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3.06 Natural course of chronic non-arteritic anterior ischemic optic neuropathy: PERG review

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Purpose: To evaluate the natural course of chronic phase non-arteritic anterior ischemic optic neuropathy (NAION) in terms of pattern electroretinography, retinal ganglion cell (RGC) thickness and visual field defect.

Methods: Prospective evaluation of chronic phase NAION was performed in 23 eyes of 17 patients (11 unilateral NAION and 6 bilateral NAION). The examinations were performed > 6 weeks after onset and at 1 month and two months after initial examination. Examinations included pattern

electroretinography, optical coherence tomography panomap and Humphrey visual fields.

Results: The first visits were performed at 24 (12–104) weeks after onset. There was an increase of P50 and N95 amplitude observed in 23 eyes of chronic phase NAION over the three measurement times [(P50 = $4.839 \pm 1.921 \mu\text{V}$; $5.291 \pm 2.256 \mu\text{V}$; $5.622 \pm 2.377 \mu\text{V}$ ($p = 0.008$); N95 = $-4.304 \pm 1.224 \mu\text{V}$; $-5.574 \pm 3.296 \mu\text{V}$; $-6.213 \pm 2.956 \mu\text{V}$ ($p = 0.01$)]. There were no statistically significant differences in implicit time as a function of visit. Compared to normal fellow eyes, NAION eyes showed significantly lower P50 and N95 amplitudes ($p < 0.05$). The RGC thickness showed a stable atrophic state without significant change over the three measurements ($p = 0.406$). Visual field defect also showed no significant change over time ($p = 0.304$). No correlation was found among P50-N95 amplitude and mean deviation or pattern specific deviation. There was a significant correlation between P50 amplitude at first visit with RGC thickness at third visit ($r = -0.558$, $p = 0.02$) and N95 amplitude at first visit with RGC thickness at third visit ($r = 0.519$, $p = 0.033$). There was no significant correlation between mean deviation-pattern specific deviation and RGC thickness.

Conclusions: Contrary to the conventional belief, chronic-phase NAION showed a change of P50 and N95 amplitude over time, suggesting the possibility of improving retinal ganglion cell function although its thickness and the visual field defect had stabilized. P50 and N95 amplitude showed a different pattern in unilateral NAION and correlated with final retinal ganglion cells thickness.