

A Case of Cardiac Arrest Soon after Receiving a Sting from a Wasp

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Abstract While felling trees along a national roadside in a remote area, a 38-year-old man suddenly cried out that he had been stung by a wasp on his left hand. His colleague came over to him, and he fell unconscious, so his colleague called an ambulance. When emergency technicians found him, he was in cardiopulmonary arrest. His initial rhythm was asystole. He received advanced cardiac life support but was unable to obtain return of spontaneous circulation, possibly due to his anaphylactic shock and complication with Kounis syndrome resulting in a low cardiac output, as he showed temporal complete bundle branch block with tachycardia PEA, repeated ventricular fibrillation, and elevated cardiac enzymes. The presence of a sting mark may also have been a sign of his severe state and complication of Kounis syndrome. The establishment of a new framework, such as permitting non-medical staff to inject adrenaline into patients with anaphylaxis, might be required.

Keywords: *anaphylaxis, Kounis syndrome, sting mark, adrenaline*

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1. Introduction

Anaphylaxis is a sudden-onset, immediate reaction that carries a risk of death. Fatalities can occur due to asphyxiation from laryngeal or oropharyngeal swelling, collapse from hypotensive shock, cardiac arrest, or acute severe bronchoconstriction that causes respiratory failure and arrest. [1] Bee or wasp stings can result in a fatal outcome due to anaphylactic reaction. [2]

We herein report a case of cardiac arrest soon after receiving one sting from a wasp.

2. Case Presentation

A 38-year-old man had suffered a wasp sting 1 month ago that had been resolved spontaneously by rest. However, while felling trees along a national roadside in a remote area, the man suddenly cried out that he had been stung by a wasp on his left hand. His colleague came over to him, and he fell unconscious, so his colleague called an ambulance at 13:57. Based on details of the first call, the fire department requested the dispatch of a physician-staffed helicopter. [3] His colleague judged that he had entered respiratory arrest and therefore started chest compression.

When emergency technicians found him at 14:13, he was in cardiopulmonary arrest. His initial rhythm was asystole. He received mechanical chest compression, bag valve mask ventilation, establishment of a venous route, and infusion with 1 mg of adrenaline every 4 minutes for 3 times. He showed pulseless electrical activity (PEA) and entered ventricular fibrillation. He underwent electrical shock four times (Figure 1). At 14:52, a physician and nurse met him, at which point he still showed PEA.

Tracheal intubation was performed. His larynx was intact. Airway resistance was low by manual ventilation. He was transported to our hospital by an air ambulance, where he arrived at 15:12. He remained in cardiac arrest. His pupils were dilated without a light reflex. He had a sting mark on his left hand (Figure 2).

He underwent infusion of 1 mg of adrenaline with advanced cardiac life support (ACLS). However, an arterial blood gas analysis revealed severe combined acidosis; pH, 6.733; PCO₂, 61 mmHg; PO₂, 312 mmHg; HCO₃⁻, 7.7 mmol/L; base excess, -39 mmol/L and lactate, 25 mmol/L. ACLS was therefore ceased. Postmortem computed tomography revealed no specific findings concerning the cause of his cardiac arrest. Blood biochemistry on arrival revealed intravascular dehydration due to anaphylaxis, elevated cardiac enzyme levels, and changes in those levels post-cardiac arrest (Table 1) [4,5,6].

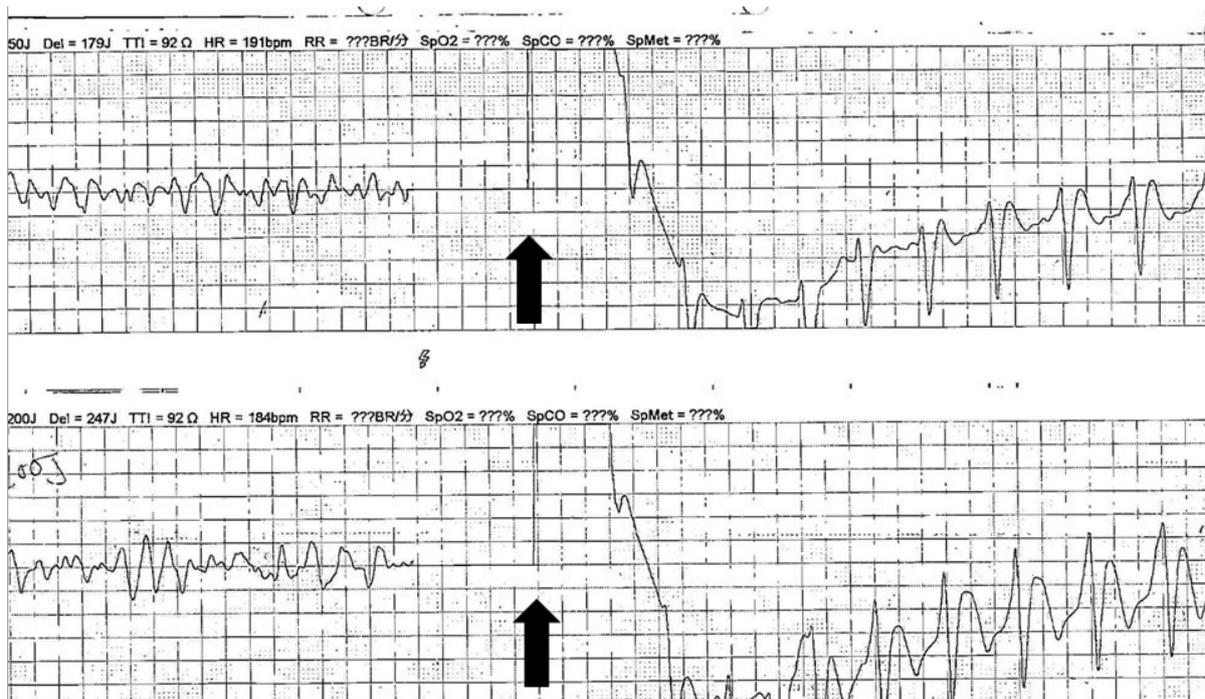


Figure 1. Segment of an electrocardiogram (ECG) at the scene. The ECG shows ventricular fibrillation. After electrical shock (arrow), the rhythm shows rapid sinus with complete branch bundle block. However, return of spontaneous circulation was not obtained

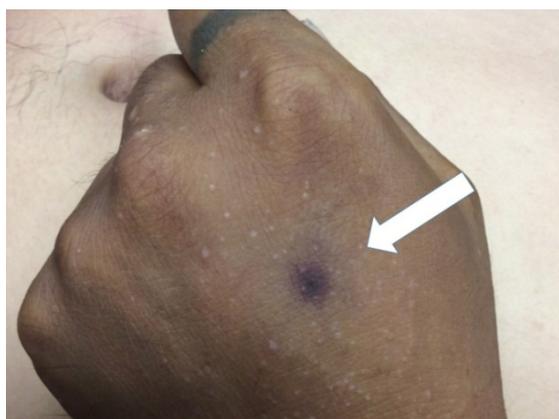


Figure 2. The patient’s left hand. He had a sting mark (arrow) on his left hand

Table 1. Blood biochemistry on arrival

white blood cell	8,100/ μ l
hemoglobin	19.1 g/dl
platelet	22.0×10^4 / μ l
total protein	6.1 g/dl
total bilirubin	0.5 mg/dl
glucose	91 mg/dl
blood urea nitrogen	13.1 mg/dl
creatinine	1.73 mg/dl
aspartate aminotransferase	72 IU/l
alanine aminotransferase	76 IU/l
sodium	153 mEq/l
potassium	4.2 mEq/l
chloride	107 mEq/l
prothrombin time	>150 (11.6) sec
activated partial thromboplastin time	>150 (27.2) sec
fibrinogen degradation products	37.8 μ g/ml
troponin T	0.016 (<0.014) ng/ml

3. Discussion

This is a case of cardiac arrest soon after receiving a sting from a wasp. The mechanism underlying the cardiac arrest may have been due to peripheral circulation incompetence and complication of Kounis syndrome, resulting in a low cardiac output, as he showed temporal complete bundle branch block with tachycardia PEA, repeated ventricular fibrillation, and elevated cardiac enzymes. [7,8] He also showed a sting mark (cutaneous hemorrhaging) after receiving the wasp sting, which may have been a sign of his severe state and complication of Kounis syndrome, in line with previous reports.[9,10] As an immediate injection is vital for patients with anaphylaxis, the establishment of a new framework, such as permitting non-medical staff to inject adrenaline into patients with anaphylaxis, such as at school, might be required. [11]

4. Conclusion

The present study described a case of cardiac arrest that developed soon after receiving a sting from a wasp in a remote area. The establishment of a new framework, such as permitting non-medical staff to inject adrenaline into patients with anaphylaxis, might be required.

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Statement of Competing Interests

We do not have conflict of interest to declare.

List of Abbreviations

PEA, pulseless electrical activity; ACLS, advanced cardiac life support.

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