

## Neurotrophins and multiple sclerosis

Jacek Losy and Alicja Kalinowska

Department of Clinical Neuroimmunology, Poznan University School of Medicine, Poland

Multiple sclerosis is a chronic inflammatory, demyelinating and neurodegenerative disease of the CNS, characterized by multiple areas of white matter inflammation, demyelination, perivascular leukocyte infiltration, axonal damage and neuronal loss. Axonal loss is considered as responsible for brain and spinal atrophy and disease progression in MS patients. Neurotrophins may exert neuroprotective role in multiple sclerosis. In MS neurotrophins appear most abundantly within the actively demyelinating edge of the plaque, where they are released in close proximity of axons being at risk of damage elicited by the inflammatory reaction. In pathological conditions an additional neurotrophic support from PBMCs might compensate the relative deficit of NTs in the CNS. BDNF secretion by PBMCs has been linked to neuroprotective abilities in MS patients. Some immunomodulating drugs have been shown to increase BDNF levels in MS patients, which might contribute to their therapeutic efficacy.

Neurotrophin-3 (NT3), studied by my Department in MS patients, is produced by neurons, T and B cells. It binds with high affinity to trkC receptors, expressed mainly on neurons and macrophages as well as with low affinity to trkA and trkB receptors. We have found that

NT-3 PBMCs concentration is strongly correlated with brain-parenchymal fraction (BPF) and corpus callosum cross-sectional area, well established brain atrophy measures. Our findings suggest that PBMC-derived NT3 may exert neuroprotective effect in MS patients.

### Biography

Dr. Jacek Losy is a professor of Neurology and Head of the Department of Clinical Neuroimmunology, University School of Medicine in Poznan. He worked in the Karolinska Institute and in the Institute for Basic Research in Developmental Disabilities in New York, USA (Jacqueline du Pré fellowship from the MSIF.) He published over 100 papers, in leading international journals, mainly in the field of neuroimmunology.

He is a member of the International Medical & Scientific Board MSIF. He is also a delegate to the Demyelinating Panel of the EFNS. Prof. Losy has organized several neuroimmunological conferences of national and international range.

jlosy@amp.edu.pl