

CASE REPORT

Hornet Sting Induced Systemic Allergic Reaction and Large Local Reaction with Bulle Formation and Rhabdomyolysis

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ABSTRACT

A 41-yr-old, previously healthy male was stung once by a hornet. The patient had no history of allergy or hornet stings. Physical examination revealed swelling of the right side of his body with blister formation on the extremities. Rhabdomyolysis developed. Treatment included corticosteroids, antihistamines, and cyproheptadine. The patient was discharged without sequellae after being hospitalized for 7 days.

Key Words: Hornet sting; Systemic reaction; Local reaction; Rhabdomyolysis.

CASE REPORT

A 41-yr-old male was stung once by a hornet. He was previously healthy, taking no medications, had no allergies, and had never been stung by a hornet or honeybee before. The hornet was identified in a color insect atlas as *Vespa ducalis*. Eight hours after the sting, the patient came to the emergency department because of an itchy rash. The rash consisted of generalized erythematous plaques. No retained stinger was found. There was no respiratory distress or hemodynamic abnormalities. The rash disappeared completely 1 h after the patient received diphenhydramine 30 mg intramuscularly, and he was discharged with a prescription for diphenhydramine 50 mg orally four times per day

for 2 days. Twenty-four hours after discharge, he returned with recurrence of the urticarial rash, swelling of his right arm, and numbness in the extremities. Examination found generalized swelling from the sting site to the distal part of the right arm and involving the right side of the torso and right leg. A small bulla was on the right wrist (Fig. 1). The vital signs at this time were temperature 37.6°C, pulse rate 115 bpm, respiratory rate 22/min, and BP 132/76 mmHg. There was no respiratory distress. The pulse was strong to palpation in the right radial and right dorsalis pedis arteries. His serum creatinine was 1.0 mg/dL, creatinine kinase 907 u/L, and myoglobin 509.9 mg/dL. The urine was noted to be dark. Serum sodium, potassium, and AST values were all normal. The patient was admitted with the diagnosis of rhabdomyo-

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Figure 1. Dermatologic manifestations

lysis due to wasp sting with hypersensitivity reaction. Rhabdomyolysis was treated with furosemide and sodium bicarbonate for alkalization of the urine. The blisters rapidly progressed along the right side of the body, including the right upper extremity and right ankle. Methylprednisolone of 40 mg was given intravenously every 6h. Hydroxyzine 25 mg was also given orally three times a day. The rash soon disappeared with this treatment but the blisters did not. On the fourth day after admission, a dermatologist aspirated the blisters. Cyproheptadine 4 mg three times a day was prescribed on the fifth day. The patient was discharged on the seventh hospital day on cyproheptadine without sequelae.

DISCUSSION

Hymenoptera stings may cause local or systemic reactions in sensitive individuals. Localized swelling may exceed 10 cm in diameter and may persist for several days (1). Systemic reactions include dermal effects (gen-

eralized urticaria, erythema, pruritus, and angioedema), respiratory system dysfunction (upper airway edema, bronchial constriction), and cardiovascular collapse (1).

Our case demonstrated two unusual aspects. First, our patient experienced a large local reaction with blister formation involving the entire right side of his body as a result of a single sting. Such reactions generally are associated with multiple or successive stings. Second, despite the use of diphenhydramine to prevent recurrence of symptoms, our patient developed rhabdomyolysis and more profound allergic reaction 24h later after his first visit to the emergency department. Rhabdomyolysis is usually reported after massive stings (2,3) and its development is delayed (1). Rhabdomyolysis results from accumulation of toxin with high concentrations of venom and phospholipase A2 found in serum and urine of fatal cases (2).

Although the venom of *V. ducalis* has not been characterized, the venom of a related hornet, *Vespa basalis* (black-bellied hornet), has been studied. The venom of *V. basalis* has four components that are associated with the edematous effects: lethal protein, mastoparan B, fraction 3, and fraction 15. The lethal protein has phospholipase A1 activity, fraction 3 contains a protease, and fraction 15 acts as a serotonin agonist. The lethal protein and fraction 15 are responsible for the release of the endogenous autocooids (including serotonin) which produce local edema (1,4–6). Rat hind-paw edema induced by the venom was inhibited significantly by serotonin antagonists (cyproheptadine and methysergide) but not by antihistamines (chlorpheniramine and diphenhydramine) or corticosteroids (betamethasone). However, chlorpheniramine or betamethasone given in combination with cyproheptadine showed a significant inhibition of the venom-induced edema (5). In addition, diphenhydramine and cyproheptadine can inhibit three other edema-producing compounds (bioactive tridecapeptides) isolated from hornet venom (7).

Among patients with large local or systemic reactions to a hornet sting or stings, treatment should include supportive care, corticosteroids, and antihistamines; the use of cyproheptadine should be considered.

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