

## **IS CRITICAL PRINT SIZE PREDICTABLE BY CENTRAL / EXTRA-FOVEAL ACUITY IN PATIENTS WITH CENTRAL FIELD DEFECTS?**

((E. Tanaka<sup>1</sup>, K. Oda<sup>2</sup>, Y. Nishiwaki<sup>1</sup>, K. Oshitari<sup>1</sup>, A. Hirakata<sup>1</sup>))

<sup>1</sup>Kyorin University School of Medicine, Dept. of Ophthalmology;

<sup>2</sup>Tokyo Woman's Christian University, Dept. of Communication, Tokyo, Japan

**PURPOSE:** In clinical practice, best visual acuity is measured as the primary indicator of remaining functional vision. When foveal acuity is not measurable, best acuity is usually obtained in some extra-foveal positions, esp. for patients with central scotoma. **Central visual field loss, such as caused by macular diseases, affects reading and disabled reading is most common and severe claim of these patients.** The question of this study is to ask how reading performance esp. critical print size (CPS) is predictable by the best acuity and other measures.

**METHOD:** Reading was measured with MNREAD-J for 16 eyes with macular diseases (7 Macular Hole, 5 Macular Pucker, 4 Macular Degeneration) and 11 fellow normal eyes in the same subjects as controls. Maximum reading speed (MRS), CPS and reading acuity (RA) were calculated for each eye. Visual acuity data were collected with Landolt-rings in both fovea and extra-foveal locus entailing best performance.

**RESULT:** While RA and central acuity showed relatively high correlations to CPS ( $r^2=0.72$ ,  $0.67$  respectively, both  $p<0.01$ ), to our surprise, best visual acuity did not show significant correlation ( $r^2=0.31$ ,  $p=0.11$  ns) when extra-foveal position was used. Regression analyses gave us the following equations;  $CPS=0.48 \times \text{central acuity} + 0.37$ ,  $CPS=0.88 \times RA + 0.40$ , and  $RA=0.49 \times \text{central acuity} + 0.0$  in logMAR unit. We could see this relationship as follows: RA was determined as half the central acuity regardless of the existence of better acuity in extra-fovea and CPS was raised from RA in 0.4 logMAR. MRS was independent from visual acuity and RA.

**CONCLUSION:** Central visual acuity is the better predictor of CPS compared to the best acuity in periphery, even in the patients with macular diseases. However, prediction is not well enough to substitute CPS measurement by central visual acuity test in fovea.

---- submitted to Vision '99 1998/11/28