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PPPM as a model of healthcare services to operate biomarkers of newer generations to monitor clinical and subclinical stages of chronic inflammatory conditions of autoimmune origin

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A new systems approach to disease to pay its crucial attention on the trend would result in a new branch in the healthcare services, namely predictive, preventive and personalized medicine (PPPM). To achieve the practical implementation of PPPM concept, it is necessary to create a fundamentally new strategy based upon the subclinical recognition of biopredictors of hidden abnormalities long before the disease clinically manifests itself. This strategy would give a real opportunity to secure preventive measures whose personalization could have a significant influence on demographics. The first discriminatory step illustrating the PPPM-oriented survey is estimating of the correlation strength between genetic polymorphism and risks of the disease, and subsequent construction of groups at risks. As a result, a patient or a person-at-risk would become a data carrier, and the physician can reasonably select of preventive protocol, proceeding from the assays made. Individuals selected at the first stage, undergo the second phase of the survey, which uses a panel of phenotypic biomarkers. Etiopathogenesis of autoimmune diseases (in particular, at its subclinical stage) is still poorly known despite intensive research on mechanisms of autoaggression. Two examples of autoimmune conditions are T1D (type 1 diabetes) and MS (multiple sclerosis). T1D is a chronic autoimmune disease resulting in a destruction of pancreatic beta-cells capable alone of producing insulin. About half of the total risk is genetic and to be used for gene-based predictive testing and getting the proper genomic biomarkers identified. Subclinical stages are determined by identification of proteomic-related biopredictors, i.e., anti-islet auto-Abs whose presence would determine risks and time points for initiating subclinical abnormalities. MS is an autoimmune disorder of the central nervous system (CNS) resulting in a destruction of neuro-myelin compartment and development of disability. Most of the studies confirmed the supreme role of the variations within HLA genes as MS gene-related risk factors and the proper genomic biomarkers identified. The crucial step in the MS evolution is a primary myelin damage which is mediated by cytotoxic anti-myelin auto-Abs. A portion of those are auto-Abs against myelin-basic protein/MBP endowing with MBP-targeted proteolytic activity (so-called, Ab-proteases). Screening for those biomarkers could become the next step to secure subclinical diagnosis of MS and to predict the clinical course. The information harvested can be used to tailor prevention. The strategy of the latter of, for chronic autoimmune diseases should contain two critical steps: (i) Arrest of auto-aggression (ii) restoration of structure and functions of the tissue affected. The strategy mentioned can be accomplished by: (i) gene therapy (ii) immune-mediated therapy, and/or (iii) stem cells technologies.

Biography

Sergey Suchkov graduated from Astrakhan State Medical University and was awarded with MD. In 1985, he obtained his PhD from the I.M. Sechenov Moscow Medical Academy and Institute of Medical Enzymology, USSR Academy of Medical Sciences, Russia. In 2001, he finished the Post-doc Research Fellowship Program and maintained his Doctor degree at the National Institute of Immunology, Russia. From 1987 through 1989, he was a senior Researcher, Lab of Developmental Immunology, Koltzov Institute of Developmental Biology, USSR Academy of Sciences to deal with developmental immunology. From 1989 through 1995, he was Head of the Lab of Clinical Immunology and Immunobiotechnology, Helmholtz Eye Research Institute in Moscow. From 1995 through 2004, he was the Chairman of the Department for Clinical Immunology, Moscow Clinical Research Institute (MONIKI) and the Immunologist-in-Chief of the Moscow Regional Ministry of Health. At present, he is Professor in Immunology, Department of Pathology, School for Pharmacy, I.M. Sechenov First Moscow State Medical University, Dean of the Department (Faculty) of The PPPM Development, and the First Vice-President of the University of World Business, Politics and Law and Secretary General, United Cultural Convention (UCC), UK.

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