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# ANAPHYLACTIC SHOCK DUE TO CENTIPEDE BITES: CASE STUDY IN WEST SULAWESI-INDONESIA

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## ABSTRACT

***Background**: Anaphylactic shock is an emergency condition with fast and appropriate treatment to prevent death in remote areas in Indonesia, namely West Sulawesi. Case Report: We report the case of a 20-year-old woman who complained of weakness and palpitations after being bitten by a centipede 1 hour earlier. On physical examination, the patient was found to have a blood pressure drop of 50x/palpation and a pulse rate increased to 157x per minute, regular and low volume. The ECG showed sinus tachycardia. The diagnosis based on the Samson criteria is that the patient comes with a state of shock, which is one of the three criteria, namely, the patient comes with a decrease in blood pressure of more than 90 mmHg or a reduction of more than 30% from the previous blood pressure immediately after the patient is exposed to an allergen without other causes of shock. The cardiovascular system manifestations that emerged were stable tachycardia with the management of anaphylactic shock by stabilizing the airway using 100% oxygen 8 liters/minute, administering 8 mg/2 ml of intramuscular dexamethasone, and fluid resuscitation with 0.9% NaCl infusion. After 12 hours of observation, the patient can be sent home with antihistamines and oral corticosteroids.*

***KEYWORDS :** Chilopeda; Centipedes; Anaphylaxis shock; West Sulawesi*

## INTRODUCTION

Anaphylaxis is an allergic disease with symptoms that appear immediately after exposure to an allergen and can be life-threatening. Anaphylactic shock is characterized by a decrease in blood pressure and circulatory collapse, which is an emergency condition that should receive appropriate and fast treatment. (1) Anaphylactic shock is relatively rare, with an estimated prevalence of 0.05-2%, and based on epidemiological data, it is found that 2 to 20% of cases experience fatal anaphylaxis. (2)

In anaphylactic shock, the heart is the source and target for releasing chemical mediators during an allergic reaction. Mast cells in the heart are mainly found in the coronary arteries and close to small intramural blood vessels. Allergen stimulation, complement factors, general anesthetic drugs, and muscle relaxants activate mast cells in the heart. Mediators released by cardiac mast cells affect ventricular function, heart rhythm, and pressure in the coronary arteries. (2)

Heart rhythm disturbances or arrhythmias are cardiovascular manifestations that can occur in anaphylaxis. One arrhythmia that can happen is supraventricular tachycardia, namely tachycardia due to disturbances in the conduction system, which appears above the HIS bundle and causes an increase in heart rate exceeding 100x per minute. Symptoms and signs include syncope, chest pain, shortness of breath, weakness, or palpitations. Supraventricular tachycardia may occur due to the release of histamine by cardiac mast cells, which stimulates arrhythmias and blocks atrioventricular conduction. (2,3)

Centipedes can cause allergic reactions in humans. While there are no search results specifically addressing allergic reactions to centipedes, centipedes are known to have venomous bites that can cause pain, swelling, and other symptoms. It is possible that some individuals may be allergic to centipede venom and experience an allergic reaction after being bitten. Symptoms of an allergic reaction to centipede venom may include hives, swelling, difficulty breathing, and anaphylaxis. (4,5,6)

## CASE REPORT

A 20-year-old woman came in conscious with the main complaint of weakness and palpitations after being bitten by a centipede in a neighbor's garden and feeling weak for 1 hour before entering the Bambalamotu public health center, which occurred suddenly. Other complaints felt by patients were shortness of breath and their hands and feet felt cold. The patient denied other complaints, such as nausea, vomiting, and dizziness. The patient's blood pressure is 50x/palpation. At that time, the patient was injected dexametasone 8mg/2ml once a time intravenously. On physical examination, the patient was found to have a general condition with the impression of being seriously ill

with compos mentis consciousness (Glasgow Coma Scale E4V5M5) with a respiratory frequency of 33x per minute with an average axillary temperature of 36.4° Celsius. However, from measuring her pulse, we found tachycardia with a frequency of 157 times per minute.

## DISCUSSION

There are limited results specifically addressing chilopeda-induced anaphylaxis shock. However, anaphylaxis can be caused by a variety of allergens, including insect stings, and centipedes are known to have venomous bites that can cause an allergic reaction in some people.

Anaphylaxis is a severe and potentially life-threatening allergic reaction that requires immediate treatment. The treatment for anaphylaxis involves administering epinephrine (adrenaline) as soon as possible. Epinephrine helps to reverse the symptoms of anaphylaxis by constricting blood vessels, relaxing the muscles in the airways, and increasing the heart rate. In addition to epinephrine, other medications such as antihistamines and corticosteroids may be given to help reduce inflammation and prevent a recurrence of symptoms. (7-9)

Epinephrine plays a crucial role in treating anaphylaxis shock by rapidly reversing the symptoms of the severe allergic reaction. Here is how epinephrine functions in managing anaphylaxis (8,10):

1. **Vasoconstriction**: Epinephrine causes blood vessels to constrict, which helps to increase blood pressure and improve circulation, counteracting the drop in blood pressure that can occur during anaphylaxis.
2. **Bronchodilator**: Epinephrine relaxes the muscles in the airways, making it easier to breathe and reducing wheezing and shortness of breath, which are common symptoms of anaphylaxis.
3. **Increased Heart Rate**: By stimulating the heart, epinephrine helps to improve cardiac output and counteract the cardiovascular effects of anaphylaxis, such as decreased heart rate and cardiac output.
4. **Stabilization of Mast Cells**: Epinephrine can help stabilize mast cells, which are responsible for releasing histamine and other inflammatory mediators during an allergic reaction, thereby reducing further release of these substances.
5. **Overall Rapid Response**: Due to its rapid onset of action, epinephrine is considered the first-line treatment for anaphylaxis and is administered via an auto-injector into the thigh muscle as soon as symptoms of anaphylaxis are recognized.

The use of epinephrine to treat anaphylaxis shock is generally safe and effective, but like any medication, it can have side effects. Some potential side effects of using epinephrine to treat anaphylaxis shock may include (7,9) :

1. **Increased Heart Rate**: Epinephrine can cause tachycardia (rapid heart rate) due to its stimulatory effect on the heart.
2. **Palpitations**: Some individuals may experience a sensation of rapid or irregular heartbeats after receiving epinephrine.
3. **Tremors**: Epinephrine can lead to tremors or shaking in some individuals.
4. **Anxiety or Nervousness**: Due to its stimulant properties, epinephrine may cause feelings of anxiety or nervousness.
5. **Headache**: Headaches are a possible side effect of epinephrine administration.
6. **Hypertension**: Epinephrine can increase blood pressure, which may be a concern for individuals with pre-existing hypertension.
7. **Nausea and Vomiting**: Some people may experience gastrointestinal symptoms such as nausea or vomiting after receiving epinephrine.

It is important to weigh the potential side effects of epinephrine against the life-threatening nature of anaphylaxis when considering its use. In summary, epinephrine is a life-saving medication in the management of anaphylaxis shock due to its ability to counteract the systemic effects of the allergic reaction quickly and effectively. But in this case, we did not provide epinephrine because our location is in remote areas of Indonesia, where medication is not available.

The mortality rate for anaphylaxis shock can vary depending on the promptness of treatment and the underlying health of the individual. Anaphylaxis is a potentially life-threatening condition that requires immediate recognition and aggressive treatment. While specific mortality rates for anaphylaxis shock are not provided in the search results, it is crucial to note that anaphylaxis can lead to fatalities if not treated promptly and effectively. Early administration of epinephrine (adrenaline) is essential in managing anaphylaxis and improving outcomes. Other medications such as antihistamines and corticosteroids may also be used as part of the treatment. Healthcare professionals should be vigilant in recognizing the signs of anaphylaxis and providing appropriate emergency care to reduce the risk of mortality associated with this severe allergic reaction (7,11,12)

## CONCLUSION

It has been reported that a 20 year old female patient with complaints of weakness and palpitations after being bitten by a chilopeda. Diagnosis of anaphylactic shock is based on the Samson criteria. The ECG showed tachycardia. We administer it with dexamethasone injection and NaCl fluid resuscitation. After the hemodynamics

are stable, the patient is allowed to go home and is prescribed antihistamine medication and oral steroids as well as control if there are other complaints.

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