

Case Reports

Acute Renal Failure Following Multiple Stings by Honeybees

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The order *Hymenoptera* consists of the stinging insects including the honeybees (*Apis Mellifera*), yellow jackets, hornets and paper wasps (1). A "sting" is an injection of venom by the female of each species through a modified ovipositor (2). In most instances stings by these insects are followed by allergic reactions. Anaphylaxis is the most dreaded complication of insect's sting hypersensitivity and such reactions have been recorded since ancient time (3). Bee venom contains many toxic fractions, the most important being mellitin which alters capillary permeability, causes local pain, red cells hemolysis and lowers blood pressure(4). Enzymes, in general constitute the major allergens. Honeybee venom contains three major protein enzymes, phospholipase A, hyaluronidase and acid phosphatase(2). Several types of uncommon reactions have been described including serum sickness, renal diseases, neurological manifestations and delayed hyper-sensitivity phenomena(2). Few reports deal with the development of acute renal failure after multiple bee stings (1,5). We report two cases of acute renal failure following multiple bee stings.

Case Reports

Case 1: A 5 months old male child presented with history of multiple bee stings on face, scalp and extremities 36 hours prior to hospitalization. The child also had history of anuria of 24 hours duration. There was no history of cough, breathlessness, vomiting and altered sensorium. The infant was passing honeybees in the stool. On examination there was extensive chemosis of both eyes with swollen lips. The conjunctiva was congested and the cornea was hazy and ulcerated. His blood pressure was 96/60 mm of Hg; temperature, pulse and respiration were within normal limits. Significant systemic finding was hepatomegaly (4 cm). Laboratory investigations revealed a hemoglobin of 8 g/dl with white blood cell count 9,400/mm³ with normal differential count. Peripheral smear showed evidence of hemolysis in the form of anisopoikilocytosis, polychromatic RBCs, fragmented RBCs and few late normoblasts (2-3/100 RBCs). Platelet count was 1 lac/mm³. X-ray chest was within normal limits. Urine examination revealed no abnormality. His initial blood urea and serum creatinine were 154 mg/dl

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and 3 mg/dl, respectively. Serum potassium was 6.5 mEq/l and SGPT 70 IU/l. The child was managed on lines of acute renal failure including peritoneal dialysis, of which, 40 cycles were completed. He expired on the eighth day of hospitalization. Autopsy revealed congestion of both the kidneys. No histopathological examination was done.

Case 2: An 8 years old male child presented with multiple bee stings 8 days prior to hospitalization. Puffiness of face, edema feet, vomiting hematuria and oliguria occurred 8 days after the stings. There was no history of breathlessness, headache and altered sensorium. On examination, the child was conscious. He had puffiness of face with pitting edema over the feet. His initial blood pressure was 120/90 mm of Hg. Systemic examination revealed no significant abnormality. Initial laboratory investigation revealed a hemoglobin of 8 g/dl with no evidence of hemolysis on peripheral smear. Platelet count was 1.5 lac/mm³. His initial blood urea, serum creatinine, serum potassium and SGPT were 280 mg/dl, 7mg/dl and 5 mEq/l and 52 IU/l respectively. Urine examination showed plenty of RBCs with RBC casts and albumin +++. Twenty four hours urine protein excretion was 0.5 g/m². He was managed on the line of acute renal failure and subjected to peritoneal dialysis once. The child had uneventful recovery and was discharged on the 19th day of hospitalization. At the time of discharge, his blood urea, serum creatinine and serum potassium were 17 mg/dl, 1 mg/dl and 4.2 mEq/l, respectively. Urine showed microscopic hematuria and albumin was in traces. Ultrasonography revealed normal kidney on both sides.

Discussion

Reactions to bee stings may be of four types, namely local, systemic, toxic and unusual. The usual reaction to an insect sting by a non allergic individual is local. These reactions usually resolve within few hours(3). The immune response to the antigenic component of venom is usually responsible for more severe systemic reactions. Anaphylaxis is the most dreaded consequence of bee sting hypersensitivity(3). The toxic reactions are a result of pharmacological actions of large doses of venom. Acute renal failure following bee stings is a rare complication(1, 5). Following bee stings, biphasic renal failure has been documented with early renal failure due to hemolysis and a second episode of azotemia about 10 days later occurring in conjunction with depressed serum complement C₃ level and nephritic changes on renal biopsy. The latter phenomenon probably represents serum sickness reaction caused by large volume of foreign proteins(4). In the present communication, probably, in Case 1 the renal failure was due to hemolysis whereas in Case 2 it was due to serum sickness like reaction. Rhabdomyolysis induced nephrotoxicity has been postulated as a possible mechanism for renal failure following stings(5). However, rhabdomyolysis has been observed following multiple stings by hornet and yellow jacket but not with bee stings(1,5).

In conclusion, even though allergic complications are common after bee stings, one should be aware of potential life

threatening rare complication of renal failure.

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