Evaluation Of Quantitative Indexes For The Analysis Of Multifocal ERG

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Abstract:

Purpose: To evaluate the clinical applicability of quantitative indexes for the interpretation of multifocal ERG (MfERG) exams. These indexes have been developed to improve the detection of alterations of MfERG responses. A first set of indexes compares the amplitudes of P1 (related to the activity of inner layers) to the amplitude of N1 (related to the activity of photoreceptors). A second set of indexes compares the amplitudes of central responses to peripheral responses.

Methods: MfERG exams were performed with identical conditions over a reference group of 71 eyes from normal individuals and over a pathological group of 32 eyes with various diseases of the retina. The analysis included: the amplitude of averaged responses over 5 ring areas (0-2, 2-5, 5-10, 10-15 and 15-25 degrees eccentricity). P1/N1 was computed for each averaged response. N1/N1 periphery and P1/P1 periphery were computed for the 4 central rings.

Results: Reference group: variation coefficients were 21% for N1 amplitude, 19% for P1 amplitude. P1/N1 and P1/P1 periphery were found to present much lower variation coefficients with values of 12% and 11%, respectively.

Pathological group: In 11 cases out of 32, the spread of deficits was larger with N1/N1 periphery than with N1 amplitude alone. In 14 cases out of 32, the spread of deficits was larger with P1/P1 periphery than with P1 amplitude alone. In 10 cases P1/N1 was out of the normal range. 3 of these cases had no significant alterations of N1 and P1 amplitudes (1 chloroquine and 2 sabril intoxications).

Conclusions: The use of quantitative indexes such as P1/N1 and P1/P1 periphery can significantly improve the detection and interpretation of alterations of MfERG results.

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