Abstract Information

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Address :	13 place Pasteur, Tunis
Participation :	symposium
Title of the Symposium :	Emerging effectors in neurodegeneration: from preclinical to clinical models
Category :	Academic/Researcher
Thematic Area :	Neuroimmunology, Neuroinflammation, and Neuroinfection
Title :	Adaptive immune cells in the cerebrospinal fluid of neuroinflammatory disorders:The control of cytokine production
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Abstract :

Background and objectives: Multiple Sclerosis (MS) is a demyelinating and neurodegenerative disease of the central nervous system (CNS). Neuroinflammation induced by genetic variations in CNS cells or by peripheral immune cells plays a crucial role in the process of neurodegeneration. This inflammation involves a different panel of cytokines and cellular players of innate and adaptive immunity. In order to study these players in the CNS of MS patients, we compared them with patients suffering from a chronic relapsing multisystem inflammatory disease which can affect the CNS, the neurological manifestation of Behçet disease (NBD).

Methods: This study included blood and cerebrospinal fluid (CSF) samples from 35 MS patients and 25 NBD patients from Institute of Neurology of Tunis. We measured and compared cytokine signatures related to Th1, Th2, Th17, Th9, Th22, T regulatory and inflammatory response. A broad panel of selected genes was compared between MS, NBD, and non-inflammatory neurological disorders. T populations were studied by qRT-PCR, ELISA and multiplexes beads. To reach this aim, bivariate and multivariate analysis were applied.

Results: In initial CSF samples, ROR-?t, IL-17a and IFN-? were significantly elevated in patients compared to controls. This group displayed activation of the Th1/Th2 and Th17 axes in the CSF. The Principal Analysis Component (PCA) highlighted distinct profiles between

NBD, MS, and controls. Parameters related to cellular activation and inflammatory cytokines within the CSF clearly differentiate between the two inflammatory diseases and the controls. Moreover, foxp3 in the blood along with IL-4, IL-10, and IL-17 expressions were the parameters that are the main contributor to the segregation between MS and NBD clustering. We proceeded to ROC analysis in order to identify the most distinctive parameters between both disorders. The latter analysis suggested that IL-17, CD73 in the blood as well as IL-1? and IL-10 in the CSF were the most discriminating parameters between MS and NBD.

Discussion: The study of inflammatory response in the CNS of MS patients showed increased expression of IL-1?. Moreover, a comprehensive analysis of multiple cellular markers by combined multi-dimensional analysis suggests distinct mechanisms governing the pathophysiology of these two neuro-inflammatory disorders.