

ARTICLE

Taking care of 55 cases of snakebite committed by *Trimeresurus stejnegeri*

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Abstract

To summarize the nursing experience of 55 cases of *Trimeresurus stejnegeri* snakebites. A review of 55 cases of snake bites received by our hospital as a designated snake bite hospital, Give emergency treatment and wound care. Nursing critical points included: Partial wound closure treatment, Observation and management of wounds and injured limbs, the anti-venom medicine should be used as early as possible, mental health care, and health promotion; after a series of nursing care, the patients were all cured and released from the hospital.

Keywords: Viper bite; *Trimeresurus stejnegeri*; Nursing

1. INTRODUCTION

Trimeresurus stejnegeri is one of our common vipers, a tiny venomous snake of the tube-tooth family, subfamily Viperous. Mainly found in China and Southeast Asian countries, such as Vietnam, Myanmar, and Thailand, The main distribution in China is in the south, primarily in mountainous, forested areas. Bites from *Trimeresurus stejnegeri* mainly occur in summer and autumn, significantly more in men than women, mainly in the young [1]. The construction of ecological civilization in China increased efforts to protect natural ecosystems and the environment, and expanded forest, lake, and wetland areas have also led to an increased incidence of snake bites in the *Trimeresurus stejnegeri* year after year. The southern part of the country, in particular, has a high proportion of snake bites, even up to 56.85% 62.56% [2-3]. Due to the high level of urban greenery, Shenzhen has a high incidence of *Trimeresurus stejnegeri* snake bites. The main component of the venom of the *Trimeresurus stejnegeri* snake is blood toxin, the main clinical symptoms of a bite are swelling, lachrymose, and blood clotting disorders at the site of the bites or on the injured

limb [4]. From May 2021 to July 2022, the hospital admitted 55 cases of *Trimeresurus stejnegeri* snake bites, all of which were cured and discharged after appropriate treatment and care. Without complications at the one-month follow-up. The following is a summary report of the nursing experience.

2. CLINICAL INFORMATION

2.1 Generality information

Fifty-five patients were selected from May 2021 to July 2022 for the bite of the *Trimeresurus stejnegeri*, 38 in males, 17 in females, Aged 19–64 years. Bite location: 11 cases on the left hand, 12 cases on the right hand, 6 cases on the left foot, 8 cases on the right foot, 9 cases on the right leg, 9 cases on the left leg, and 1 case on the left forearm.

2.2 Clinical performance

The patients all have partial pinpoint tooth marks in the shape of a "...". Interval of 0.3 to 0.5 cm, Painful wound on the affected limb, peri-wound redness and swelling, swelling spreading cardinally, elevated skin temperature with bleeding disorders. Including one case of severe coagulation disorder.

2.3 Laboratory examinations

Blood Examination: One patient reported critical values for activated partial thromboplastin time (APTT), prothrombin time (PT), and fibrinogen (FIB). 40 patients with abnormal bleeding and coagulation results, The activated partial thromboplastin time (APTT) and prothrombin time (PT) was prolonged in 7 patients as shown in Chart 1. Fibrinogen (FIB) was reduced in 14 patients, white blood cells (WBC) and Alanine transaminase (ALT) were elevated in 14 patients, and D-II aggregates were slightly elevated in 8 patients.

2.4 Treatments

Partial treatment: Wound and surrounding skin disinfected with 0.5% iodophor after repeated flushing with hydrogen peroxide disinfectant, check the wound for any remaining poisonous teeth, and if so, remove them promptly, At the above time, under aseptic operation, a "+" incision is made with the poisonous tooth mark as the centre of the incision, and the venom is repeatedly pushed out from the proximal to the distal end to drain the venom. The wound was continuously flushed with saline while squeezing and closed with lidocaine plus dexamethasone in a circular pattern above the wound.

Medication: Patients with *Trimeresurus stejnegeri* snake bites are often treated clinically with anti-viper venom or anti-vibrio serum [3], Anti-viper serum 6000 U in 10 patients, 2 sticks. One patient combined anti-viper 6000 U, two sticks and anti-Penta serum 2000 U, two sticks. As the snakebite wounds were contaminated, patients were routinely given tetanus immunoglobulin.

3. NURSING CARE

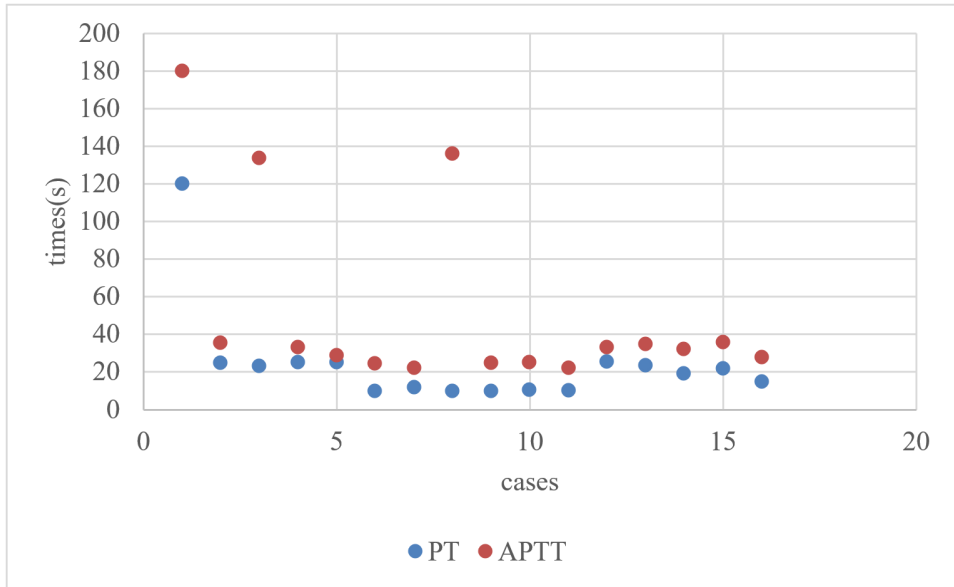


Figure 1. Results: AP and aPTT in 17 critically ill patients. Chart 1
ECG: occasional tachycardia of the sinuses and fall of the ST segment.

3.1 Early taping care

Twenty-six cases were referred urgently, and prehospital staff performed a tourniquet to secure the proximal wound. If the ligature is in place, nurses should ask how long it has been and check the blood flow from the skin and the corresponding limb proximal to the ligating. If the device has been in place for 30 minutes, immediately untie it and contact the surgeon at the earliest opportunity.

A total of 23 patients had undergone self-ligation. All participants arrived at the hospital for untying, and prompt notification as the strength and material of the self-ligature did not meet the criteria. Six patients presented to our hospital without ligature. According to Yao Yongkun *et al.*, In the study by [5], no ligatures were performed, and the physician was informed immediately.

3.2 Treatment of injuries

Fifty-five patients had severe painful swelling of the wound and the affected limb. After the doctor cleared the wound, ice was applied to relieve swelling and pain, and the patient was advised to rest in bed before applying the antivenom. The injured limb is elevated 15–20° with an elevating pillow, which reduces wound bleeding, exudate and painful swelling of the limb.

Observe the degree of swelling and pain and the peripheral circulation of the injured limb. When the swelling and pain in the injured limb subsides, instruct the patient to perform appropriate functional exercises, but avoid strenuous activities. Injuries to the leg should be avoided by avoiding weight-bearing on the injured limb [3].

In 10 patients with extensive swelling, 25% magnesium sulfate was applied as a wet

compress as prescribed by the doctor[6]. The patient was also observed for wound bleeding and swelling. No further bleeding from the wound was observed in any of the 55 patients, and the wound swelling and pain gradually improved.

3.3 Medication care

As antivenom is a heterogeneous protein, there is a risk of allergy during treatment. Therefore a skin test should be done before injection, and desensitisation should be carried out if the skin test is positive [7]. The skin test is performed according to the antivenom instructions. 0.1ml of the skin test solution is injected intradermally into the patient's forearm palm side and observed for 30 minutes. A skin test site is considered harmful if the mound and redness are less than 2cm; 51 patients were not allergic to antivenom. Three patients were allergic to antivenom and were treated with desensitisation and dexamethasone to prevent allergic reactions as directed.

Plasma prothrombin time (PT) and activated partial thromboplastin time (APTT), and fibrinogen (Fig) values improved and normalised in 54 patients after completion of antivenom infusion. One patient did not improve significantly; her fibrinogen value was only 0.8g/L with gingival bleeding and haematuria. So she was given a fibrinogen infusion as prescribed by the doctor; referring to a study by Cai Tingting et al[8], it was found that patients were cured after five days using a treatment regimen of combined anti-viper venom and anti-withdrawal serum.

3.4 Monitor closely for changes

The patient was given cardiac monitoring as prescribed by the doctor. Q1h Monitor pulse, blood pressure, respiration, consciousness, pupils, peripheral blood circulation and the degree of swelling and skin temperature of the affected limbs, and closely monitor the progress of the patient's haematuria, gingival bleeding, subcutaneous petechiae, subcutaneous bleeding spots. Inform the doctor immediately if there is a spread of subcutaneous petechiae, widespread bleeding spots, drop in blood pressure, clammy skin and change in mental state. At the same time, keep warm and give oxygen, establish two or more intravenous accesses, speed up rehydration, prepare resuscitation supplies and other treatments, catheterise if necessary, and monitor 24h intake and output and CVP.

3.5 Psychological care

The bite is often sudden, with bleeding and swelling, and the patient experiences pain, numbness, and other discomfort and fear for their life [9]. The antivenom is expensive, and patients cannot cope with it and often suffer from anxiety and fear. We need to pay more attention to the emotions of patients and families, comfort them in time, and explain relevant knowledge and treatment methods to gain their cooperation while introducing more successful cases to improve their treatment confidence. Another clinical situation is the lack of appropriate knowledge and understanding of the bite of the *Trimeresurus stejnegeri* and the lack of attention to the condition, Or reluctance or even non-cooperation with treatment due to all sorts of considerations. In this case, our medical and nursing staff gave enough patience and responsibility to communicate with the patient several times.

The patient was informed of the toxicological effects of the *Trimeresurus stejnegeri*, the development of the disease and its healing process, the reasons for the medication and the results achieved.

3.6 Complication care

Activated Partial Thromboplastin Time (APTT), Prothrombin Time (PT) and Fibrinogen (FIB) and platelets are all abnormal in the activated part of blood test in *Trimeresurus* snakebite patients, so the process of care should follow up on their blood test results. Closely observe the patient's wound status, mental status, pupils, vital signs and bleeding from the skin, mucosal membranes and gums, preventing the presence of critical platelets, such as bleeding and bleeding.

3.7 Health education

Diet: Instruct patients to eat a light, easily digestible, highly nutritious, high caloric diet and ban spicy, oily, and challenging foods to promote rapid wound healing.

Rest and exercise: After discharge, patients should exercise moderately, have adequate rest, and avoid strenuous physical activity.

Taking care, not going near grass or dense forests where there are few people, and wearing long clothes and boots to work in the forest. There is no need to panic after being bitten by a snake, trying to squeeze venom from proximal to distal extremity and reduce activity. Identify snake type and call number 120 for transportation to the designated snakebite hospital for prompt medical attention.

4. SUMMARY

After the bite of a *Trimeresurus stejnegeri*, the patient's wound should be tied up by a professional; the wound should be debrided at the hospital where the snake bite was treated. Furthermore, the anti-viper or anti-viper serum should be used in sufficient quantity early.

The nurses should have sufficient professional skills and closely observe the patient's progress; patient comfort and health education are the critical points of care for the patient with a snake bite of *Trimeresurus stejnegeri*. The management of snake bites and awareness of the need for prompt medical attention is key to reducing mortality and disability rates[10]. Based on this view, it would be helpful for the relevant medical personnel to organise relevant scientific and educational activities or to visit the respective communities to establish a good relationship with the community in order to increase the awareness of the residents about the bite of the *Trimeresurus stejnegeri* and to improve the cure rate, thereby reducing the disability and mortality rates.

To raise awareness of protection, timely medical treatment and reduce the risk of snakebite. As urban greenery continues to increase, cases of serpent bites are increasing. Since there are few snakebite cases by *Trimeresurus stejnegeri* in our department, especially critical and complex cases, we still need to improve our learning.

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