NAWM in MS: loss of oligodendrocytes and lesion depended microglia activation (MS: Changes of microglia and oligodendrocytes)

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Multiple sclerosis (MS) lesions have been classified as active, mixed active/inactive, and inactive. These lesion types are distinguished by numbers and localization of macrophages and microglia within MS lesions. MS patients with a secondary progressive MS (SPMS) course show a progressive and continuous worsening of symptoms independent of relapses. Diffuse microglia activation has been shown to be more pronounced in patients with a secondary progressive disease course compared to patients with a relapsing-remitting disease course; however detailed analyses are missing.

Aim of this study is to examine extent and consequences of diffuse microglia activation in the normal appearing white matter. Therefore, we 1.) quantified the numbers of microglia, 2.) determined which factors may influence the extent of microglia activation and 3.) investigated the correlation between microglial and oligodendroglial numbers. Immunohistochemical studies of tissue sections from the normal-appearing white matter (NAWM) of MS patients (n=33 tissue blocks) and controls (n=17 tissue blocks) showed that the density of microglia correlates with proximity to lesion type and sex. However, heterogeneity between individual patients appears to be greater than between lesion types. Numbers of oligodendrocytes in NAWM of MS patients are lower than in sex and age matched controls. Numbers of oligodendrocytes did not correlate significantly with lesion proximity or lesion type; however we found significantly higher numbers of oligodendrocytes in the NAWM of female compared to male MS patients. In summary, our data demonstrate that several factors, such as lesion proximity, lesion type and / or sex together with individual factors modulate microglia activation and oligodendroglial numbers in NAWM of MS patients. Further analyses are ongoing to analyze the correlation between disease progression and microglia activation.

NAWM in MS: loss of oligodendrocytes and lesion depended microglia activation (Changes of microglia and oligodendrocytes in NAWM in MS) - **Disclosure of potential conflicts of interest**

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