

Quantitative Pupillary Pathway Assessment with Automated Pupillometry and Its Correlation with Visual Evoked Potential Latency in Multiple Sclerosis without a History of Optic Neuritis

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Introduction/Aims:

The present study was conducted to investigate indicative alterations in features of pupillary light response measured by pupillometry and to assess its potential associations with latency prolongation of the visual evoked response in non-optic neuritis RRMS patients.

Methods:

We investigated P100 latency and pupillometry parameters including neurological pupil index (NPi), pupil size (PS), minimum size of pupil (MinPS), percentage change of pupil size (CH), Constriction Velocity (CV), Maximum of Constriction Velocity (MCV), Dilation Velocity (DV) and latency (LAT) from 62 non-ON RRMS and 80 control. Independent-samples t-tests were run, first to determine pupillometry differences between the right eye of cases and controls and then, to determinate differences across age-matched controls and cases while p100 latency was in normal range. To assess P100 latency variation in terms of EDSS and pupillometry variables, right eyes of non-ON cases were quantified through multiple regression.

Results:

The mean comparison of case and control subjects showed statistically significant differences of -0.56, $p=.002$; -0.24, $p=.01$; -3.18, $p=.015$; -0.53, $p=.01$ for PS, MinPS, CH, MCV, respectively. And under normal p100 classification it was revealed that there were statistically significant differences of -0.77, $p = .007$; -5.38, $p = .006$; -0.78, $p = .015$ for PS, CH and MCV, respectively. EDSS and CH statistically significantly predicted P100 $p<0.005$, $R^2 =18.3\%$.

Conclusions:

Pupillary light response parameters are affected by the pathophysiologic process in MS disease even in the absence of ON and latency prolongation of VEP. The Percentage change of pupil size alongside EDSS can predict p100 latency with a medium effect size.