Africanized Bee Stings and Pathogenesis of Acute Renal Failure

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Dear Sir,

Africanized bees (Apis melliferd) are spreading all over the continent since they were inadvertantly released in Brazil about three decades ago [1]. Herein we describe a case that survived a massive attack by Africanized bees. The patient developed acute renal failure, but eventually recovered. A 12-year-old boy was the victim of a bee attack in his town (Huitzuco, State of Guerrero), about 200 km south of Mexico City. He lost consciousness during the attack, lasting about 10 min. More than 500 bee stings were found over his face, trunk and extremities. He developed fever, vomiting and hypertension (120/100 mm Hg) soon after the attack. Generalized edema, oliguria and gross hematuria developed within a few hours. He was transferred to our hospital the next day. Laboratory reports: hemoglobin 10.9 g/dl (109 g/l), white cell count 32,300/mm3 (32.3 10^3), platelet count 29 × 10^9/mm3 (29 × 10^9), fibrinogen 395 mg/dl (3.95 g/l), sodium 125 mEq/l (mmol/l), potassium 7.6 mEq/l (mmol/l), BUN 572 mg/dl (204.2 mmol/l), creatinine 7.2 mg/dl (636.5 µmol/l), immunoglobulins: G 1,330 mg/dl (13.3 g/l), A 131 mg/dl (1.31 g/l), M 114 mg/dl (1.14 g/l), C3 131 mg/dl (1.31 g/l), C4 26.0 mg/dl (0.26 g/l), alkaline phosphatase 131 U/l (2.18 ukat/l) and gamma-glutamyltransferase 124 U/l (2.06 ukat/l). Urinalysis: sp. gr 1.012, pH 5.5; sediment: protein +, hemoglobin +, 20-10 RBCs/HPF; numerous hemoglobin casts. Fractional excretion of the filtered sodium 3.4%.

Peritoneal dialysis was performed and he received intravenous hydrocortisone, 10 mg/kg daily during 3 consecutive days. He developed a recurrent hemolytic process, with decreasing hemoglobin, increased indirect bilirubins (1.4 mg/dl, 23 µmol/l) and reduction of haptoglobin to undetectable levels. The hemolytic crisis, together with the thrombo-cytopenia and leukocytosis lasted 2 weeks. The anuric episode lasted 20 days, at the end of which the dialysis was discontinued. A percutaneous renal biopsy showed histopathological changes compatible with acute tubular necrosis. The creatinine decreased to 0.5 mg/dl (44.2 µmol/l) and the urinalysis was normal on discharge, 5 weeks after the admission.
Africanized bees are very aggressive insects and their attacks are usually massive. This is important, since the main risk depends upon the amount of venom injected into the victim. Their venom is not more potent than that of the native bees [2]. The venom contains several active substances, such as mellitin, which is its main component (50% content), with hemolytic and vaso-active properties. Histamine, hyaluronidase, apamin, phospholipase A2 and acid phosphatase are other allergens present in the bee venom [3]. The pathogenetic mechanisms involved in the development of acute renal failure after bee stings, include intravascular hemolysis with hemoglobinuria and rhabdomyolysis [3, 4]. Our patient had severe hemolysis, but rhabdomyolysis could not be ruled out. Unfortunately, muscular enzymes were not determined. However, alkaline phosphatase and gamma-glutamyltransferase were slightly elevated. Immunologic-mediated mechanisms were not demonstrable and there was no evidence of DIC. The thrombocytopenia was most likely related to the toxicity of the venom [3, 4]; a possible relationship with the renal complication was unclear. There are only few reports regarding the development of acute renal failure after massive bee stings [3, 4]. Information of this kind may be relevant since more attacks can be predicted. Also, preventive measures should be made public [5].

References


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