

Immunohistochemical Study of Skin Biopsies from Vitiligo Patients

Noel K. MacLaren, M.D.
University of Florida

Study Plan: We studied 41 adults and 6 children with vitiligo. All responded to a newspaper article on our work and were thus randomly ascertained. We performed a full thickness skin biopsy at the margin of an active lesion as possible. We took a history and examined the patients for evidence of an associated autoimmune endocrinopathy. We performed tyrosinase autoantibodies and a variety of endocrine autoantibodies on serum, While HLA-DR/DQ typings were performed on peripheral blood DNA.

Findings: We found lymphocytic infiltrates in most (91%) patients, albeit only 57% had inflammatory changes above a minimal degree. The CD8+T cell subset was dominate; however, there were increases in CD4+T cells as well. Direct histological evidence of an ongoing T cell mediated cytolysis of melanocytes was found. As many as 84% of the adults with lymphocytes associated melanocyte injury had circulated tyrosinase autoantibodies and 72% of these had endocrinopathies and/or endocrine autoantibodies as well. Only one child had tyrosine autoantibodies. There was an increased frequency of DR 13 among the patients.

Conclusions: Most patients with vitiligo have evidence of autoimmune disease. Their biopsies showed chronic inflammatory changes consistent with a delayed hypersensitivity or autoimmune process. They frequently had tyrosinase autoantibodies and associated endocrine autoimmunities, and disturbed frequencies of class 2 major histocompatibility alleles primarily of the DRB1 locus.

Recommendations:

- We suggest that all patients with vitiligo be tested for tyrosinase autoantibodies to identify those with their disease on an autoimmune basis, preferably as close as possible to the time of diagnosis.
- We strongly recommend that all patients with vitiligo be examined for autoimmune endocrine disease (eg goiter or Addisonian pigmentation), including by testing for endocrine autoantibodies to exclude impending diabetes or Addison's disease, especially if they have tyrosinase autoantibodies.
- We speculate that vitiligo may be treatable on the basis of immunization by the relevant autoantigens such as tyrosinase protein, such as to switch a destructive Th1 (T cell mediated) immune response to a protective Th2 (antibody mediated) response.