

IMMEDIATE HYPERSENSITIVITY TO CRICKET

HARB A. HARFI, M.D.

CRICKETS BELONG TO ORTHOPTERA, which includes locusts and grasshoppers. These insects are non-stinging and rarely cause any allergic reactions.

Diagnosis of insect allergy is based on history, skin testing and challenge shock organs with the body extract, venom, rash and/or passive transfer (P-K).^{1,2} Although crickets have a worldwide distribution, we could find no published reports of a documented case of immediate hypersensitivity to crickets. We herewith describe clinical and immunological data on a patient who presented with manifestations of an immediate allergic reaction to crickets.

Table I. Summary of the Various Results of Testing with the Whole Body Extract of Crickets.

Test	Extract-dil W/V	Wheal in mm	Flare in mm	Others
Scratch	1:20	15	60	Negative control
Intradermal	1:10,000,000	10	20	Negative control
P-K	1:1,000	20	40	The passive transfer was done with the patient serum in healthy non-allergic volunteers. The cricket extract was injected at the site of the passive 48 hours.
Conjunctival	1:100			In two minutes the conjunctiva became red, edematous and pruritic. The patient had sneezing, itching in the nose and profuse watery rhinorrhea. Negative control in the left conjunctiva.
Bronchial challenge	1:1,000			Tightness in the chest after five minutes with cough. No abnormal physical findings. Wheezing after five hours.
Precipitin test	1:10			Negative
Histamine release	1:10			Positive

Case Report

R.K., a 16-year-old Caucasian male, on two occasions while fishing within 30 minutes after exposure to cricket, developed lacrimation, angioedema of the eyelids, swelling of upper lip, severe sneezing, profuse rhinorrhea and headache; cough, dyspnea and wheeze followed in about five hours. On both occasions the patient was treated in an emergency room with epinephrine and an antihistamine with complete clearing of symptoms.

The patient is a known asthmatic, since the first year of his life. However, his asthma was mild, infrequent and he was receiving neither hyposensitization nor symptomatic medications when he was exposed to the cricket. The family history revealed one maternal uncle and a paternal grandmother with histories of asthma.

Because of the severity of the patient's symptoms confirmation of the diagnosis was desired. Cricket whole body extract 1:10 W/V was obtained from Greer Laboratories. Immunologic data are shown in Table I.

Conjunctival challenge with one drop of 1:100W/V in the right conjunctiva caused severe pruritus, redness and edema, rhinorrhea and sneezing in less than one minute after challenge. Challenge with the vehicle was negative in the left conjunctiva. A scratch test with 1:20 was 3+ within 15 minutes.

An intradermal test with 1:10,000,000 W/V was 2+; A P-K titer was 4+ with 1:1000. Bronchial challenge with cricket extract precipitated an asthmatic attack five hours after challenge and lasted for about 12 hours. Precipitin test with the patient's serum against cricket was negative. *In vitro* histamine release studies were performed by incubating the patient's leukocytes with serial ten-fold dilutions of cricket antigen. Fifty percent histamine release was obtained with 1:10 dilution (Figure 1). The patient's activity was demonstrated and was limited to fractions eluted in the ascending limb of Peak II.

31764

IMMEDIATE HYPERSENSITIVITY TO CRICKET — HARFI

Comment

This is probably the first well documented case of allergy to crickets. Bernton, et al and others^{4,5,6} reported on the relationship and importance of cockroaches in causing hypersensitivity in both adults and children. Schnitzker⁷ reported a case of hypersensitivity to grasshoppers in a teenage boy after playing on a football field.

Sensitization to arthropods might be due to salivary secretions, emanations and debris, discarded body casts, egg casings or direct contact with the insect.^{8,9} This patient apparently became allergic to crickets by direct contact with conjunctiva and inhalation of the cricket body dust. His serum reaginic antibody titer to cricket was high, as shown by the P-K titer and positive intradermal skin test to a dilution of 1:10,000,000 W/V of cricket body extract.

The data we presented suggest that crickets are capable of producing immediate hypersensitivity. Hypersensitivity to cricket may be more prevalent than realized, especially in rural areas of southern states. Further studies may be needed to document the prevalence of hypersensitivity to cricket among allergy patients.

References

1. Hellreich E: Evaluation of skin tests with insect extracts in various allergic diseases. *Ann Allerg* 20: 805, 1962.
2. Wilson H: Preliminary report of a case of sensitization to the may fly. *JAMA* 61: 1648, 1913.
3. Osgood H: Allergy to caddis fly. *J Allerg* 28: 113, 1957.
4. Brenton HS, McMahon TF and Brown H: Cockroach asthma. *Br J Dis Chest* 66: 61, 1972.
5. Mendoza J and Snyder RD: Cockroach sensitivity in children with bronchial asthma. *Ann Allerg* 28: 159, 1970.
6. Schulaner FA: Sensitivity to the cockroach in three groups of allergic children. *Pedia* 45: 475, 1970.
7. Schnitzker WF: Grasshopper allergy. *Pedia* 53: 280, 1974.
8. Frazier CA: *Insect Allergy*. St. Louis: Warren H. Green, Publisher, 1969.
9. Wiseman RD, Woodin WG, Miller HC and Myers MA: Insect allergy as a possible cause of inhalant sensitivity. *J Allerg* 30: 3, 1959.

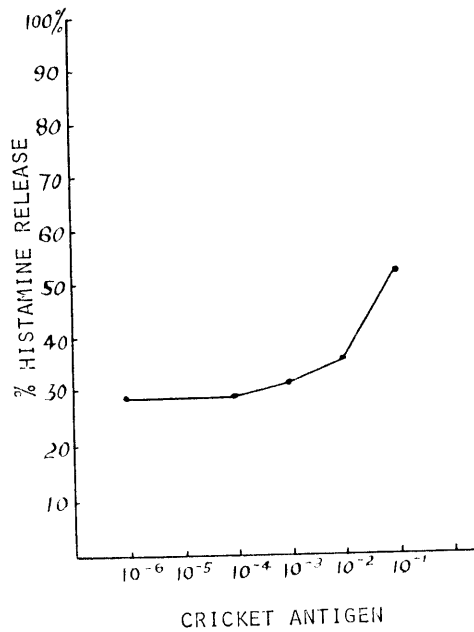


Figure 1.

Requests for reprints should be addressed to:
 Dr. Harb A. Harfi
 1050 Fifth Avenue
 Ft. Worth, Texas 76104

"Never waste anything, but above all, never waste time. Today comes but once and never returns. Time is one of heaven's richest gifts and once lost is irrecoverable."

Author unknown