A Randomized Trial of Brimonidine Versus Timolol in Preserving Visual Function: Results From the Low-pressure Glaucoma Treatment Study

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PURPOSE: To compare the alpha2-adrenergic agonist brimonidine tartrate 0.2% to the beta-adrenergic antagonist timolol maleate 0.5% in preserving visual function in low-pressure glaucoma.

DESIGN: Randomized, double-masked, multicenter clinical trial.

METHODS: Exclusion criteria included untreated intraocular pressure (IOP) >21 mm Hg, visual field mean deviation worse than -16 decibels, or contraindications to study medications. Both eyes received twice-daily monotherapy randomized in blocks of 7 (4 brimonidine to 3 timolol). Standard automated perimetry and tonometry were performed at 4-month intervals. Main outcome measure was field progression in either eye, defined as the same 3 or more points with a negative slope =-1 dB/year at P < 5%, on 3 consecutive tests, assessed by pointwise linear regression. Secondary outcome measures were progression based on glaucoma change probability maps (GCPM) of pattern deviation and the 3-omitting method for pointwise linear regression.

RESULTS: Ninety-nine patients were randomized to brimonidine and 79 to timolol. Mean (± SE) months of follow-up for all patients was 30.0 ± 2. Statistically fewer brimonidine-treated patients (9, 9.1%) had visual field progression by pointwise linear regression than timolol-treated patients (31, 39.2%, log-rank 12.4, P = .001). Mean treated IOP was similar for brimonidine- and timolol-treated patients at all time points. More brimonidine-treated (28, 28.3%) than timolol-treated (9, 11.4%) patients discontinued study participation because of drug-related adverse events (P = .008). Similar differences in progression were observed when analyzed by GCPM and the 3-omitting method.

CONCLUSION: Low-pressure glaucoma patients treated with brimonidine 0.2% who do not develop ocular allergy are less likely to have field progression than patients treated with timolol 0.5%.

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