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Cataract Evaluation With An Objective Scattering Index Based On Double-pass Image Analysis

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Abstract:
Purpose: To evaluate the amount of intraocular scattering in cataract patients by using the Objective Scatter Index (OSI) provided by a double-pass instrument. We establish a quantitative comparison between this objective evaluation and some subjective procedures commonly employed to evaluate cataracts such as visual acuity (VA) and slit-lamp examination.
Methods: We selected a group of patients in different levels of cataract development from early stages to mature levels. A control group of young normal eyes was also evaluated with the same procedure. The subjective procedure consists in a preliminary exam of the VA with and without correction (UCVA and BSCVA) and the direct observation of the crystalline lens by the slit-lamp image from which a first gradation of the state of every cataract eye is assessed (from 0 to 4). The analysis by the double-pass instrument (OQAS, Visiometrics SL, Spain) provides an objective quantification of intraocular scattering not affected by the contribution of the ocular aberrations (Alcon et al. ARVO 2007).
Results: The scatter index (OSI) provided a robust tool to objectively classify cataract patients: OSI<2 for eyes without cataract, 2<OSI<5 for early cataracts and OSI>5 for the mature cataract eyes. In most of the patients, we find a correlation between the value of OSI and the BSCVA and UCVA and the previous classification by the slit-lamp images. However, some noticeable differences suggest the convenience of using an objective parameter to establish the severity of the cataract and its actual impact on the retinal image.
Conclusions: We evaluated the feasibility of using a scatter parameter OSI as a standard procedure in clinical environments to quantify the severity of cataracts. This objective parameter helps to take a sound decision about the convenience of scheduling the cataract surgery.
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