

Case Reports

Indian Pediatrics 2000;37: 1003-1005

Allergic and Systemic Reactions Following Yellow Jacket Stings**C. Subramanian****Vivek Jain****Meenu Singh****Lata Kumar**

From the Department of Pediatrics, Postgraduate Institute of Medical Education and Research, Chandigarh 160012, India.

Reprint requests: Dr. Lata Kumar, Professor and Head, Department of Pediatrics, Postgraduate Institute of Medical Education and Research, Chandigarh 160 012, India.

E-mail: apc@chd.nic.in

Manuscript Received: December 21, 1999;

Initial review completed: January 18, 2000;

Revision Accepted: February 29, 2000

Insects that sting are members of the order *Hymenoptera* of the class *Insecta*. There are two major sub groups, vespids and apids. While vespids include the yellow jacket, hornet and the wasp, the apids are honeybee and bumblebee(1). In the previous published reports from India, the most common offenders were either hornets or bees(2-4). Yellow jacket sting and the resultant allergic and toxic reactions have not been reported from India. We report a young boy who developed massive intravascular hemolysis, rhabdomyolysis and acute renal shutdown in addition to allergic reaction following multiple yellow jacket stings.

Case Report

A 12-year-old boy was stung by a swarm of yellow jackets while he was playing hide and seek with his peer group. Immediately he developed severe pain at the site of sting and swelling all over the body. He complained of constricting sensation in the chest within minutes. He was treated in a local hospital with intravenous dexamethasone and chlorphenir-amine maleate. Two hours later he passed about 100 ml of reddish urine following which he became anuric. He was treated with intravenous fluids and diuretics. Edema increased and he continued to be anuric, therefore was referred for further management to us.

Examination of the child 72 hours after the episode revealed about 250 sting marks spread all over the body. He had anasarca, severe pallor, icterus and acidotic breathing. Pulse rate was 114/min, regular with good volume, respiratory rate 44/min and blood pressure 140/100 mm Hg. Liver was palpable 3 cm below the costal margin with a span of 14 cm. Spleen was not palpable.

Investigations revealed hemoglobin- 9.4 g/dl, total leukocyte count-28,300/mm³ with 56% neutrophils, 39% lymphocytes, 3% monocytes and 2% eosinophils. Platelet count was 56,000/mm³. Peripheral blood film revealed marked aniso-poikilocytosis. Serum chemistry (at admission) revealed sodium-134 mEq/L, potassium-4.4 mEq/L, urea-255 mg/dL, creatinine-5.8 mg/dl, total serum bilirubin-3.4 mg/dL [conjugated-0.7 mg/dl], aspartate and alanine amino-transferases-37 and 96 U/L, respectively. Creatine phosphokinase was 438 U/L [normal 0-20U/L]. Prothrombin and partial thromboplastin times were normal. Plasma hemoglobin was 103 mg/dl. Arterial blood gases showed metabolic acidosis. Chest X-ray and EKG were normal. Child was anuric for 7 days. Subsequent urinalysis showed urine hemoglobin of 28 mg/dl. Urine for myoglobin was also positive.

Child underwent peritoneal dialysis at admission, but as he continued to be anuric, he underwent four hemodialyses over the next two weeks. The urine output, blood pressure and renal parameters normalized in 3 weeks and he was discharged after 30 days of hospital stay.

Discussion

Hymenoptera stings are a well-known cause of allergic and toxic manifestations. In most parts of United States, yellow jackets (*Cespula germanica*) are the principal offenders(1). Yellow jacket stings leads to both allergic and toxic reactions. Allergic reactions are commoner and can be of immediate or delayed type(5).

In the case described, there was evidence for an allergic reaction of immediate type as manifested by bronchospasm which responded to steroids and antihistaminics. The more severe manifestations in this case were intravascular hemolysis and acute renal shutdown. The venom of yellow jackets contain many toxic substances like phospholipases, hyaluronidase and a toxic protein known as antigen 5(1). These toxins damage red blood cell and myocyte membrane causing hemolysis and rhabdomyolysis. Ensuing hemo and myoglobinuria cause acute tubular necrosis and renal failure. A possible direct toxic effect of the venom on renal tubular cells has also been hypothesized(5). In the case described, hemolysis was evident by a fall in hemoglobin, unconjugated hyperbilirubinemia, and increased plasma and urine hemoglobin levels. Hemolysis only occurs after multiple stings because of the high dose of venom injected(5). He also had evidence of rhabdomyolysis in the form of muscle pains, increased creatine kinase levels and urine myoglobin.

The cause for transient thrombocytopenia in this situation is unclear. Thrombocytopenia has been noted by previous authors and postulated to be due to a suppressive effect of the venom on the marrow(5).

In conclusion, hymenoptera stings pose a common environment hazard particularly in a tropical country like ours, and it requires early recognition of the pathophysiology and prompt institution of supportive measures. Renal failure and its associated complications can be life threatening and timely renal supportive therapy is essential to ensure complete recovery.

Contributors: CS was responsible for conceiving and designing the article. VJ drafted and revised the manuscript. MS critically reviewed the article. LK revised the manuscript.

Funding: None.

Competing interests: None stated.

Key Messages

- Hymenoptera stings are common and are fatal if there is a delay in the institution of appropriate therapeutic measures.
- Both allergic and toxic reactions are known to occur.
- Early recognition of the exact pathophysiology helps in the institution of appropriate therapy ensuring prompt recovery.

References

1. Reisman RE. Insect stings. N Eng J Med 1994; 331: 523-527.
2. Chugh KS, Sharma BK, Singhal PC. Acute renal failure following hornet stings. J Trop Med Hyg 1976; 79: 42-44.
3. Ghosh K, Singh S, Pereira BJG, Singhi SC. Acute systemic toxic reactions caused by hornet stings. Indian Pediatr 1988; 25: 796- 798.
4. Deshmukh LS, Borse BT. Acute renal failure following multiple stings by honeybees. Indian Pediatr 1996; 33: 781-783.
5. Bousquet J, Huchard G, Micherl FB. Toxic reactions induced by hymenoptera venom. Ann Allergy 1984; 52: 371-374.



[Home](#)
[Feedback](#)

[Past Issue](#)
[Links](#)

[About IP](#)
[Author Info.](#)

[About IAP](#)
[Subscription](#)