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The development of chronic diseases and therapeutic concepts from a complex systems point of view

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The medical community fails dramatically in the understanding of chronic diseases and development of causal therapies. Unquestioned statistical associations between vaccinations or infections and autoimmune diseases, Gulf war illness, chronic fatigue syndrome, post Lyme syndrome, or the mild encephalitis in schizophrenia remains without any scientific rational. This points to the need for new scientific approaches, different from unsuccessful linear clonal selection concepts in immunology. Non-linear dynamics analyzed in time series, phase portraits and mathematical models. Three different types of chronic diseases can be discriminated in neurology by cerebrospinal fluid analysis: (1) Chronic inflammatory diseases with persisting causative antigen, (2) Chronic inflammatory diseases without persisting antigens but humoral immune response and (3) Immune System Associated Pathologies (ISAP) without pleocytosis or signs of a humoral immune response. Ad1: In a virus-driven chronic disease, like Fuchs Heterochromic Cyclitis of the eye, the chronification of the infection was described as an attractor, i.e. as one of the stable optional states between complete immunity and death. This model helps create causal therapies by facilitating phase transitions to complete immunity. Ad 2: The arbitrary poly-specific immune response (e.g. in multiple sclerosis) is based on individual connectivity in the immune network. Ad 3: Chronic diseases with a sudden change from stable health to a pathological but stable state are phase transitions based on metabolic fluctuations spontaneous or facilitated by external influences (via the immune, endocrine or nervous system). With an immune system associated pathology, an initiation by vaccination or infection has to be regarded as a facilitator for a phase transition, like a catalyst, but not as the cause. With this causation we understand why no traces, like causative antigens, are found in these diseases as a self-organizing stable state. A reduced complexity with reduced stability in the regulation of diseased organisms can be shown by the numerical analysis of time series (e.g., heart rate) or attractor phase portraits. The complexity approach shows why antiviral or antibiotic medications fail in chronic diseases. Disease as an emergent property should be investigated on the phenotype level. Nonlinear analysis of time series of the individual patient gives information not available from group statistics of molecular multi-scale systems or systems biology. New research perspectives could base on the extended time of registry after vaccinations and should focus on causal therapies, which need financial support, independent from the medical-industrial complex, with its divergent interests.

Biography

Hansotto Reiber has completed his Diploma in Biochemistry, Dr. rer nat in Biophysics and is the Professor for Neurochemistry, University Göttingen, Germany, 1978-2005 (retirement). Since 1991-2015 he is the Supervisor and Organizer of the Cerebrospinal Fluid Quality Control (EQAS) for Germany and different European countries, INSTAND, Germany. Fields of Competence: Cerebrospinal fluid (CSF) analysis, theory of blood-CSF barrier function and CSF flow. Dynamics of brain- and blood-derived proteins in CSF. Neuroimmunology and basic research in chronic neurological diseases. Particular research in CSF analysis in tropical Neurology. Basic research on nonlinear dynamics of biological processes, self organization concepts in biological and medical sciences. Analysis of aqueous humor for diagnosis of eye diseases. >200 publications (www.horeiber.de). International courses and seminars on CSF analysis for diagnosis of neurological diseases.

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