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Case Report

Severe and Prolonged Cutaneous Necrosis Following Jellyfish Envenomation in a Cambodian Child: A Case Report

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ABSTRACT

Introduction

Jellyfish envenomation is a significant yet often underrecognized public health issue, particularly in coastal regions with high marine activity. In Southeast Asia, countries such as Thailand, the Philippines, and Malaysia have documented numerous cases of jellyfish envenomation, including severe complications and fatalities. In Cambodia, the coastline stretches along the Gulf of Thailand and includes popular destinations such as Kampot, Kep, and Sihanoukville, jellyfish stings remain underreported. There has been a lack of published data or case reports documenting jellyfish-related injuries among Cambodian children. We report the first documented case of a 6-year-old girl who developed prolonged cutaneous necrosis and secondary infections following jellyfish exposure in the coastal waters of Kampot Province.

Case Presentation

A 6-year-old girl was initially diagnosed with a jellyfish sting. She presented with non-healing necrotic lesions and significant inflammation in both thighs. Despite receiving treatment at several local clinics, her condition did not improve, prompting her admission to the National Pediatric Hospital for intensive care. During hospitalization, her condition gradually improved with intensive wound care, including repeated debridement. However, secondary infections with methicillin-resistant *Staphylococcus aureus* (MRSA) and superficial fungal infection (tinea) complicated her recovery. Following appropriate antimicrobial treatment and meticulous wound management, her condition significantly improved. Ultimately, the patient fully recovered, although she had persistent skin lesions for 41 days in total, including 21 days of outpatient care.

Conclusion

This case highlights the potential severity of jellyfish envenomation in children, including prolonged skin necrosis and secondary infections such as MRSA and tinea corporis. This underscores the need for timely recognition, proper wound care, and appropriate antimicrobial treatment. In Cambodia, where public awareness and clinical guidance on marine envenomation are limited, this report emphasizes the importance of education for both communities and healthcare providers.

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Introduction

Jellyfish envenomation is a significant yet often underrecognized public health issue, particularly in coastal regions with high marine activity [1]. Globally, thousands of jellyfish stings are reported annually, with the highest incidence observed in tropical and subtropical waters, including Southeast Asia [2]. Countries such as Thailand, the Philippines, and Malaysia have documented numerous cases of jellyfish envenomation, including severe complications and fatalities [3], especially in children, who may have increased vulnerability due to their smaller body size and lack of awareness [4].

In Cambodia, although the coastline stretches along the Gulf of Thailand and includes popular destinations such as Kampot, Kep, and Sihanoukville, jellyfish stings remain an underreported and poorly studied phenomenon [3]. To date, there is a lack of published data or case reports documenting jellyfish-related injuries among Cambodian children. The absence of epidemiological surveillance, public awareness, and clinical reporting creates a significant gap in understanding the true burden and complications of this marine hazard in the country.

Jellyfish envenomation typically causes immediate localized pain, erythema, and urticarial lesions [4]. In some cases, however, it can progress to more serious manifestations, such as necrosis, secondary bacterial infections, systemic hypersensitivity, or delayed wound healing [5]. Children are particularly at risk for severe skin reactions and secondary complications, which may go unrecognized or undertreated in resource-limited settings [6]. Methicillin-resistant *Staphylococcus aureus* (MRSA) and fungal superinfections such as tinea corporis can further complicate recovery, especially in the presence of skin barrier disruption [7].
We report here the first documented case in Cambodia of a 6-year-old girl who developed prolonged cutaneous necrosis and secondary infections following jellyfish exposure in the coastal waters of Kampot Province.

Case Presentation

A 6-year-old girl referred to the National Pediatric Hospital (NPH) with an itchy, red skin rash on both lower limbs that had lasted for 21 days, along with a high fever of 38.5°C. Her mother had bought some medicine from a nearby pharmacy and clinic, but her symptoms did not improve. Therefore, she brought her daughter to NPH for further treatment and care.

The patient completed all her childhood vaccinations according to the National Immunization Program. She had no history of allergies or contact with sick individuals. She was born full term with a normal birth weight of 2.8 kg. She sometimes has common colds and pharyngitis.

The girl's mother reported that she touched a jellyfish while swimming at the seaside in Kampot Province on February 22, 2025. The same day, she was given some medications, including paracetamol, hydrocortisone cream, and other unknown drugs. After a red rash first appeared as a plaque on her left thigh, it gradually spread to both lower legs. The rash then became larger, deeper, and crusted, changing from red to brown with raised skin lesions **(Figure 01a)**. On March 4, 2025, she was given another unknown medication for itching. On March 6, 2025, she ate duck meat and swam in a pool—her parents suspected these may have worsened her skin condition. On March 9, 2025, she visited the NPH outpatient department (OPD) due to an itchy skin rash. She was prescribed erythromycin 250 mg, chlorpheniramine 4 mg, and multivitamins. On March 13, 2025, she developed a fever while still having a skin rash, so she returned to the NPH OPD. On examination, her temperature was 38.5°C. Both legs were red, itchy, and warm, and her throat appeared moderately red. She was then admitted to the Inpatient Department, Infectious Disease and Dermatology Unit, for further investigations, clinical monitoring, and treatment.

On the first day after admission, she was clinically diagnosed with acute pharyngitis and a jellyfish sting. Several investigations, including complete blood count, C-reactive protein (CRP), glucose, calcium, liver enzymes, electrolytes, and blood and pus cultures, were performed. She was given intravenous cloxacillin, chlorpheniramine, gentian violet, and supportive care, such as IV fluids and antipyretics.

During the first three days, her condition did not improve. She still had a mild fever in the morning (37.7°C) and continued to experience itchy skin. Her blood test revealed low blood sugar (hypoglycemia), with a glucose level of 60 mg/dL. Other results—such as white blood cell count, hemoglobin, platelets, neutrophils, CRP, calcium, liver enzymes, and electrolytes—were all within normal limits.

The next day, the pus culture from her right thigh revealed methicillin-resistant *Staphylococcus aureus* (MRSA). The Gram stain revealed gram-positive cocci with 2+ polymorphs. MRSA is resistant to cloxacillin, cefazolin, clindamycin, and erythromycin but sensitive to trimethoprim-sulfamethoxazole and vancomycin. Her blood culture revealed no growth. On the basis of these results, we changed her antibiotic to cotrimoxazole 480 mg twice daily. Additional treatments included ketoconazole cream and mupirocin cream, both of which were applied to the skin lesions twice a day. The lesion on her left thigh clinically appeared to be tinea corporis, showing a ring-shaped lesion with central clearing, a raised border, redness, and itching **(Figure 01b)**.

***Figure 01: a**. Erosion, pustule, crust with pain on the right thigh **b-** Lesion erythematous plaque with itch on the left thigh*

After starting the new treatments, her condition improved daily. The fever disappeared, and no new symptoms developed. Her skin lesions became dry, started to shrink, gradually healed, and returned to a normal skin color without itching. Her parents were very happy with the progress, as they had waited over a month to see improvement. She was discharged on March 19, 2025, with continued treatment at home, including cotrimoxazole 480 mg twice daily (to complete 10 days), chlorpheniramine 2 mg three times daily, prednisolone 10 mg twice daily, and both ketoconazole and mupirocin creams applied to the skin lesions twice daily. A follow-up appointment was scheduled five days later. On March 24, 2025, she returned for follow-up. Her skin improved substantially-- dry wounds and only mild itching **(Figure 02)**. The doctor prescribed 2 mg of chlorpheniramine twice daily, 20 mg of zinc dispersible once daily, Fenistil cream three times daily, and continued ketoconazole cream for a total of four weeks.

On April 2, 2025, during her second follow-up visit, her wounds had significantly improved **(Figure 03)**, and she had no further complaints. These findings indicated that lesions had nearly healed. Therefore, the clinician advised continued observation at home and did not prescribe any additional medication.

***Figure 02:** Five days after discharge (24-03-2025)*

***Figure 03:** Last follow-up with no drug (02-04-2025)*

Discussion

Jellyfish envenomation is a common marine hazard in Southeast Asian countries, particularly in coastal regions of Thailand, Malaysia, Indonesia, Vietnam, and the Philippines [3]. Warm tropical water is home to various venomous jellyfish species, including Chironex fleckeri (box jellyfish), Carukia barnesi (Irukandji jellyfish), and Cyanea capillata (lion's mane jellyfish), each capable of producing a spectrum of clinical effects [8]. Most jellyfish stings result in immediate pain, erythema, and linear urticarial lesions [4]. However, more severe reactions can occur, including dermo-necrosis, bullous lesions, and systemic symptoms such as vomiting, hypotension, bronchospasm, or even cardiac arrest in highly venomous species [9]. In children, the clinical effects can be amplified by a smaller body surface area and immune sensitivity [2]. Despite this burden, jellyfish envenomation remains underreported in the region, and limited surveillance makes it difficult to quantify its public health impact. Enhanced recognition and documentation are essential to improve outcomes and guide preventive strategies [3].

In our case, the child presented prolonged skin necrosis and delayed wound healing following jellyfish envenomation, which is uncommon but clinically significant. The development of secondary skin infections, including MRSA and tinea corporis, complicated her recovery. Skin barrier disruption from venom-induced necrosis is likely to increase susceptibility to bacterial and fungal colonization. MRSA infections are particularly concerning in pediatric settings because of their resistance profile and potential for deeper tissue involvement [10]. The concurrent diagnosis of tinea corporis further supports the role of opportunistic infections in damaged skin. Despite initial outpatient care, her condition did not improve, and she required inpatient management with wound care, systemic antibiotics, antifungals, and close follow-up. This case underscores the importance of recognizing secondary infections in jellyfish-related skin injuries and highlights the need for standardized treatment protocols, particularly in settings such as Cambodia, where marine injuries may be underrecognized and mismanaged.

From a clinical perspective, this case emphasizes the importance of recognizing both primary effects and secondary complications following marine injuries. Health professionals, particularly in coastal or referral hospitals, should be trained to manage jellyfish stings, assess for complications such as necrosis, and identify secondary infections such as MRSA or superficial fungal disease. Educational initiatives within medical schools and continuing professional development programs can improve recognition and response. Additionally, developing clinical algorithms and integrating case-based learning can strengthen early intervention. As Cambodia continues to expand its coastal tourism and healthcare systems, prioritizing marine injury preparedness will be key to minimizing morbidity and ensuring child safety.

Jellyfish envenomation is a growing public health concern in coastal regions of Southeast Asia. However, it remains underrecognized in Cambodia. Despite increasing tourism and local travel to provinces such as Kampot and Kep, there is little public education on the risks of marine envenomation. Local communities and healthcare providers may lack awareness of appropriate first aid measures—such as avoiding rinsing with freshwater and applying vinegar to neutralize nematocysts—which can worsen outcomes if mismanaged [11]. Furthermore, no formal surveillance system currently exists in Cambodia to track jellyfish stings, limiting the ability to assess burden or issue timely warnings. In contrast, neighboring countries such as Thailand and Australia have public awareness campaigns and beach signage for jellyfish risk zones [12]. This disparity highlights the need for national guidelines, local health education initiatives, and collaboration with the environmental and tourism sectors to prevent and manage jellyfish-related injuries more effectively [13].

In short, this case highlights the potential severity of jellyfish envenomation in children, including prolonged skin necrosis and secondary infections such as MRSA and tinea corporis. This underscores the need for timely recognition, proper wound care, and appropriate antimicrobial treatment. In Cambodia, where public awareness and clinical guidance on marine envenomation are limited, this report emphasizes the importance of education for both communities and healthcare providers. Strengthening first aid knowledge, improving surveillance, and developing

national treatment protocols are essential to prevent complications and reduce the burden of jellyfish stings in coastal regions.

Abbreviations

CRP: C-reactive protein, NPH: National Pediatric Hospital, MRSA: Methicillin-resistant *Staphylococcus aureus*

Author contributions

RSR wrote the manuscript. CNM revised the manuscript. THP supervised the case, guided the writing, and reviewed the manuscript.

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Declarations

Consent was obtained directly from the patient's mother for publication.

Competing interests

The authors declare that they have no competing interests.

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