

IgE autoantibodies monitored in a patient with atopic dermatitis under cyclosporin A treatment reflect tissue damage

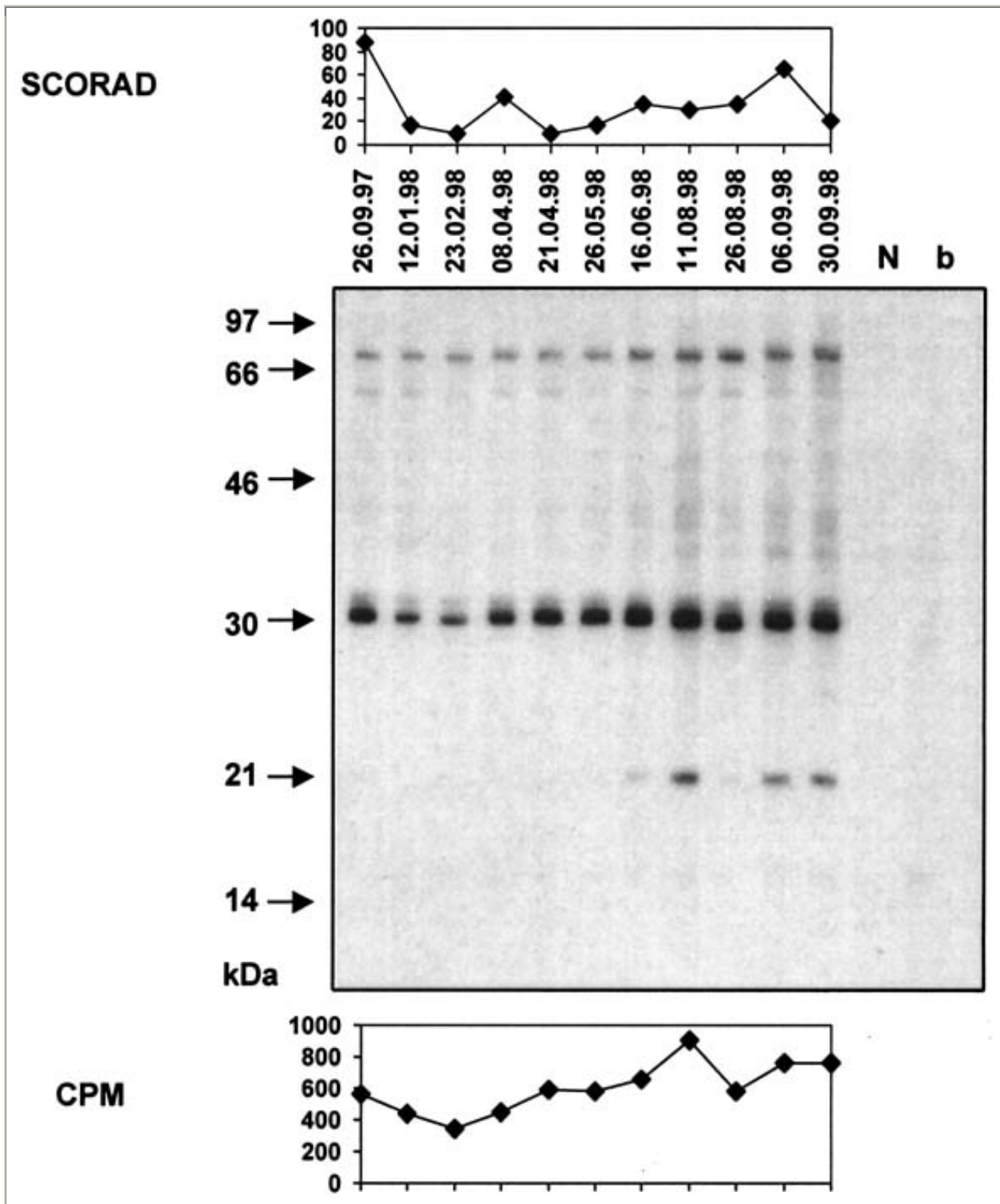
To the Editor:

Atopic dermatitis (AD) is a genetically determined, multifactorial, chronically relapsing, inflammatory, severely pruritic, eczematous skin disease affecting more than 10% of children.¹ Sera from AD patients often not only exhibit IgE against various exogenous allergens but also contain IgE autoantibodies.²⁻⁵ Whether IgE autoreactivity plays a pathogenetic role in AD and might be used as a diagnostic parameter reflecting tissue damage is still an open question.

We monitored IgE autoreactivity in a 26-year-old man with AD who was receiving systemic cyclosporin A (CyA). Sensitization to birch pollen, grass pollen, weed pollen, house dust mite, animal dander, and mold was confirmed by skin prick testing, CAP RAST measurements, and atopy patch tests. The diagnosis of mild AD had been made when the patient was 2 years old. Since then, his disease had worsened continuously. From November 1994 to September 1996, he had been treated with topical and systemic steroids, emollients, and sedative antihistamines. Attempts to control the disease with UVA and/or UVB therapy had been ineffective. An experimental treatment⁶ performed with IFN- γ for 12 weeks in 1996 had failed to yield satisfactory results.

In 1997 the patient experienced a therapy-resistant exacerbation of AD (SCORAD, 88; Fig 1) with generalized, severe erythema, infiltration, lichenification, excoriation, and superinfection.

Fig. 1. SCORAD documentation of skin manifestations (*upper part*) and IgE reactivity to nitrocellulose-blotted human epithelial cell extracts (*middle part*) during CyA treatment. A quantification of IgE binding to the 31-kDa band by γ -counting is also displayed (*bottom part*). CPM, Counts per minute. Lanes *N* and *b* represent controls performed with serum from a nonatopic individual and buffer, respectively.



Therefore, systemic treatment with CyA (4 mg/kg body weight/day) was added to the ongoing standard therapy and continued in decreasing dosages until August 1998. A dramatic improvement of symptoms was observed after 1 month of treatment (SCORAD in October 1997, 41). Systemic antibiotics and topical steroids were stopped at the beginning of December 1997. Paralleling the improvement of skin symptoms, a marked reduction of IgE autoreactivity was noted in January and February 1998 (Fig 1). During the birch pollen season of 1998 (March-April), the patient exhibited a worsening of skin symptoms that was accompanied by an increase of IgE autoreactivity and of birch pollen allergen (Bet v 1)-specific IgE despite CyA treatment (2.5 mg/kg/d; Fig 1). A short improvement of skin

manifestations was achieved by means of topical steroid and systemic antibiotic treatment in the beginning of April. In May 1998, as a result of grass pollen contact, skin symptoms worsened and were paralleled by increased levels of IgE to the major timothy grass pollen allergen, Phl p 5. Again IgE autoreactivity (intensity, additional bands) increased (Fig 1). The failure of disease control despite a relative high CyA maintenance dosage (2 mg/kg/d) during allergen exposure made it necessary to withdraw CyA by the end of August 1998. Our results demonstrate association between severity of skin manifestations and IgE autoreactivity in our patient. After initiation of CyA treatment, AD improved and a reduction of IgE autoreactivity was observed. On the other hand, skin symptoms worsened during exogenous allergen contact and after reduction of CyA treatment, which was associated with increased IgE autoreactivity.

There are 2 mutually nonexclusive explanations for these observations. First, it is possible that CyA treatment suppressed the activity of T cells supporting the production of IgE autoantibodies.⁷ The second explanation would be that IgE autoantibody production, such as the production of IgE antibodies to environmental allergens, is strongly stimulated by antigen contact.⁸ In this scenario, the decrease of IgE autoantibody production in response to CyA treatment would be caused by reduced tissue damage and reduced exposure of autoreactive B cells to autoallergens. Although not proven, this assumption is supported by the observation that clinical improvement of AD caused by CyA treatment preceded the reduction of IgE autoreactivity. It cannot be decided definitively whether any of these events were operative in our patient. Nevertheless, there remains a clear association between the severity of the disease and the degree of IgE autoreactivity. We therefore assume that the latter reflects the extent of cellular injury, perhaps mediated by T cells, and might represent a useful parameter for monitoring chronic tissue injury in AD.

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