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Comparison of multifocal pattern ERG responses to luminance and chromatic contrast stimulations

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Purpose

To evaluate the relationship between ganglion cells properties and responses obtained with multifocal pattern ERG.

Methods

6 normal subjects were tested with 3 types of multifocal ERG stimulations: standard flash, pattern reversal with luminance contrast (black / white) and pattern reversal with chromatic contrast (red / green). The amplitude density and implicit times (ms) of responses were evaluated as a function of eccentricity with respect to fixation.

Results

The amplitude density of responses was much smaller for pattern reversal stimulations than for flash stimulations with a ratio of 2.5 at the fovea (57 nV/deg² vs. 146 nV/deg²) and 13 at 15 degrees of eccentricity (3.2 nV/deg² vs. 43 nV/deg²). The responses to chromatic contrast were significantly delayed in comparison with luminance contrast.

Conclusions

The variation of amplitude density of multifocal ERG responses with eccentricity was found similar to the variation in density of photoreceptors for flash stimulations and of ganglion cells for pattern stimulations.