Accelerated Cure Project for MS

March 2019

Accelerating research towards a cure for multiple sclerosis

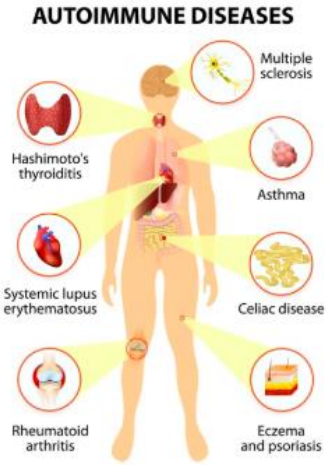
iConquerMS™

ACP Repository™

Repository Spotlight – the Neuroimmunological Disorders Gene-Environment Epidemiology (NDGE) Laboratory at Case Western Reserve University

Dr. Farren Briggs and his team at the NDGE Lab at Case Western Reserve University presented four posters at the 2019 ACTRIMS Forum at the end of February. Each poster summarized data from a study using ACP Repository samples and data. The team's research uncovered interesting new information about the relationship between MS and comorbid autoimmune conditions. These studies also reveal potential risk factors for depression and disability in MS, as well as elements that may help predict an individual's transition from relapsing remitting MS to secondary progressive forms of the disease.

The first study characterized 1,500 ACP Repository participants with MS and another autoimmune disease, as well as those with a family history of autoimmunity. For the purposes of the study, this was a representative sample of the general MS population in the United States. Subjects were classified as "polyautoimmune" if they reported having a second autoimmune disease. Data analysis showed polyautoimmunity in people with MS is greater among women, older or more educated individuals, those with a personal history of obesity, and those with a family history of autoimmunity. Interestingly, non-white people with MS were less likely to report a history of autoimmune disease than white people with MS.



The second study looked at potential risk factors for depression in MS and the ability to predict depression based on these factors. Analysis of samples and data from over 800 ACP Repository subjects revealed several non-genetic risk factors, including having a mother with a history of depression, obesity, hypertension, mononucleosis, and obstructive pulmonary disease. This study also identified genetic factors that may influence whether or not an individual with MS will develop depression at some point in the course of their disease. For example, the major alleles for the APOE gene are called E2, E3 and E4. Results from this study show that the E4 genotype is a risk factor for depression. On the other hand, the E2 genotype appears to be protective against depression. These genetic factors can easily be determined at MS onset and may potentially be used to identify those at high risk for depression.

The third poster summarized an investigation of the relationship between established MS risk factors and MS disability. This study looked at how genetic factors, such as human leukocyte antigen (HLA), and non-genetic variables, such as tobacco smoke, obesity and lower socioeconomic status, influence an individual's level of disability. Dr. Briggs and his team concluded that genetic risk factors do not influence MS disability. As expected, older age of MS onset and longer disease duration were associated with greater disability. Male and black participants had greater disability than female and white participants, respectively. Obesity led to greater overall disability and smokers had greater deficits in walking and dexterity. Results also suggest the amount of time between an individual's first two relapses might be an early predictor of their long-term disability outcome, with a longer interval associated with lower impairment.

The fourth study evaluated the role of both genetic and non-genetic factors in predicting an individual's transition from relapsing remitting to secondary progressive MS (SPMS). After analyzing samples and data from over 1,200 ACP Repository subjects with MS, the study team made the following conclusions: 1) The HLA gene (specifically HLA-A*02) is highly protective against transition to SPMS such that it leads to a later transition; 2) One's gender is a strong predictor of early transition to SPMS, with men at significantly increased risk; 3) Neurological diseases, such as migraines, are protective against transition to SPMS; and, 4) Six or more years between the first two relapses are consistently associated with a decreased risk of and a later transition to SPMS. Understanding risk for transition to SPMS is extremely valuable to individuals affected with MS, who must plan for long-term disease management.

The ACP Repository has been an invaluable resource for these, and more that one hundred other studies. These data will be shared with and built upon by other MS researchers, advancing our understanding of the cause and effect of MS in the lives of those living with the disease. Advances such as these bring us closer to better treatments and a cure.

ACP Repository™