Pathology-2013

OMICS Group Conferences
Accelerating Scientific Discovery

2nd International Conference and Exhibition on
Pathology

August 05-07, 2013 Embassy Suites Las Vegas, USA

Autoimmune pathogenesis in autism

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Abstract

Autoimmunity is a major cause underlying many chronic diseases particularly those impacting the nervous system. There are 85 or so human conditions that are generally considered as autoimmune diseases that affect an estimated 55-60 million Americans across the entire lifespan. This number however never includes millions more people who suffer from autoimmune disease of the nervous system, for example autism, Alzheimer's disease, etc. Our laboratory investigations have recently shown that an autoimmune mechanism of pathogenesis is also involved in autism, a disorder of the developing nervous system. We analyzed autoimmune markers, cytokines and virus serology in blood samples of autistic and normal children and also in the CSF samples of some autistic children. Laboratory methods included enzyme-linked immunosobent assay (ELISA) and protein immunoblotting assay. We found that many autistic children harbored elevated levels of pro-inflammatory cytokines (e.g. interferon-gamma and interleukin-12), acute-phase protein (e.g. C-reactive protein), brain-specific autoantibodies [e.g. antibodies to myelin basic protein (anti-MBP) and antibodies to caudate nucleus (anti-CN)], antibodies to measles virus, and a positive response to immunotherapy. CSF samples were also positive for antibodies to brain antigens and measles virus. Of considerable importance to autoimmune pathogenesis, we found a positive correlation between brain autoantibodies (anti-MBP) and virus serology (anti-measles virus). Taken together, our laboratory findings demonstrated a pathological role of autoimmunity in autism or a major subset thereof – we refer this subset as "Autoimmune Autistic Disorder (AAD)".

Biography

Vijendra Singh received his PhD in Brain Biochemistry from the University of British Columbia, Vancouver, BC, Canada. Subsequent to a post-doctoral fellowship in Neurochemistry and Immunology, he specialized in Neuroscience, Neuroimmunology, Clinical Immunology and Laboratory Medicine. Until recently, he was a university professor at the University of Michigan, Utah State University, Medical University of South Carolina and the University of British Columbia. He was a member of American Academy of Anti-Aging Medicine (A4M), American Academy of Neurology (AAN), American Association for the Advancement of Science (AAAS), American Association of Immunologists (AAI) and American Society for Microbiology (ASM), and is now an active member of the Society for Neuroscience (SfN). He is also a member of prestigious International Who's Who of Intellectuals (UK) and American Men and Women in Science (USA). He was also a member of the Scientific Advisory Board of several non-profit Organizations and/or Foundations. For his work, Dr. Singh has been awarded O. Spurgeon English Humanitarian Award from the Psychiatric Association of Philadelphia and National Foundation for Alternative Medicine (NFAM), Washington, DC. Currently, Dr. Singh works as an independent Professor of Neuroimmunology through a research program known as Neuro Immune Biotechnology Solutions (NIBS). He is a professional neuroscientist and immunologist, speaker, author, biomedical researcher and consultant for autoimmunity and inflammation in brain disorders. The focus of his research is to uncover novel therapies for autoimmune pathologies in nervous system disorders.