5.4 million snakebite incidents occur annually, with 2.7 million resulting in envenomation, and nearly 138,000 deaths and 400,000 disabilities attributed to this condition.⁸ Snakebite envenomation is thus recognized as a neglected tropical disease, particularly affecting low-resource settings in Asia, Africa, and Latin America. The most affected demographic includes children and young adults, while the highest mortality rates are observed in pediatric and geriatric populations.⁹

Immediate management of snakebites is critical to reducing morbidity and mortality. WHO-recommended first aid emphasizes the importance of remaining calm, immobilizing the entire body especially the bitten limb and rapid transportation to a healthcare facility. When feasible, the affected individual should be placed in the recovery position. Pressure pad immobilization may be utilized in specific cases, although it is not advised for neurotoxic bites such as those from elapid species. The use of tight tourniquets is strongly contraindicated due to the risk of ischemia and subsequent complications. Documentation of the biting snake, if safely possible (e.g., through a photo), can assist in identification and guide appropriate treatment; however, capturing or killing the snake is not necessary.¹⁰

In this case, the patient's description of a green snake measuring approximately 50 cm suggests the culprit may have belonged to the genus *Ahaetulla*, commonly known as the Asian vine snake. These snakes are mildly venomous, arboreal, and non-aggressive, and their venom is generally not life-threatening to humans. However, accurate identification of the snake and verification of venom exposure remain challenging. Non-venomous snakes may exhibit similar physical characteristics, and venomous snakes may deliver so-called "dry bites" that do not involve venom injection. Therefore, clinicians must rely on both local and systemic symptoms to assess envenomation severity.¹¹

Snakebite envenomation is generally classified into four grades. Grade I (minor) involves only fang marks without edema, pain, systemic symptoms, or coagulopathy. Grade II (moderate) is characterized by local edema and fang marks without systemic involvement or coagulopathy. Grade III (severe) presents with regional edema extending across two anatomical segments, intractable pain, and evidence of coagulopathy. Grade IV (major) encompasses extensive edema, systemic symptoms (e.g., vomiting, headache, chest or abdominal pain, and shock), and thrombotic complications. Local symptoms may include erythema, swelling, bleeding, ecchymosis, burning, tingling, or pain at the bite site.¹²

Systemic manifestations that warrant vigilance include visual disturbances, neurological symptoms (e.g., dizziness, headache), cardiovascular signs (e.g., palpitations, hypotension), gastrointestinal symptoms (e.g., nausea, vomiting), respiratory compromise (e.g., dyspnea), as well as general symptoms such as fever, muscle weakness, and hypersalivation. These symptoms typically appear within 2–6 hours post-bite. In the present case, although the patient exhibited mild local and systemic manifestations, the presence of pain and swelling indicated systemic involvement.

Therefore, the envenomation was categorized as grade II, warranting prompt administration of anti snake venom serum (ASVS) to prevent progression of tissue damage and systemic complications.¹³

ASVS is typically derived from hyperimmunized animal serum, most commonly equine, and contains immunoglobulins that bind and neutralize venom components. Despite its efficacy, ASVS administration may result in hypersensitivity reactions, including type I (immediate) and type III (delayed) responses. Anaphylactic reactions, occurring in up to 25% of cases, are among the most serious side effects and can be life-threatening.¹⁴ In this case, the patient received 1 ampoule of ASVS at 40 drops/min as part of the medical management.

ASVS administration is indicated in patients who exhibit definitive or suspected venom exposure with one or more of the following: spontaneous systemic bleeding, coagulopathy, thrombocytopenia, neurotoxic signs (e.g., ptosis, ophthalmoplegia, paralysis), cardiovascular compromise (e.g., hypotension, shock, arrhythmias), acute kidney injury, hemoglobinuria or myoglobinuria, or significant and progressive local swelling. Specifically, local envenomation is considered severe if swelling extends beyond half the affected limb within 48 hours or if rapid progression is observed, particularly with regional lymphadenopathy.¹⁵

Inappropriate ASVS administration should be avoided to reduce the risk of adverse reactions and preserve limited antivenom supplies. In Indonesia, the only available antivenom is the trivalent ASVS, known as SABU, which is produced using equine serum immunized against the venoms of the Javan spitting cobra (*Naja sputatrix*), the Malayan pit viper (*Calloselasma rhodostoma*), and the banded krait (*Bungarus fasciatus*).¹⁶

Post-ASVS adverse effects may be classified as immediate or delayed. Immediate reactions (within minutes to 3 hours) include anaphylaxis presenting with urticaria, dry cough, fever, vomiting, abdominal colic, diarrhea, tachycardia, hypotension, bronchospasm, and angioedema. Pyrogenic reactions, which occur within 1–2 hours due to contaminated production processes, may present with chills, fever, and hypotension. Delayed serum sickness reactions (1–12 days) may include fever, vomiting, diarrhea, pruritus, myalgia, arthralgia, and lymphadenopathy.¹⁷

CONCLUSIONS

In conclusion, the presented case illustrates a moderately severe envenomation (grade II), which was appropriately managed with ASVS and supportive medications to prevent further tissue injury and systemic deterioration. Continued clinical monitoring and awareness of potential complications remain essential components of snakebite management.

Competing Interests

The authors declare that there is no conflict of interest.

REFERENCES

1. Medikanto, A. R., Silalahi, L. M. M. V., & Sutarni, S. (2017). Viperidae snake bite: Kasus serial. *Berkala Ilmiah Kedokteran Duta Wacana*, 2(2), 361–374.
2. Yuniasih, D., Tejosukmono, A., & Heriyanto, J. (2020). Snakebite as a neglected tropical disease in Indonesia: A review. *International Journal of Science and Technology Research*, 9(3), 6180–6185.

3. World Health Organization. (2012). *Neglected tropical diseases, hidden successes, emerging opportunities*. WHO.
4. Yunanto, R. A., et al. (2024). Improving the snakebite envenoming first aid treatment of farmers in rural areas of Indonesia: An educational intervention program. *International Journal of Occupational Safety and Health*, 14(3), 352–363.
5. Berling, I., & Isbister, G. K. (2015). Hematologic effects and complications of snake envenoming. *Transfusion Medicine Reviews*, 29(2), 82–89.
6. Naufal, A., & Prasetyo, Y. E. (2025). Laki-laki usia 60 tahun dengan snake bite: Laporan kasus. AT-TAKLIM: *Jurnal Pendidikan Multidisiplin*, 2(3), 16–22.
7. Jeon, Y. J., et al. (2019). Risk factor, monitoring, and treatment for snakebite induced coagulopathy: A multicenter retrospective study. *Acute and Critical Care*, 34(4), 269.
8. World Health Organization Regional Office for South-East Asia. (2019). *Guidelines for the management of snakebites (2nd ed.)*.
<https://www.who.int/publications/i/item/9789290225300>
9. Pucca, M. B., Knudsen, C., Oliveira, I. S., Rimbault, C., Cerni, F. A., Wen, F. H., Sachett, J., Sartim, M. A., Laustsen, A. H., & Monteiro, W. M. (2020). Current knowledge on snake dry bites. *Toxins*, 12(11), Article 668. <https://doi.org/10.3390/toxins12110668>
10. Simangunsong, D. K., Habib, H., & Simbolon, E. (2024). Pemberian SABU (Serum Anti-Bisa Ular) untuk kasus gigitan ular awitan lama dengan komplikasi disseminated intravascular coagulation (DIC). *Cermin Dunia Kedokteran*, 51(3), 149–155.
11. Adiwinata, R., & Nelwan, E. J. (2015). Snakebite in Indonesia. *Acta Medica Indonesiana*, 47(4), 358–365.
12. Roberts, J. R., & Otten, E. J. (1990). Snakes. In L. R. Goldfrank, N. E. Flomenbaum, N. A. Lewin, R. S. Weisman, & M. A. Howland (Eds.), *Toxicologic emergencies* (4th ed., pp. 789–799). Connecticut: Prentice–Hall International Inc.
13. Sutantoyo, F. F., & Gunawan, E. J. (2016). Antikolinesterase untuk gigitan ular dengan bisa neurotoksik. *Cermin Dunia Kedokteran*, 43(1), 14–18.
14. Warrell, D. A. (2016). *Guidelines for the management of snake-bites*. New Delhi: World Health Organization - Regional Office for South-East Asia.

-
15. Tan, C. H., Liew, J. L., Tan, K. Y., Sim, S. M., Leong, P. K., Fung, S. Y., ... & Tan, N. H. (2016). Assessing SABU (Serum Anti Bisa Ular), the sole Indonesian antivenom: A proteomic analysis and neutralization efficacy study. *Scientific Reports*, 6, 37299. <https://doi.org/10.1038/srep37299>
 16. Shafie, N. A., et al. (2020). The prevalence of hypersensitivity reactions to snake antivenoms administered in Sultanah Nur Zahirah Hospital from 2013 to 2016. *Medical Journal of Malaysia*, 75(3), 217.