

Balance control in glaucoma

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PURPOSE: To examine postural stability in glaucoma patients and subjects with no ocular disease.

METHODS: TWENTY-FOUR GLAUCOMA (G) AND 24 CONTROL (C) SUBJECTS PARTICIPATED (MEAN AGE \pm SD] G: 65.9 \pm 5.5] years; C: 68.3 \pm 5.2] years) . Postural stability was measured using a force-balance platform under four conditions: eyes open/closed standing on a firm surface and eyes open/closed on a foam surface. Average magnitude of center of foot pressure displacement (root mean square \pm RMS]) was calculated in the anteroposterior (AP) direction. The Romberg Quotient (RQ) was used to evaluate the visual contribution to balance. The difference in sway between firm and foam standing evaluated the relative somatosensory contribution to balance. The binocular mean deviation (BinMD) score was calculated from Humphrey 24-2 SITA strategy tests.

RESULTS: GLAUCOMA PATIENTS HAD A LOWER VISUAL CONTRIBUTION TO SWAY (AP RQ, G = 1.65 \pm 0.44]; AP RQ, C = 2.25 \pm 0.53], P = 0.0001) , AND HIGHER RELATIVE SOMATOSENSORY CONTRIBUTION TO SWAY (CHANGE IN AP RMS EYES OPEN FIRM TO FOAM STANDING: G = 4.12 \pm 1.85] mm, C = 2.22 \pm 2.04] mm, P = 0.002) . BinMD was a significant predictor of balance (AP RQ versus BinMD β -coefficient = 0.58, P = 0.0001; change in AP RMS \pm eyes open "firm" to "foam"] versus BinMD β -coefficient = -0.35, P = 0.02) .

CONCLUSIONS: Glaucoma patients display differences in their visual and somatosensory contributions to quiet standing balance compared with control subjects, associated with the degree of binocular visual field loss. This suggests that balance control may be compromised in this patient group.

Invest Ophthalmol Vis Sci. 2012 Nov 27;53(12) :7795-801. doi: 10.1167/iops.12-10866.

PMID: 23060145

<http://www.ncbi.nlm.nih.gov/pubmed/23060145>