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Influence of blue light wavelength filtering intraocular lens on automated perimetry

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Purpose: To determine whether the blue light wavelength filtering intraocular lens affects automated perimetry. **Methods:** A randomized controlled trial was performed. Patients with senile cataract and no other significant ocular disease were enrolled in this study. Each eye undergoing cataract extraction was randomly assigned to receive an intraocular lens with (Acrysof Natural® or Acrysof IQ®) or without blue light filtering (Acrysof® or Sensar®). After one month of uncomplicated cataract surgery, the patients performed the standard automated perimetry, short-wavelength automated perimetry, and frequency doubling technology perimetry in a random order. The investigators performing the perimetry testing were masked to the type of intraocular lens the patients had received. The mean deviation (MD), pattern standard deviation (PSD), and foveal threshold indexes were analyzed. **Results:** A total of 24 patients (40 eyes) were included in this study. The differences in MD, PSD and foveal threshold between the eyes that had blue light filtering intraocular lenses and those which did not receive this type of lens were not statistically significant in the standard automated perimetry ($P = 1.00$) and frequency doubling technology perimetry ($P > 0.06$). Conversely, in the short-wavelength automated perimetry there were statistically significantly lower values in the MD (mean difference, 3.54 dB; 95% confidence interval, 1.90 to 5.17 dB; $P < 0.001$) and foveal threshold (mean difference, 2.5 dB; 95% confidence interval, 0.9 to 4.0 dB; $P = 0.001$), but not in the PSD ($P = 0.86$), in eyes with blue light filtering lens in comparison with eyes that received intraocular lenses without this filtering.

Conclusions: The blue light wavelength filtering intraocular lens causes a general reduction in the light sensitivity level in the short-wavelength automated perimetry. This fact should be taken into account when evaluating patients with this type of intraocular lens and diseases that affect the visual field