

■ ELISA/ACT Biotechnologies LLC ■

LRA by ELISA/ACT®

CLINICAL PEARLS UPDATE#28

Alopecia areata and Vitiligo

June 4, 2004

Dear Colleague,

Alopecia areata and vitiligo are depigmentation syndromes due to melanocyte loss in the skin. Autoimmunity often plays an important role. Restoring immune repair tolerance can be helpful. **LRA by ELISA/ACT® tests and plans are designed to determine the help that restoring immune repair resilience and tolerance can provide in vitiligo.**

We encourage you to share this valuable clinical update newsletter with your colleagues and staff so they can learn more about how our comprehensive approach can be applied to their practice with beneficial results. Please also let us know if any of your colleagues or staff would like to be added to our email distribution list.

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

Sincerely,

Russ Jaffe, MD, Ph.D., CCN, NACB
Lab Director

Zoller M, Freyschmidt-Paul P, Vitacolonna M, McElwee KJ, Hummel S, Hoffmann R. Chronic delayed-type hypersensitivity reaction as a means to treat alopecia areata. *Clin Exp Immunol* 2004;135(3):398-408.

Department of Tumor Progression and Tumor Defense, German Cancer Research Center, Heidelberg, Germany. m.zoeller@dkfz.de

The acute phase of alopecia areata (AA) is characterized by an increase in CD44v3+ and CD44v10+ skin-infiltrating lymphocytes (SkIL). Induction of a contact eczema, one of the therapeutic options in AA, can be mitigated strongly by a blockade of CD44v10. The observation that induction of a delayed type hypersensitivity (DTH) reaction abrogates an autoimmune reaction, where both responses apparently use similar effector mechanisms, is surprising and prompted us to search for the underlying mechanisms. AA-affected C3H/HeJ mice were treated with the contact sensitizer SADBE (squaric acid dibutylester) and leucocyte subpopulations and their activation state was evaluated in SkIL and draining lymph nodes. AA-affected mice exhibited an increased number of SkIL with a predominance of T lymphocytes. After treatment with the contact sensitizer SADBE recovery of SkIL was reduced and monocytes predominated. However, a significantly increased number of leucocytes was recovered from draining lymph nodes. Draining lymph node cells from untreated and treated AA mice exhibited all signs of recent activation with high-level expression of co-stimulatory and accessory molecules and an increased percentage of CD44v3+ and CD44v10+ leucocytes. In contrast, SkIL of SADBE-treated AA mice contained relatively few activated T cells and reduced numbers of CD44v3+ and CD44v10+ cells. Thus, the activation state and the distribution of leucocyte subsets in SADBE-treated AA mice are consistent with a blockade of leucocyte extravasation. Accordingly, the therapeutic effect of long-term SADBE treatment may rely on impaired leucocyte traffic.

Kemp EH, Waterman EA, Weetman AP. Autoimmune aspects of vitiligo. *Autoimmunity* 2001;34(1):65-77.

Vitiligo is a depigmenting disorder characterised by the loss of melanocytes from the cutaneous epidermis. Although the exact cause of the condition remains to be established, an autoimmune aetiology has been suggested and several observations support this theory. These will be the topic of discussion in this review. In brief, the disease is frequently associated with other disorders, which have an autoimmune origin such as autoimmune thyroiditis and insulin-dependent diabetes mellitus. Furthermore, circulating antibodies and T lymphocytes, which react against melanocyte antigens are present in the sera of a significant proportion of vitiligo patients compared with healthy individuals. Immunosuppressive therapies, which are reasonably effective in treating the condition, well-studied animal models of the disease as well as the association of vitiligo with MHC antigens, all add credence to the hypothesis that immune mechanisms play a role in the development of vitiligo.

Zerubavel-Weiss R, Markovits D, Cohen IR. Autoimmune thyroiditis (EAT) in genetically resistant mice mediated by a T cell line. *J Autoimmun* 1992;5(5):617-627.

Experimental autoimmune thyroiditis (EAT) can be induced in genetically susceptible strains of mice by immunization to mouse thyroglobulin (Tg). EAT also can be produced by administration of anti-mouse Tg T cell lines and clones. Previously we were able to raise virulent anti-Tg T cell lines from mice genetically susceptible to EAT. These virulent lines, upon attenuation, were able to vaccinate the susceptible mice against EAT. We now report the isolation of a virulent T cell line from C57BL/6 mice genetically resistant to EAT. The T cell line and its clones recognize a Tg epitope cross-reactive between mouse and bovine Tg. Unexpectedly, the virulent anti-Tg line attenuated in various ways failed to vaccinate C57BL/6 mice against EAT mediated by the line itself. These results shed some light on the regulation of autoimmunity

Das PK, van den Wijngaard RM, Wankowicz-Kalinska A, Le Poole IC. A symbiotic concept of autoimmunity and tumour immunity: lessons from vitiligo. *Trends Immunol* 2001;22(3):130-136.

Vitiligo is a skin disease in which melanocytes (MCs) are eradicated from lesional epidermis, resulting in disfiguring loss of pigment. MCs are destroyed by MC-reactive T cells, as well as other non-immune and immune components. Similarities exist between the autoimmunity observed in vitiligo and the tumour immunity observed in melanoma immuno-surveillance. An analysis of these mechanisms might lead to the development of new therapies for both vitiligo and melanoma.