

CONTRAST SENSITIVITY IN CATARACT PATIENTS

Shiow-Wen Liou, Chun-Chen Chen

Purpose: to measure the change of contrast sensitivity function (CSF) in cataract patients and to evaluate the association between contrast sensitivity function and lens clarity.

Materials and methods: Examinations of contrast sensitivity function (using OPTEC 2000P) and visual acuity (using Snellen chart) were conducted on 332 consecutive patients with cataracts and 90 control eyes. The severity of cataract was graded by the Lens Opacities Classification System III (LOCS III). Data were analyzed by logistic regression models.

Results: In early cataracts, CSF was reduced at all spatial frequencies (SF). There was statistical significance ($p < 0.001$) only at high SF (12~18 cpd) for nuclear opalescence (NO) despite no change in Snellen visual acuity. The relationships between LOCS III severity and loss of CSF were significant ($p < 0.05$) at the following specific spatial frequencies: cortical, 6 to 18 cpd; NO and nuclear color (NC), 12 to 18 cpd; posterior subcapsular cataract (PSC), 6 to 18 cpd. The correlation coefficient (0.9) of visual acuity and medium-high spatial frequency was high for pure nuclear and cortical cataracts, but CSF was unrelated to visual acuity at low spatial frequencies.

Conclusions: Contrast sensitivity function of patients with cataract provided more information on visual dysfunction beyond visual acuity and played an important role in preoperative assessment.

Key words: contrast sensitivity, cataract.

INTRODUCTION

The assessment of visual function has traditionally been done through visual acuity tests like the Snellen or Landolt chart. However, acuity assesses only a portion of the entire visual field's area and measures mainly one visual talent; specifically, the

ability to resolve fine details at high contrast. It may not be sensitive enough to detect subtle changes in visual function. A patient may have normal acuity but still complain of poor performance in certain visual tasks like face perception and driving, especially at night. This has been observed in cataract patients who may do well on visual acuity tests but complain of difficulty in performing everyday tasks in the real

Received: August 8, 2000, Revised: October 23, 2000, Accepted: February 12 2001.

Department of Ophthalmology, Taipei Municipal Jen-Ai Hospital,

Correspondence and reprint requests to: Shiow-Wen Liou, Department of Ophthalmology, Taipei Municipal Jen-Ai Hospital, 10, Sec. 4, Jen-Ai Rd., Taipei, Taiwan.