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FUNCTIONALITY ARMED ANTIBODIES AS NEW TRANSLATIONAL TOOLS TO MONITOR PROGRESSION OF CHRONIC DISORDERS AT CLINICAL AND SUBCLINICAL STAGES

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Subclinical multiple sclerosis (S-MS) can be usually defined as the discovery of characteristic lesions at magnetic resonance (MR) or at autopsy, in the absence of clinical evidence consistent with MS. The methodological bricks of subclinical diagnostic and predictive protocols should include basic algorithms to differ essentially from those employed in canonical clinical practice, i.e., (i) to confirm a diagnosis of subclinical stage of the disease course and (ii) to select a mode for preventive treatment to quench the autoimmune inflammation. In this sense, among the best-validated proteome-related translational biomarkers, antibody-proteases were proven to be the best known ones. Abs against myelin basic protein/MBP endowing with proteolytic activity (Ab-proteases with functionality) is of great value to monitor demyelination to illustrate the evolution of MS. The activity of the MBP-targeted Ab-proteases discovered in MS patients markedly differs between: (i) MS patients and healthy controls; (ii) different clinical MS courses; (iii) EDSS scales of demyelination to correlate with the disability of MS patients to predict the transformation prior to changes of the clinical course. The activity of Ab-proteases was first registered at the subclinical stages 1-2 years prior to the clinical illness. About 24% of the direct MS-related relatives (probands) were seropositive for low-active Ab-proteases from which 38% of the seropositive relatives established were being monitored for 2 years whilst demonstrating a stable growth of the Ab-associated proteolytic activity. Three patients were initially evaluated because of accidental MRI findings suggestive of MS that fulfilled the Barkhof criteria. At the moment of MR examination, patients were asymptomatic. The objective examinations as well as the clinical history were negative. After having those patients tested for Ab-proteases, all three have demonstrated elevated levels of the specific activity to target MBP. We have been monitoring along with the patients mentioned all direct members (13 healthy persons) of their families for 2 years and found that 3 relatives tested had elevated levels of the specific activity which was having a trend to grow whilst correlating with clinical symptoms of MS including the chronic fatigue, muscle weakness, dizziness, etc. All family members were studied with MRI, evoked potentials, and human leukocyte antigen (HLA) typing. The activity of Ab-proteases and its dynamics tested would confirm a high subclinical and predictive (translational) value of the tools as applicable for personalized monitoring protocols. Further studies on targeted Ab-mediated proteolysis may provide a translational tool for predicting demyelination and thus the disability of the MS patients in a variety of clinical and subclinical cases.

Biography

Sergey Suchkov was born in the City of Astrakhan, Russia, in a family of dynasty medical doctors. In 1980, graduated from Astrakhan State Medical University and was awarded with MD. In 1985, Suchkov maintained his PhD as a PhD student of the I.M. Sechenov Moscow Medical Academy and Institute of Medical Enzymology. At present, Dr Sergey Suchkov, MD, PhD, is: Professor, Director, Center for Personalized Medicine, I.M.Sechenov First Moscow State Medical University and Dept of Clinical Immunology, A.I.Evdokimov Moscow State Medical and Dental University; Professor, Chair, Dept for Translational Medicine, Moscow Engineering Physical Institute (MEPhI), Russia Dr Suchkov is a member of the: American Heart Association (AHA), USA; European Association for Medical Education (AMEE), Dundee, UK; EPMA (European Association for Predictive, Preventive and Personalized Medicine), Brussels, EU;.

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