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Abstract Title: Peripapillary Microperimetry in Glaucomatous Eyes

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Purpose: To determine, in patients with ocular hypertension and glaucoma, the existence of peripapillary threshold reduction using microperimetry and to evaluate the association between peripapillary sensitivity and retinal nerve fiber layer (RNFL) thickness.

Methods: Fourteen eyes affected by ocular hypertension, nineteen eyes affected by glaucoma and fourteen age-matched controls underwent: peripapillary sensitivity quantification with microperimetry (fundus-related microperimetry; MP1 Microperimeter, Nidek Technologies, Padova, Italy) using a standardized peripapillary grid. RNFL thickness was quantified, using optical coherence tomography (Stratus OCT, Carl Zeiss, Jena, Germany), in a ring exactly corresponding to microperimetry threshold quantification. Standard automatic perimetry was performed in all except control eyes.

Results: Peripapillary threshold was 17.1 ± 4.1 , 13.4 ± 6.7 and 8.9 ± 6.6 db in control, ocular hypertension and glaucomatous eyes respectively ($p < .0001$). Progressive significant ($p < .001$) reduction of RNFL thickness was documented in ocular hypertension and glaucomatous eyes compared to controls. Significant correlation ($r = 0.75$) was documented just in control and ocular hypertension eyes between RNFL thickness and corresponding peripapillary sensitivity. Individual patterns of sensitivity vs RNFL thickness were identified in the examined groups.

Conclusions: Microperimetric exact quantification of peripapillary sensitivity may be used as a new functional parameter in the integrated morpho-functional evaluation of glaucomatous eyes.

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