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Hansotto Reiber

Cerebrospinal Fluid Diagnostics in Neurology

Paradigm Change in Brain Barriers, Immune System and Chronic Diseases

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What you can find in this *essential*

- CSF Basics and disease typical data patterns
- Biophysics of biological barrier functions
- Lymphocyte- und Cytokin - networks as Interpretation base
- Chronic disease as a stable attractor of reduced complexity
- Paradigm change- the view from philosophy of science

“The straight line is a crime”

(Friedensreich Hindertwasser, Artist.)

Preface

In my long-standing efforts to improve cerebrospinal fluid diagnostics, I have learned how important our disease models are for good diagnostics. By combining biologically related data, disease-typical data patterns emerge, but they can only be adequately interpreted if our disease models also allow this. In current medicine, some of these, often only implicit, models are so unrealistic that, for example, it is not possible to develop a causal therapy for any of the chronic diseases.

Above all, understanding nonlinear relationships in biophysical and biological processes may contribute to the development of better disease models with corresponding implications for diagnosis and therapy. However, this also means breaking with some established doctrins and accepting not-so-new, more relevant paradigms.

More than other areas of clinical-chemical laboratory diagnostics, cerebrospinal fluid diagnostics presupposed new interpretation models and thus also contributed to a corresponding development of these areas.

The brain, with its particularly differentiated functions and metabolic conditions, requires much more than other organs a complex barrier from the blood, the blood-brain barrier. Understanding this barrier function has become a central challenge for cerebrospinal fluid diagnostics as well as for neuroimmunology.

In cerebrospinal fluid diagnostics, what is specific to the reactions in the brain must be discriminated from what originates unspecifically from the blood. Particularly for the synthesis of immunoglobulins in the brain during inflammatory processes, various practical methods have been developed for this purpose for over a hundred years. One of these methods was the qualitative Mastix reaction, developed in the 1920s and presented as a graph. The shape of the curve directly indicated to the doctor a possible multiple sclerosis, neurosyphilis, or neurotuberculosis, given the corresponding clinical question. Still in 1978, the