

Key words: cane reed; clarinetist's; cheilitis; Gramineae; immediate-type; allergy.

Clarinetist's cheilitis is a dermatitis described in woodwind music players. Symptoms have been attributed to an irritative mechanism or a delayed allergy, but the responsible allergens have not been identified yet. The reed attached to the instrument's mouth-piece is made of small pieces of cane, *Arundo donax* (*A.d.*), which belongs to the family Gramineae, subfamily Poaceae.

Case Report

A 14-year-old girl, clarinet player, with pollinic rhinoconjunctivitis and oral allergy syndrome to peach, pear, apple, orange, almond, and nut, suffered from episodes of oropharyngeal itching and edematous swelling of the lower lip minutes after playing the instrument. These symptoms were more intense when a new cane reed was used.

Methods

Prick test with a standard series of common aeroallergens and prick-by-prick test with the clarinet reed (*A.d.*) were performed. Blood samples were obtained to determine specific serum IgE antibodies [enzyme-linked immunosorbent assay (ELISA)]. The protein of the cane reed *A.d.* was extracted in phosphate-buffered saline. IgE immunoblotting with the extract of the clarinet reed and immunoblot inhibition with *Phleum pratense* pollen were performed.

Results

Subsequently, a challenge test was carried out with the cane reed damp in the lower lip for 5 min. The patient developed angioedema of the lip and tongue itching. Prick test was positive to *Lolium*, *Cynodon*, *Phragmites*, and *Olea* pollens. Prick-by-prick test with clarinet reed (*A.d.*) caused a positive reaction (4×7 mm). Serum-specific IgE determinations (ELISA) to major allergens of Poaceae pollen Phl p 1 and Phl p 5 (groups 1 and 5) measured 6.73 and 12.78 kU/l, respectively, to profilin, 15.1 kU/l, and was negative to peroxidase, quitinase, and Pru p 3. In order to further characterize the allergenic component of *A.d.* cane, IgE immunoblotting with the extract was carried out, detecting

Clarinetist's cheilitis caused by immediate-type allergy to cane reed

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2 allergenic proteins of 35–65 mw, similar to the allergens of Poaceae pollen (groups 1 and 4). IgE immunoblot inhibition showed a complete inhibition of *A.d.* cane IgE bands by *P. pratense* pollen. (Fig. 1)

Evolution

We recommended the patient to avoid handling of cane reeds of *A.d.* and to play the clarinet with plastic polystyrene reeds, but it affected the sound of the instrument and the patient continued using a cane reed of *A.d.* The symptoms decreased when the as the cane reed was used.

Discussion

Clarinetists can have cutaneous problems associated with playing the instrument. Dermatitis of the median lower lip, leucokeratosis of the labial mucosa adjacent to the lower incisors, and ulceration of the labial mucosa have been observed. A dermatitis called 'clarinetist's cheilitis' can occur in the area where the wooden reed contacts the skin. It occurs on the median portion of the

vermillion border of the lower lip and extends onto the chin. This reaction is attributed to pressure, friction, and moisture (saliva or perspiration) under the lower lip (1).

Several case reports on cane reed contact dermatitis in musicians have been reported (2–6). Friedman and Connolly (2) described clarinetist's cheilitis as a median lower lip cheilitis in a clarinetist using a cane reed (*A.d.*). Patch test was negative; the authors thought local irritant factors to be the cause.

Positive patch test reactions to a cane reed in a flute player was described in a study, but it did not mention the botanical name of the cane reed used (3). Inoue et al. (4) described 1 case of delayed-type contact allergy caused by an *A.d.* cane reed in a saxophonist, who was patch test positive and scratch test negative. McFadden et al. (5) reported a similar case in a clarinetist who showed the same patch test results. Notably, an immediate-type allergic, contact urticaria-like reaction to reed made of *A.d.* has been observed in an atopic saxophonist. This patient had a positive prick test but with no patch test result (6).

The allergenic proteins of cane reed causing symptoms have not been characterized previously. We report a patient who developed an angioedema of the lip after playing the clarinet. Allergic IgE-mediated pathogenesis is supported by prick test and *in vitro* assay.

A.d. belongs to the family Gramineae, subfamily Poaceae. The stems of the plants are used, for example as lathes, for fishing rods, or in crafting of wind instruments such as saxophone or clarinet.

The band at 35 kDa showed by immunoblotting with *A.d.* cane extract could easily correspond to the major grass group I allergens (27–35 kDa).

The major grass group I allergens, to which more than 95% of patients allergic to grass pollen possess IgE antibodies, belong to family beta-expansins and are highly immunologically cross-reactive glycoproteins exclusively expressed in pollen of all grasses, but there are their vegetative homologues alpha-expansin, which may mediate plant cell wall growth (7).

Results from immunoblot inhibition studies also showed the IgE cross-reactivity between the *P. pratense* allergens and the *A.d.* cane extract.

As far as we are concerned, in our patient, atopic personal history and sensitization to *Phleum* pollen allergens play an important role in the development of IgE sensitization to *A.d.*

Conclusions

- The clarinetist's cheilitis may be caused by an immediate-type allergy IgE of *A.d.* cane reed.
- The results of our study show that *A.d.* cane contains allergens that have cross-reactivity with grass pollen allergens. This allergy may be a consequence of primary sensitization to *Phleum* pollen allergens.

References

1. Gambichler T, Boms S, Freitag M. Contact dermatitis and other skin conditions in instrumental musicians. *BMC Dermatol* 2004; 4: 3–15.
2. Friedman SJ, Connolly SM. Clarinetist's cheilitis. *Cutis* 1986; 38: 183.
3. Lerner C. Cheilitis caused by Italian reed. *Urol Cutan Rev* 1941; 45: 195–196.
4. Inoue A, Shoji A, Yashiro K. Saxophonist's cane reed cheilitis. *Contact Dermatitis* 1998; 39: 37.

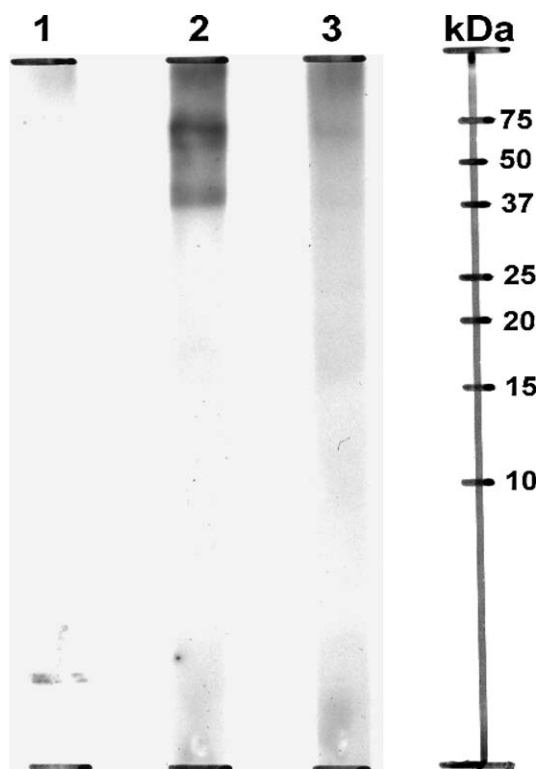


Fig. 1. IgE immunoblotting of *Arundo donax* (*A.d.*) cane extract with sera of healthy control (1) and patient (2). IgE immunoblot inhibition with *A.d.* cane extract incubated with *Phleum pratense* pollen (3).

5. McFadden JP, Ingram MJ, Rycroft RJG. Contact allergy to cane reed in a clarinettist. *Contact Dermatitis* 1992; 37: 117.
6. Van der wegen-Keijser MH, Bruynzeel DP. Allergy to cane reed in a saxophonist. *Contact Dermatitis* 1991; 25: 268–269.
7. Grobe K, Becker WM, Schlaak M, Petersen A. Grass group I allergens (β -expansins) are novel, papain-related proteinases. *Eur J Biochem* 1999; 263: 33–40.

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