Roles of HLA genes and HLA polymorphisms on Multiple Sclerosis pathogenesis and susceptibility

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Introduction: Multiple sclerosis (MS) is a chronic inflammatory, autoimmune disease of the brain and spinal cord that leads to neurological deficiency. Epidemiologic evidence in studied MS articles suggests that its development depends on genetic and environmental factors. The human leukocyte antigen (HLA) system is the locus of genes that encode for proteins on the surface of cells that are responsible for regulation of the immune system in humans. Association studies on genome-wide association studies (GWAS) have been conducted for MS and other autoimmune diseases, and have identified specific HLA genes. in this article, we review recent studies that illuminate roles of HLA genes and polymorphisms of HLA genes in MS pathogenesis and susceptibility.

Materials and Methods: In order to compile this paper, we used highly cited articles with keywords including Multiple sclerosis (MS), human leukocyte antigen (HLA), HLA polymorphisms presented in credible databases PubMed and Embase from 2006 to 2015.

Conclusion: Although the cause of multiple sclerosis is unknown, variations in dozens of genes are thought to be involved in multiple sclerosis risk. Association studies on genome-wide association studies (GWAS), meta-analyze for HLA genes polymorphisms and HapMap projects on MS described roles of HLA genes in MS susceptibility. Changes in the HLA genes are the strongest genetic risk factors for developing multiple sclerosis. Variations and polymorphisms in several HLA genes(HLA-DRB1, HLA-DQB1, HLA-G and other genes) have been associated with increased multiple sclerosis risk.

Keywords: Multiple sclerosis (MS), autoimmune disease, human leukocyte antigen (HLA), HLA polymorphisms