



# Association Between Optic Neuritis and Information Processing Speed in Relapsing-Remitting Multiple Sclerosis Patients

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## ABSTRACT

**Introduction:** Multiple sclerosis (MS) is a demyelinating, central nervous system inflammatory disease. Optic neuritis (ON) is inflammation of the optic nerve and occurs in 20% of patients at disease onset and up to 80% throughout the disease. This cross-sectional study aimed to investigate the association between visual evoked potentials (VEP) and performance on the Cambridge Neuropsychological Test Automated Battery (CANTAB) in relapsing-remitting MS (RRMS) patients.

**Methods and Materials:** 133 RRMS patients were recruited from an MS cognition clinic in Tabriz, Iran, between 2022 and 2023. Participants underwent VEP testing and based on the rapid visual information processing (RVP) subtest of CANTAB, patients were divided into two groups (impaired [RVP-I] and non-impaired [NI-RVP]), and VEP outcomes were compared between the groups of the study. All statistics were applied using the 27<sup>th</sup> version of SPSS. Considering the lack of normal distributions based on the Kolmogorov-Smirnov test, numeric values are presented in median [IQR], and non-parametric tests (Mann-Whitney U test and Spearman correlation) were utilized. Categorical variables were compared using the Chi-Square.

**Results:** Of 133 included participants in the total sample, 99 (74.4%) were female, and 34 (25.6%) were male. Fifty-seven patients (42.8%) had CI, and 76 (57.1%) were in the NCI group. VEP left latency (RVP-I: 116.68 [26.95], RVP-NI: 112.32 [13.40];  $p = 0.02$ ) was significantly higher in the RVP-I group, and VEP left latency118 was more prevalent in RVP-I group (47.5% vs. 30.2%;  $p = 0.047$ ). There was no significant difference between the groups regarding the VEP correct latency (RVP-I: 116.20 [22.23], RVP-NI: 113.00 [16.45];  $p = 0.18$ ), VEP amplitudes (data are not presented;  $p = 0.05$ ). There was a positive correlation between the RVP and VEP Left Latency (Correlation  $r = 0.227$ ,  $p = 0.010$ ). Conclusion and discussion Our findings revealed a relationship between optic neuritis and visual information processing speed in RRMS.

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