IMMUNOSUPPRESSIVE THERAPY REDUCES AXONAL DAMAGE IN PROGRESSIVE MULTIPLE SCLEROSIS

J.N. Lycke[1], M. Axelsson[1], C. Malmeström[1], H. Zetterberg[2], P. Sundström[4], M. Gunnarsson[3], A. Svenningsson[4]

[1]Department of Clinical Neuroscience and Rehabilitation & [2]Department of Psychiatry and Neurochemistry, Institute of Neuroscience and Physiology, The Sahlgrenska Academy, University of Gothenburg, Gothenburg; [3]Department of Neurology, Örebro University Hospital, Örebro; [4]Department of Pharmacology and Clinical Neuroscience, Umeå University, Umeå, Sweden

Background: In progressive MS, disease modifying therapies have not been shown to reduce disability progression.

Objective: The impact from immunosuppressive therapy in progressive MS was explored by analyzing CSF biomarkers of axonal damage (neurofilament light protein, NFL), astrogliosis (glial fibrillary acidic protein, GFAP), and B-cell regulation (CXCL13).

Methods: CSF was obtained from 35 progressive MS patients before and after 12-24 months of mitoxantrone (n=30) or rituximab (n=5) treatment, and from 14 age matched healthy control subjects. The levels of NFL, GFAP, and CXCL13 were determined by immunoassays.

Results: The mean NFL level decreased by 51% (1781 ng/L, SD 2018 vs 874 ng/L, SD 694, p=0.007), the mean CXCL13 reduction was 55% (9.71 pg/mL, SD 16.08, vs 4.37 pg/mL, SD 1.94, p=0.008), while GFAP levels remained unaffected. Subgroup analysis showed that the NFL reduction was confined to previously untreated patients (n=20) and patients with Gd-enhancing lesions on MRI (n=12) prior to study baseline.

Conclusions: Our data implies that 12-24 months of immunosuppressive therapy reduce axonal damage in progressive MS, particularly in patients with ongoing disease activity. Determination of NFL levels in CSF is a potential surrogate marker for treatment efficacy and as end-point in phase II trials of MS.