Comparison of the Effects of Latanoprostene Bunod and Timolol on Retinal Blood Vessel Density: A Randomized Clinical Trial

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PURPOSE: To compare the differences in retinal vessel density (VD) between topical administration of latanoprostene bunod (LBN) ophthalmic solution 0.024% and timolol maleate 0.5% in patients with open-angle glaucoma (OAG) or ocular hypertension (OHT) and normal subjects.

DESIGN: Randomized, single center, crossover clinical trial.

METHODS: Eligible subjects were examined during 6 study visits over 12 weeks. All subjects were randomized in a 1:1 ratio to LBN dosed once daily or timolol dosed twice daily in both eyes (OU) for a duration of 4 weeks each, separated by a 2-week washout period. A comprehensive eye examination OU was performed at each visit. Testing was performed with optical coherence tomography and optical coherence tomography angiography (optic nerve and macula) , as well as visual field examination, on the study eye at baseline and before and after each treatment.

RESULTS: One eye from each of 50 patients was enrolled (10 healthy patients, 26 patients with OHT, and 14 patients with OAG) . After administration of LBN there was significantly increased macular VD (0.76% [0.20%-1.33%], P = 0.009) and a trend in increasing peripapillary VD in patients with OAG and patients with OHT. In contrast, after administration of timolol, there were no differences in macular VD, and a decrease in peripapillary VD only was observed in the nasal inferior sector (-0.56% [-1.08% to -0.03%], P = .04) in patients with OAG and patients with OHT. No change in peripapillary or macular VD was observed in the normal subjects (P > .05 for all) .

CONCLUSIONS: Topical administration of LBN enhanced macular VD in patients with OAG or patients with OHT. In contrast, timolol administration did not have any effect on VD.

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