

Association Between Visual Field Damage and Gait Dysfunction in Patients With Glaucoma

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IMPORTANCE: Gait dysfunction is common in older people with visual impairment and is a major cause of falls.

OBJECTIVE: To compare 3-year longitudinal changes in gait measures across the spectrum of baseline visual field (VF) damage in glaucoma.

DESIGN, SETTING, AND PARTICIPANTS: A post hoc analysis was designed on September 1, 2018, following a prospective cohort study, which enrolled older adults with glaucoma or suspected glaucoma from September 2013 to March 2015 and followed up for up to 3 years. Baseline VF damage was defined by integrated VF (IVF) sensitivity and categorized as normal/mild (IVF >28 dB) , moderate (IVF, 23-28 dB) , and severe (IVF, MAIN OUTCOMES AND MEASURES: Three-year changes in 7 gait assessments under usual-pace walking, including base support and its coefficient of variation, stride length and its coefficient of variation, stride velocity and its coefficient of variation, and cadence.

RESULTS: Of 241 participants, the mean (SD) age was 70.8 (7.7) years, 116 (48.2%) were women, and 70 (29.0%) were African American. When comparing longitudinal gait changes over 3 years across the spectrum of IVF sensitivity, each 5-unit (dB) decrement was associated with more rapid declines in stride velocity (-0.05 z score unit/y; 95% CI, -0.09 to -0.01; P = .01) and cadence (-0.07 z score unit/y; 95% CI, -0.10 to -0.03; P **CONCLUSIONS AND RELEVANCE:** At worse levels of baseline VF damage, patients with glaucoma in this study demonstrated an exacerbated decline in walking speeds (ie, stride velocity and cadence) , indicating that mobility speeds decrease faster over time in older adults with glaucoma.

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This is an important study which suggests that patients with glaucoma with advanced VF damage are more

prone to future declines in specific gait measures and the associated health-related consequences.

This paper was selected because gait dysfunction is a well-established predictor for falls, functional decline, and reduced quality of life in the older population, and it represents the first objective evidence of worse health trajectories in persons with more severe glaucoma.

Among the strengths of this study it should be highlighted its prospective nature, being cross-sectional the majority of published reports about the relationships between visual field damage and QoL measures. Moreover, it represents an important addition to prior studies that examined the relationships between VF damage and the changes in quality of life as their primary outcome.

Limitations of this study, highlighted by the authors themselves include that the generalizability of the results might be limited by the fact that participants were enrolled from a single clinical center, that the performance-based gait measures examined in a lab by walking on a flat surface with ambient lighting may not reflect the walking in the real world, and that visual field changes that might have occurred over the 3-years of follow-up were not considered as covariates, despite the chances they have occurred were judged to be low as this was a treated cohort population. Moreover, the findings of this study might be limited by the post hoc design, which increases the risk of detecting associations that may have occurred by chance.