

Aromatic plants – A cause of severe attacks of angio-edema and urticaria

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Celery and parsley were confirmed as etiological agents in 14 patients with severe attacks of angio-edema and urticaria. All of the patients proved to be atopic. Without exception they all had positive prick test reactions to mugwort. The patients were examined using the scratch – chamber test method and all of them showed positive reactions to celery and 12 patients to parsley. No peroral provocation tests were performed because of the severity of the reactions in the past. Passive transfer by the Prausnitz-Küstner technique was positive in two patients.

Key words: Angio-edema – celery – chamber test, scratch – urticaria.

Received for publication October 3, 1979

Several fruits and vegetables can produce immediate allergic reactions in atopic persons. The most common complaints reported are itching and tingling of the lips, mouth and tongue upon ingestion of the relevant food (Hannuksela & Lahti 1977), and local wheal reaction and eczema of the hands after the handling of fresh plant material (Cronin 1973, Maibach 1976). Persons sensitized to birch pollen are especially prone to these reactions (Hannuksela & Lahti 1977). Fruits and vegetables can also cause urticaria and angio-edema. An anaphylactoid reaction to celery has been described by Rowe & Rowe (1972) and recently by Forsbeck & Ros (1979), who confirmed the etiological agent by peroral provocation test.

We report a group of 14 patients with severe attacks of angio-edema and urticaria, including two patients with anaphylactic shock, in whom celery (*Apium*) and parsley were confirmed as etiological agents. No peroral provocation tests were carried out.

Skin tests by the scratch-chamber method using raw food material proved to be of great help in explaining these cases.

Material and Methods

The series comprised 14 patients with one to several previous attacks of angio-edema and urticaria of unknown etiology, who were submitted to the Hospital for Allergic Diseases, Helsinki University Central Hospital. A careful inquiry concerning any underlying triggering factors such as medicine, food and symptoms of an infection, as well as previous symptoms of atopy, was made. Table 1 shows the main clinical data concerning the patients. Most of them had had multiple attacks of urticaria and angio-edema, and two had had an anaphylactic shock within the past few years. Prick tests with the routine series of 14 environmental allergens were performed on all patients. A RAST test to mugwort (a species of *Artemisia*) was performed on 10 patients. Fur-

Table 1. Clinical data of 14 patients with severe attacks of angio-edema and urticaria caused by aromatic plants

Patient	Age/ Sex	Symptoms	No. of attacks	Onset/ years earlier
1	19/F	AE & U	3	2½
2	18/F	AE	1	2
3	38/F	U & SH	3 (1)*	4
4	28/M	AE & U	3	2
5	38/F	AE & U	2	3
6	36/F	AE & U	4	4½
7	26/F	AE & U	3	4
8	36/F	AE & U & SH	3 (1)*	½
9	23/F	AE & U	1	½
10	55/F	AE	1	½
11	28/F	U	3	1
12	22/F	AE & U	5	2
13	24/F	U	2	½
14	25/F	U	2	½

AE = angio-edema

U = urticaria

SH = anaphylactic shock

* = no. of shocks

ther skin tests were performed by the scratch-chamber test method described by Hannuksela & Lahti (1977), using raw, fresh or deep-frozen edible roots, vegetables and fruits. The test series included celery (*Apium*), parsnip, carrot, swede, potato, parsley, apple and tomato. In addition, the test was performed with cooked celery (*Apium*) on six patients. Histamine 1:1000 was used as a positive control and physiological saline as a negative one. A reaction was regarded as positive if the area provoked was at least half the size of that produced by histamine.

Passive transfer test by the Prausnitz-Küstner technique, using the sera of patients 10 and 12, was performed on two volunteers, but by applying the scratch-chamber method with raw celery instead of an injection with antigen extract. Control tests were performed on untreated skin.

Results

All patients proved to have had atopic disorders, except patient 14, who denied ever having had such symptoms (Table 2). Allergic rhinitis was the most common complaint.

All patients, no. 14 included, reacted positively to a commercial extract of mugwort on prick test. The size of the reactions was at least equal to that of the area provoked by histamine. Nine patients reacted positively to the deciduous trees common in Finland and 11 to grass. All 12 patients examined had a strongly positive (3+ or 2+) RAST to mugwort (*Artemisia*).

Table 3 shows the results of the scratch-chamber tests with vegetables. All patients had a positive reaction to celery (*Apium*), nine also to parsnip and 12 to parsley. As a rule, the celery reaction was strongly positive. The local reaction disappeared rapidly, and no systemic symptoms occurred in any patient. A test with cooked celery also gave a positive result on the six patients examined.

In 12 cases it could be proved that the patient had consumed raw or cooked celery (*Apium*) and/or parsley from half an hour to 1 h before the attack. A lip provocation test with a piece of raw celery was per-

Table 2. Atopic disorders in 14 patients with severe attacks of angio-edema and urticaria caused by aromatic plants

Atopic disorders	No. of cases
Rh/Conj	6
Rh/Conj & E	4
Rh/Conj & U	2
Rh/Conj & E & U	1
No atopic disorders	1

Rh = rhinitis

Conj = conjunctivitis

E = atopic eczema

U = urticaria also triggered by other causes

Table 3. Immediate reactions to vegetables and apple in scratch-chamber tests

Patient	Celery	Parsnip	Carrot	Swede	Potato	Parsley	Apple	Tomato
1	+++	+	-	-	-	+++	-	-
2	+++	++	-	-	-	+	-	-
3	+++	+	-	-	-	++	-	-
4	+++	-	-	-	-	++	-	-
5	++	+	+++	++	++	++	++	++
6	+++	+	-	-	-	+++	-	-
7	++	-	-	-	-	-	-	-
8	+	+	+	-	+	+	-	-
9	++	-	-	-	+	++	-	-
10	++	-	++	++	++	+	-	-
11	+++	+++	++	+	++	+++	+	-
12	++	-	-	-	-	-	-	-
13	+++	+	+	+++	+++	+	-	-
14	+++	+++	-	++	-	+	-	-

formed with a positive result on patient 12, who was not quite sure of having eaten celery before the attacks.

In the passive transfer tests both of the volunteers had positive reactions to raw celery. The control tests on untreated skin were negative.

Discussion

The patient material comprised selected cases of acute and recurrent urticaria, angio-edema and anaphylactic shock elicited by aromatic plants. All of the patients proved to be atopic and showed positive skin test reactions to several environmental allergens. Without exception they all had positive skin reactions to mugwort. Those on whom RAST was performed also showed positive reactions in this test, as did the patient with anaphylactoid reactions to celery described by Forsbeck & Ros (1979).

All of the patients reacted positively to raw celery (*Apium*) and most of them also to parsley and parsnip in the scratch-chamber test, which can be considered in agreement with Hannuksela & Lahti (1977) to be a proper method for detecting vegetable al-

lergy in the absence of any commercial test extract.

Since no peroral provocation tests were carried out because of the risk of severe reactions, the scratch-chamber test findings were correlated with the clinical history only. All but one patient had a history of consuming some aromatic vegetable before an attack, and in this one patient with a negative history a positive lip test confirmed the specific allergy. Thus there was an agreement between the clinical symptoms and the skin test result in every case.

Reactions to celery (*Apium*) parsley and parsnip may be cross-reactions, as are the reactions to carrot, since all belong to the Umbelliferae family. The fact that all of the patients had a positive reaction to mugwort remains unexplained, because there is no known botanical relationship between celery and mugwort. Of the 55 patients hypersensitive to mugwort, 29 (53 %) showed a positive reaction to celery in the scratch-chamber test (Kousa & Kauppinen, unpublished data). Hannuksela & Lahti (1977) found positive celery (*Apium*) reactions in 18 % of persons allergic to birch pollen. Cross-reactivity between various vegetables

and fruits has also been observed by Rowe & Rowe (1972).

Already Tuft & Blumstein (1942) showed that hypersensitivity to fresh fruits could be transferred with patients sera. In the present study the reactivity to celery (*Apium*) was transferred to nonsensitive persons using the sera of sensitized patients. This suggests that the mechanism underlying these reactions is reagin mediated.

The nature of the allergens in vegetables and fruits is still unexplained, probably because of the extreme lability of the allergens. Andersen & Løvenstein (1978) could not find any "immunological identity" between birch pollen and extracts of fresh peel from apples and potatoes. Further investigations are needed to identify the allergenic substances in vegetables and fruits.

This study indicated that in severe allergic reactions, aromatic plants should be considered as possible causative agents and that a modified scratch test with raw material is a proper method for detecting these agents.

Acknowledgment

This study was supported by a grant from the Foundation for Allergy Research, Finland.

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