(S71) RELATIONSHIP BETWEEN COGNITIVE PERFORMANCE AND CLINICAL/MAGNETIC RESONANCE IMAGING VARIABLES IN EARLY MULTIPLE SCLEROSIS

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Background: Cognitive dysfunction in early stages of multiple sclerosis (MS) is well documented. While data are also available on correlations between magnetic resonance imaging (MRI) and cognitive function, correlations with other clinical variables or the predictive value of cognition for disease course are scarce and inconsistent. Objectives: Data from the BENEFIT study in patients with a first event suggestive of MS (clinically isolated syndrome [CIS]) were reanalyzed in an exploratory fashion to assess the relationship between cognitive performance (Paced Auditory Serial Addition Test [PASAT]) and other clinical/MRI variables. Methods: A total of 468 patients with CIS were randomized (5:3) to receive interferon beta-1b (IFNβ-1b) 250 μg subcutaneously every other day or placebo for 2 years or until diagnosis of clinically definite MS (CDMS), after which open-label IFNβ-1b was offered for up to 5 years. We evaluated associations between PASAT and clinical/MRI findings at baseline and year 5 and the impact of baseline PASAT on the development of MS or neurologic disability. Data were analyzed by Spearman correlation, nonparametric analysis of covariance, and Cox proportional hazards regression. Results: At screening and year 5, low Expanded Disability Status Scale (EDSS) scores were associated with better PASAT performance (P < .01; r = −0.2), but no significant or consistent associations with MRI were found. PASAT performance at year 5 did not differ in patients with versus without CDMS (P = .44) and did not correlate with MRI outcomes (absolute changes in T2, gadolinium-enhancing T1 and T1-hypointense lesion volumes, and percent change in brain volume, all P > .1) but was worse in patients with confirmed EDSS progression (P = .02). Baseline PASAT performance did not predict time to CDMS (P = .8; hazard ratio [HR], 0.998; 95% confidence interval [CI], 0.980-1.015) or time to McDonald MS (P = .7; HR, 0.997; 95% CI, 0.984-1.011). Higher baseline performance was associated with a lower risk of confirmed EDSS progression (P = .01; HR, 0.975; 95% CI, 0.956-0.994). Conclusions: Our findings suggest a possible causal relation between cognitive impairment and neurologic disability at CIS and during early MS. Low cognitive performance at CIS may even predict later neurologic disability in early MS. However, at this early disease stage, cognitive impairment was not associated with conventional MRI measures of cerebral pathology and did not predict CDMS diagnosis as defined by relapse or new MRI activity.

Supported by: Bayer Schering Pharma AG, Berlin


Keywords: psychological issues and MS, natural history of MS, disease-modifying treatment in MS