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Immunogenetic markers in Latvian patients with *Borrelia burgdorferi* infection

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Abstract

Many autoimmune diseases are associated with variants of HLA genes such as those encoding the MHC complex. We sought to identify HLA class II alleles that might be associated with Lyme borreliosis in Latvian patients. The frequencies of HLA-DRB1 *04 and HLA-DRB1 *17 (03) were significantly increased in the Lyme disease patients compared with the control group. But, HLA-DRB1*11 was significantly higher in controls and showed a tendency to protection against Lyme Borreliosis in Latvian patients. The DR allele is responsible for presenting the antigen to the T cells for an immune system response. When the antigen is presented to the T cell in the context of the DR4 allele, T cells are stimulated to produce interferon gamma, an inflammatory response. In contrast, when the antigen is presented in the context of the DR11 allele, it stimulates the production of antibodies, a response that does not induce inflammation. The antibodies bind to the bacteria and eliminate it. So somehow the presence of either the DR4 or DR11 allele determines the T cell response- whether to produce interferon gamma and launch an inflammatory attack or to produce antibodies to the antigen. In the case of DR4, once the immune response has begun, it is self-perpetuating because interferon gamma will stimulate T cells to produce more interferon gamma. Thus the initial immune response determines the outcome of the disease in the long run.