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LRA by ELISA/ACT[®]

CLINICAL PEARLS UPDATE#5

Eczema

September 29, 2003

Dear Colleague:

Eczema or atopic dermatitis affects 2-15 million Americans according to the American Academy of Dermatology. Successful, comprehensive management using LRA by ELISA/ACT[®] tests and treatment plans are illustrated in the attached abstract reports.

Functional, *ex vivo* lymphocyte response assays (LRA by ELISA/ACT) offer the most advanced tests available for determination of the individual's responses to the widest available range of substances tested by any lab in the world.

We are grateful for the opportunities to be of service to you and your patients.

Sincerely,

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Lab Director

Tamaki K, Nakamura K. The role of lymphocytes in healthy and eczematous skin. *Curr Opin Allergy Clin Immunol* 2001;1(5):455-460.

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Eczema is a heterogeneous disease, and the pathophysiological mechanism should be clarified in each disease. Allergic contact dermatitis and atopic dermatitis are representative diseases showing eczematous reaction. **A major player in both allergic contact dermatitis and atopic dermatitis is skin-specific T lymphocytes.** The significance of these T lymphocytes, especially the expression of cutaneous lymphocyte-associated antigen on T helper cells types 1 and 2, and its counter-receptor on vascular endothelial cells needs further investigation. **The evidence showing that infiltrating T cells participate in the formation of eczematous reaction** through Fas-induced apoptosis is important in our understanding of eczematous reactions and also for treatment.

Akdis M, Trautmann A, Klunker S, Blaser K, Akdis CA. Cytokine network and dysregulated apoptosis in atopic dermatitis. *Acta Odontol Scand* 2001;59(3):178-182.

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Activation and skin-selective homing of peripheral blood memory/effector T cells and effector functions in the skin represent sequential immunological events in the pathogenesis of atopic dermatitis (AD). T cells infiltrating the skin utilize the cutaneous lymphocyte-associated antigen (CLA) and other receptors to recognize and cross the vascular endothelium. In the peripheral blood of AD patients, both CD4+ and CD8 subsets of CLA+CD45RO+ T cells are in an activated state with high CD25, HLA-DR, and CD40-ligand expression. They express upregulated Fas and Fas-ligand and undergo activation-induced apoptosis. **After homing to skin, these T cells form dermal infiltrates, which play a key role in the pathogenesis of the disease.** Skin-infiltrating T cells in AD are protected from activation-induced cell death, although they express both Fas and Fas-ligand. They are protected from apoptosis by cytokines such as IL-2, IL-4, and IL-15 and extracellular matrix components such as fibronectin and transferrin. CLA+, skin-homing T cells may play a role in peripheral blood eosinophilia and hyper IgE production by high IL-5 and IL-13 expression, respectively. These T cells secrete IFN-gamma in the skin, which upregulates Fas on keratinocytes and renders them susceptible to apoptosis. Keratinocyte apoptosis is induced by Fas-ligand, either soluble or expressed on the surface of T cells, leading to eczema formation. Here we discuss the mechanisms of skin-selective T cell homing and activation and emphasize the concept of dysregulated apoptosis of T cells, eosinophils, and keratinocytes as essential pathogenetic episodes in AD and other eczematous disorders.

Note: We believe the comprehensive repair treatment guide, available as an option with LRA by ELISA/ACT tests, if requested, provides the best current therapy for sustained remissions in eczema and chronic atopic dermatitis.

