

Hypersensitivity to mustard seed

Malet A, Valero A, Lluch M, Bescos M, Amat P, Serra E. Hypersensitivity to mustard seed. *Allergy* 1993; 48: 62–63. © Munksgaard 1993.

A. Malet, A. Valero, M. Lluch, M. Bescos, P. Amat, E. Serra
Al-Lergo Center, Barcelona, Spain

Two patients were studied. Both underwent a thorough clinical evaluation, including a comprehensive physical examination. Both were also prick tested for inhalants, pollens, and food (including fruit). A nasal provocation test, serum immunoglobulins, total IgE serum, specific IgE serum, and a histamine release test were also carried out. The results of all these tests were positive to mustard seed.

Key words: angioedema; dermo-respiratory; food allergy; hypersensitivity; mustard seed; nasal provocation test; urticaria.

Al-Lergo Center
A. Malet i Casajuna
Josep Tarradellas, 151 pral-1
08029 Barcelona
Spain

Accepted for publication 3 March 1992

Mustard is a plant belonging to the Cruciferae family and to the *Brassica nigra* species. It is an annual, herbaceous plant of compound nature, reproduced by wind dispersal. Throughout the ages it has been used in traditional home remedies to stimulate the appetite, to serve as a laxative, and to combat hoarseness, bronchitis, pharyngitis, rheumatism, skin flushes, gastric ulcers, and pyrosis.

Nowadays, it is mainly used in sauces for flavoring food. As well as mustard, these types of sauces often contain wheat flour, pepper, cinnamon, cloves, tarragon, truffles, grape verjuice, preservatives (E-202, E-211), stabilizers (E-410, E-412), and colorants (E-100).

The antigenic potential of mustard has been reported after ingestion of small quantities. However, a large number of cases showing positive skin tests without any clinical symptoms, both in patients who had previously ingested mustard and those who had not, have been reported.

Material and methods

Case 1

A man, aged 31, was suffering from angioedema of the face, generalized urticaria, dyspnea without wheezing, sneezing, nasal itching, hydrorrhea, and nasal obstruction, after having ingested either mustard sauce or seeds. All these symptoms disappeared 2 or 3 h after treatment in the hospital emergency unit. The same patient, on smelling mustard sauce,

presented the following symptoms: sneezing, hydrorrhea, nasal itching and nasal obstruction, all of which lasted 60 min. Accidental local contact on the lips with mustard sauce caused lip edema, though the patient claimed that as a child he had tolerated mustard.

Case history. The patient showed hypersensitivity to gramineae pollen (*Lolium perenne*) which had been manifested in the form of seasonal rhinitis for 20 years. This was confirmed by a nasal provocation test by rhinomanometry (RhinoTest MP 500) for *Lolium perenne* pollen in different concentrations HEP/ml from LETI Laboratory (Barcelona, Spain). We consider this provocation test to be positive because nasal resistance increased more than 40% and nasal symptoms appeared.

None of his family presented allergy-related symptoms.

Case 2

A man, aged 32, presented symptoms of generalized urticaria, angioedema of the neck, lips, eyelids, and ears, with itching of the scalp and genital area, an asthma attack including loss of voice, and a general feeling of sickness. The symptoms presented 2 to 3 min after his having accidentally ingested mustard and gradually intensified until requiring hospital treatment. By the age of 10, this patient had shown symptoms of vomiting and angioedema of the lips

after contact with mustard, though no clinical symptoms presented on ingestion of mustard.

Case history. None of his family presented allergy-related symptoms, and there were no personal allergy symptoms in his case history. A skin test was carried out with the usual inhalant antigens, including pollens and fungi, and food antigens including nuts, legumes, vegetables, fruits, fish, and shellfish. A skin test for mustard seed with 1/1000 (w/v) concentration was carried out, as well as the corresponding positive histamine and negative saline serum controls. The control group was made up of 87 patients.

In vitro test

Serum immunoglobulins IgA, IgG, and IgM were determined by the nephelometric technique (ICS Beckman, Fullerton, CA, USA) with antiserum from Irma Kallestad Laboratory (Austin, TX, USA) using the Buffone technique (Buffone 1980).

Total IgE serum values were carried out by radioimmunoassay in iu/ml from Irma Kallestad Laboratory (Austin, TX, USA).

Specific IgE serum was determined by the RAST technique from Phadebas-Pharmacia Laboratory (Uppsala, Sweden).

Histamine liberation test was performed by the automated fluorometric technique described by Siraganian in 1980, modified by Moneo and later by Engel in 1985 (2).

Results

Case 1

The skin prick test results were positive to gramineae pollen, nuts (almond, hazelnut, peanut, and pine nut), and mustard seed. We considered the skin test to be positive when the allergen area wheal, as measured by planimetry, was larger than the control area wheal (histamine). Serum immunoglobulins (IgA, IgG, IgM) were normal. (IgA: 160 mg/ml, IgG: 733 mg/ml, IgM: 95 mg/ml). Total IgE serum was 923 iu/ml, which we considered higher than normal.

The histamine release test was positive to gramineae pollen, nuts (almond, hazelnut, peanut, and pine nut), and mustard seed. All of these allergens recorded values >40% of the total histamine release.

Specific IgE by the RAST technique was positive

to mustard seed (17 PRU/ml class 3), and to *Lolium perenne* gramineae (0.7 PRU/ml class 1).

Nasal provocation test was positive to *Lolium perenne* gramineae.

Case 2

The skin prick test was positive to mustard seed, and the inhalants and food allergens were negative. Serum immunoglobulins (IgA, IgG, IgM) were normal. (IgA: 120 mg/ml, IgG: 960 mg/ml, IgM: 90 mg/ml). Total IgE serum was 220 iu/ml, which we considered higher than normal.

Specific IgE by the RAST technique was positive (7.20 PRU/ml, class 3) to mustard seed.

Discussion

The scarcity of material published on this subject has motivated us to describe two cases of dermatological and respiratory symptoms caused by ingestion of, and occasional contact with, mustard. Both cases show that mustard has a high antigenic potential requiring minimal quantities to trigger off intensive dermo-respiratory symptoms. In spite of this, hypersensitivity to mustard is not frequently diagnosed (1, 3, 4, 5).

Sensitivity to pollen has frequently been described in patients showing specific IgE to mustard sauce, mainly to gramineae pollen and compound plants. There are numerous publications describing sensitivity to foods which are not botanically related (2, 4). In our study, no cross-reactions between mustard seed and foodstuffs from other members of the Cruciferae family were recorded.

References

1. CARRILLO T, CUEVAS M, MUÑOZ T, UREÑA V, MONEO I. Acute pancreatitis as a complication of anaphylaxis to mustard. *Rev Esp Alergol Immunol Clin* 1987; 2: 388-90.
2. ENGEL P, MALET A, SANOSA J, FAJAS L, GARCIA P. Histamine liberation test as a diagnostic parameter and its possible modification in post-specific immunotherapy. *Allergol Immunopathol* 1985; 13-93.
3. LEANIZBARRUTIA I, MUÑOZ D, BERNAOLA G, FERNANDEZ E, AUDICANA M, FERNANDEZ DE CORRES L. Anaphylactic reaction after ingesting mustard sauce. *Rev Esp Alergol Immunol Clin* 1988; 3: 79-83.
4. LEANIZBARRUTIA I, MUÑOZ D, BERNAOLA G, FERNANDEZ E, AUDICANA M, FERNANDEZ DE CORRES L. Skin sensitivity to mustard. Frequency and clinical implications. *Rev Esp Alergol Immunol Clin* 1988; 3: 113-19.
5. MEDING B. Immediate hypersensitivity to mustard and angler. *Contact Dermatitis* 1985; 13: 121-2.

This document is a scanned copy of a printed document. No warranty is given about the accuracy of the copy. Users should refer to the original published version of the material.