

Candida albicans and atopic dermatitis

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Summary

The role of sensitization and exposure to *Candida albicans* in atopic dermatitis (AD) was studied with skin-prick tests, yeast cultures and immunoblotting in 156 young adults with AD attending the Department of Dermatology, University of Turku, during 1983–89. Eighteen patients with allergic rhinitis without eczema and 39 non-atopics were included as controls. Parameters associated with severe AD were simultaneous anti-*C. albicans* IgE and saprophytic *C. albicans* growth. A statistically significant correlation between *C. albicans* sensitization (specific IgE antibodies) and AD symptoms was observed only in patients with saprophytic *C. albicans* exposure. No correlation between *C. albicans*-specific IgE and AD severity was shown in patients without gastrointestinal growth. Furthermore, severe eczema was seldom seen in patients without saprophytic *C. albicans* growth. The most important IgE-binding components of *C. albicans* in immunoblotting were 27 and 46 kD proteins and mannan, a polysaccharide. IgG and IgA antibodies to *C. albicans*, mainly towards *C. albicans* mannan, were found in practically all 70 sera studied. These results suggest a continuous exposure and induction of IgE antibodies by *C. albicans* in AD patients. Severe phases of AD in colonized patients are associated with IgE synthesis against *C. albicans*. These findings suggest a role for *C. albicans* in the exacerbations of AD but the clarification of this subject needs double-blind placebo-controlled treatment trials.

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Introduction

Candida albicans has a controversial role in allergy. The evaluation of the immune response towards it and the assessment of allergic response are difficult because it is a common commensal. *Candida albicans* has been proposed to play a role in asthma, allergic rhinitis (AR) [1] and urticaria [2]. Studies on *C. albicans* in atopic dermatitis (AD) have focused on the microbial flora of atopic skin and lesions [3–5]. The yeast is rarely found in the skin cultures but has been shown to colonize the gastrointestinal tract of patients with atopic immune response [6]. Elevated *C. albicans* radio allergosorbent test (RAST) values have been detected among AD patients [6,7]. Another commensal yeast, *Pityrosporum ovale*, has been connected to AD. Elevated circulating *P. ovale*-specific IgE antibodies and positive skin prick test reactions to it have been detected, especially in AD involving the head

and neck [8–11]. Therapeutic measures against *P. ovale* by means of systemic anti-fungal treatment have been beneficial for such AD patients [8]. However, the effect of the treatment could also be due to elimination of not only *P. ovale* but also *C. albicans*, also sensitive to ketokonazole.

The study was performed to evaluate the role of *C. albicans* in AD in young adults. Patients with AD of varying severity, atopics without dermatitis and non-atopic controls were included. Skin prick tests, nasopharyngeal yeast cultures and immunoblotting (IgE, IgA and IgG) were used for analyses.

Materials and methods

Patients

Summaries of patient data and investigations are presented in Tables 1 and 2. Originally 117 patients with AD were entered into the study. No information about their previous skin-prick test sensitivity to *C. albicans* was available. Eighteen patients with AR and 39 non-atopics

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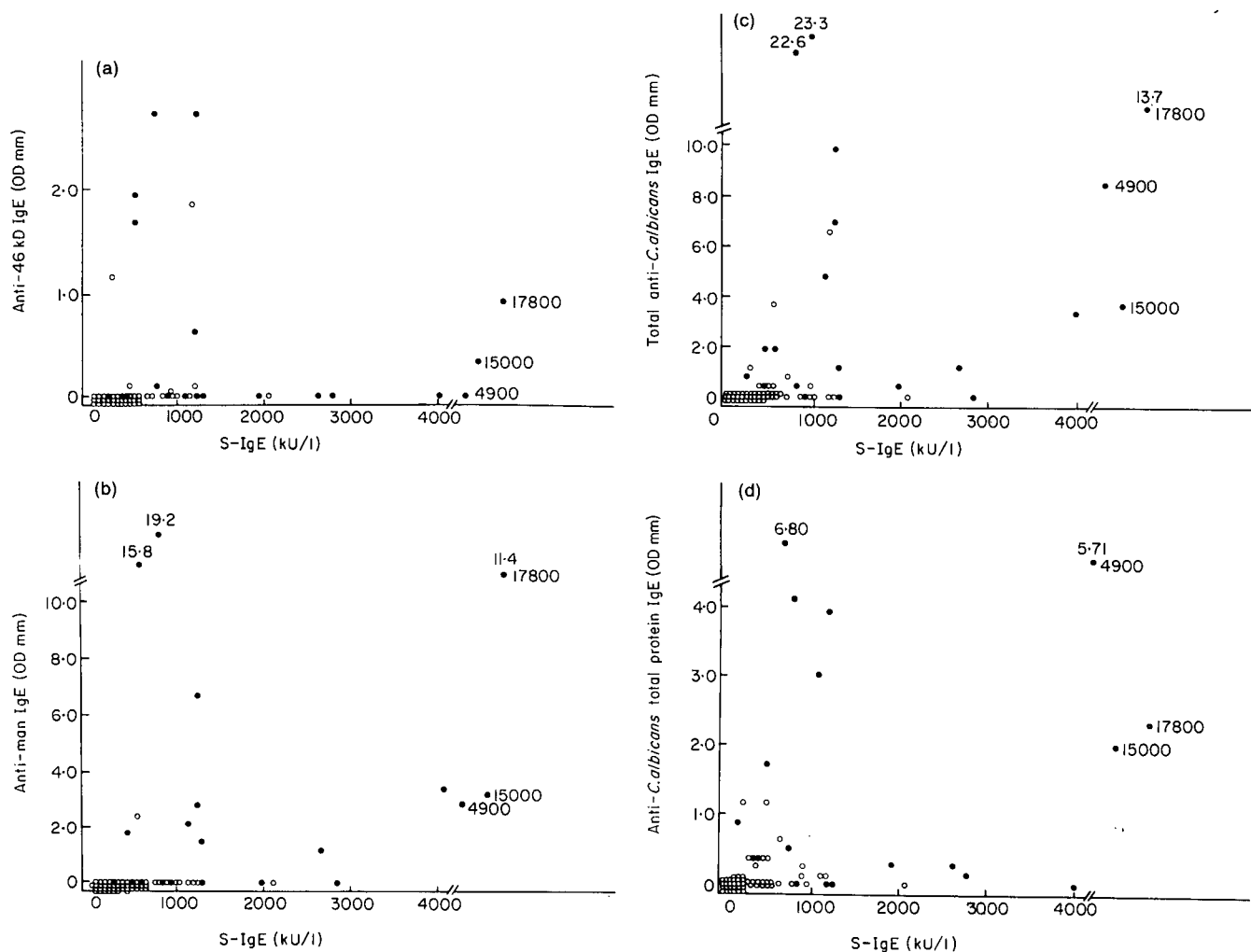


Fig. 5. The association of serum total IgE and IgE response to (a) 46 kD protein, (b) mannan, (c) summarized total anti-*Candida albicans* and (d) summarized protein response. ●, Patients with grade III/II dermatitis; ○, patients with grade I/0 dermatitis (1983).

high anti-*C. albicans* IgE and *C. albicans* colonization and severity of AD may provide a model for the understanding of the pathogenesis and immunoregulation of the disease. The observed correlation between sensitization and symptoms in colonized atopics also suggests that this persistent induction of anti-*C. albicans* antibodies in patients with severe AD may have clinical significance which should be thoroughly examined.

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