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Pityrosporum Orbiculare—a Pathogenic Factor in Atopic Dermatitis of the Face, Scalp and Neck?

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Pityrosporum orbiculare (pit.o.), the yeast form of Malassezia furfur, though usually considered to be a non-pathogenic saprophyte, in some individuals trigger various types of dermatitis. It is earlier shown that it is of importance in atopic dermatitis in the head-neck area in adults, and that elimination of the yeast by help of treatment with ketokonazole improve the dermatitis. In this large retrospective study of 741 patients prick-tested with an aqueous extract of pit.o., the occurrence of positive pricktest to pityrosporum was related to the patients's atopic manifestations. It was found that a positive pricktest to pityrosporum was related to active atopic dermatitis, and especially in the head-neck region. In contrast to the common allergens in the standard pricktest-series, however, pit.o. was not found to give positive pricktests in patients with atopic conjunctivitis, rhinitis and/or asthma without active dermatitis. This finding strengthens the concept that hypersensitivity to the cutaneous microflora is of pathogenic importance in some cases of atopic dermatitis in adults.

Pityrosporum orbiculare (pit.o.), the yeast form of Malassezia furfur, is normally found as a part of the microflora in 90% of the adults (1). It is a liphophilic yeast, and is found in the highest concentrations in "seborrhoeic areas" such as the scalp, face, neck, and upper chest. Pit.o. is considered nonpathogenic, but various factors may dispose to pathogenicity, and it has been shown that the mere application of cosmetic oils or body lotion to the skin may induce tinea versicolor (2) or pityrosporum folliculitis. Pit.o. has also been found to give positive pricktest-reactions in patients with atopic manifestations or an atopic history (Kroon & Hjorth, unpublished).

In the period February 1981—December 1982 a pricktest with 5 mg/ml extract of pit.o. was included for all patients tested for type I hypersensitivities at the Dermatologic Department, Gentofte Hospital. Here we present a retrospective study with regard to the results of these pricktests correlated to the patient's manifestations of atopic disease, as described in the routine records. This material consists of 741 consecutive patients. In this study, we divided the patient-population in 5 categories:

I. Atopics with active dermatitis in the face, scalp, neck and/or upper chest area ("head-neck dermatitis"). Many of these patients also had dermatitis in other regions, but the dermatitis in the head-neck area was of major dermatologic concern at the time of the test.

II. Atopics with dermatitis, but little or no involvement of the head-neck area at the time of the test.

III. Patients with atopic conjunctivitis, rhinitis, and/or asthma, but no dermatitis at the time of the test.

IV. Patients where there were possible, but not certain atopy, or where the records were inconclusive with respect to a diagnosis of atopia.

V. Patients with urticaria, referred for pricktest.

LABORATORY METHODS

A positive pricktest was defined as a reaction more than 2 mm in diameter, and at least the size of the histamine control. The pit.o. extract was made from pit.o. grown on oilrich agar according to Faergermann's method. The following allergens are used in the standard pricktest: *Betula verrucosum* (birch), *Phleum pratense*, *Artemisia vulgaris*, horse, dog, cat, derm. pteronys. (house dust mite), house dust, *Alternaria* species, *Cladosporium herbarum*. All allergens were delivered by "Allergologisk Laboratorium" in Copenhagen.

RESULTS

Category	No.	% pos. pit.o.	% pos. in standard
I. Head/neck	89	28	67
II. Other site	157	6	52
III. AD?	304	2	30
IV. Conj., rhin., asth. alone	42	0	69
V. Urticaria	149	1	37

"% pos. in standard" means: Percentage of patients with at least one positive pricktest out of the 10 pricktests with common allergens used as standard in screening for type I hypersensitivity in Denmark.

COMMENTS

It is interesting that positive pricktest for pityrosporum orbiculare is seen only in atopic patients with active dermatitis, and especially when there is a heavy involvement of the head-neck area, which also is the area with the heaviest growth of the lipophilic pit.o. In contrast to the allergens in the standard pricktest-series, positive pricktest for pit.o. was not seen when the atopic patients had conjunctivitis, rhinitis, and/or asthma alone, without active dermatitis. We do not know if development of allergy to this yeast is the prime triggering factor of atopic dermatitis in some adults or if the allergy is first developed after the eczema and the treatment with fatty oils and creams, and the following proliferation of pit.o., is already there.

Anyhow, the fungus seem to be an important pathogenic factor in atopic dermatitis in some cases, especially in young postpuberty females with dermatitis in the head-neck area solely, as shown in a study by Clemmensen & Hjorth (4). In these cases, with positive pricktest with pit.o., there was a significant effect on the dermatitis when the patients were treated with ketokonazole 200 mg daily, as compared with placebo. A similar beneficial effect was observed when bifonazole cream was used instead of ketokonazole tablets (not published). The improvement was probably due to the elimination of the allergenic pit.o.

In other cases, with more widespread dermatitis, the ketokonazole treatment did not show significant effect. In these cases Pityrosporum might still contribute to their dermatitis, although there must also be other causative factors potent enough to reduce the clinical effect of the elimination of pityrosporum by help of ketokonazole.

However, the observed close relationship between occurrence of hypersensitivity to pit.o. and dermatitis in the head-neck area demonstrate a probably important role of cutaneous allergens in at least some cases of atopic dermatitis. We hope that this observation will stimulate further investigation of the relationship between sensitivity to different common allergens in the microenvironment and active atopic dermatitis in adults.

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