

Loss of temporal peripapillary retinal nerve fibers in prediabetes or type 2 diabetes without diabetic retinopathy: The Maastricht Study

Citation for published version (APA):

Schouten, J. S. A. G., de Clerck, E. E. B., Berendschot, T. T. J. M., Beckers, H. J. M., Schaper, N. C., Schram, M. T., Stehouwer, C. D. A., & Webers, C. A. B. (2017). Loss of temporal peripapillary retinal nerve fibers in prediabetes or type 2 diabetes without diabetic retinopathy: The Maastricht Study. *Acta Ophthalmologica*, 95, 26-26. <https://doi.org/10.1111/aos.13419>

DOI:

[10.1111/aos.13419](https://doi.org/10.1111/aos.13419)

Document status and date:

Published: 01/04/2017

Document Version:

Publisher's PDF, also known as Version of Record (includes final page, issue and volume numbers)

Please check the document version of this publication:

- A submitted manuscript is the version of the article upon submission and before peer-review. There can be important differences between the submitted version and the official published version of record. People interested in the research are advised to contact the author for the final version of the publication, or visit the DOI to the publisher's website.
- The final author version and the galley proof are versions of the publication after peer review.
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Especially people with glaucoma frequently experience mobility restrictions, which may influence this association. Therefore, to determine the optimal approach for treating depression in this specific population, we investigated the potential mediating role of mobility restrictions in the association between visual impairment and depression.

Methods: A cross-sectional study in adult patients ($n = 83$, mean age 71 years, 60% male, 24% low vision) with the clinical diagnosis glaucoma was performed. A mean deviation of -12 dB or less and/or a decimal visual acuity of 0.32 or less in the best eye indicated having low vision. Depression was measured with the Patient Health Questionnaire-9 and mobility-related quality of life was assessed with the Glaucoma Quality of Life Questionnaire-15, with a central, peripheral, dark/light and outdoors subscale. Associations were investigated with linear and binary logistic regression analyses and mediation analysis.

Results: A clear significant association between glaucomatous visual impairment and depression was found (OR 1.7, $p = 0.02$). Furthermore, visual impairment was strongly associated with dark/light- and peripheral-related mobility restrictions (β 6.2, $p < 0.001$ and β 5.6, $p < 0.001$, respectively), followed by central- and outdoors-related mobility restrictions (β 2.2, $p < 0.001$ and β 0.9, $p < 0.001$, respectively). While on the other hand, depression was most strongly associated with outdoors- and central-related mobility restrictions (OR 2.4, $p < 0.001$ and OR 1.6, $p < 0.001$, respectively), followed by dark/light- and peripheral-related mobility restrictions (OR 1.2, $p < 0.001$ and OR 1.2, $p < 0.001$, respectively). When all mobility-related quality of life subscales were included as mediators, central- and peripheral-related mobility most strongly influenced the association between visual impairment and depression (indirect effect 0.6, 95% CI 0.02–1.1 and indirect effect 0.5, 95% CI 0.2–1.0, respectively). The total indirect effect of all subscales was greater than 1, which complicates the interpretation of the mediated proportions.

Conclusion: Based on these results we can conclude that especially central- and peripheral-related mobility play a significant role in the association between glaucomatous visual impairment and depression. Glaucoma patients with higher central- and peripheral-related mobility restrictions could be identified as those at risk of developing depression; a referral to low vision rehabilitation is recommended. Rehabilitation interventions could be targeted both directly at depression, for instance with the effective cognitive behavioural therapy-based stepped-care intervention that was developed by Van der Aa et al. (BMJ 2015;351:h6127) and at improving mobility to prevent and reduce mental health problems.

Loss of temporal peripapillary retinal nerve fibers in prediabetes or type 2 diabetes without diabetic retinopathy: The Maastricht Study

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Purpose: To assess thinning of the peripapillary retinal nerve fiber layer (RNFL) in prediabetes or type 2 diabetes without diabetic retinopathy (DM2 w/o DRP), compared with individuals with normal glucose metabolism (NGM).

Methods: We measured sectoral and mean RNFL thickness with a 3.45 mm diameter circular scan centered on the optic nerve head with spectral domain optical coherence tomography in 1172 participants from The Maastricht Study (population-based cohort study, mean age 59 \pm 8 years, 47% men, 699 NGM, 186 prediabetes, 287 DM2 w/o DRP). Multivariable linear regression was used to assess the association between RNFL thickness and glucose metabolism status, adjusted for age and sex.

Results: In individuals with prediabetes, the temporal RNFL was thinner compared with individuals with NGM after adjustment [$\beta = -2.28 \mu\text{m}$ (95% CI -4.44 to -0.13), $p = 0.04$], whereas in individuals with DM2 w/o DRP, the temporal inferior [$\beta = -3.66 \mu\text{m}$ (95% CI -6.46 to -0.85), $p = 0.01$], the temporal superior [$\beta = -2.99 \mu\text{m}$ (95% CI -5.95 to -0.02), $p = 0.05$], the temporal [$\beta = -2.73 \mu\text{m}$ (95% CI -4.62 to -0.84), $p < 0.01$], and the mean RNFL [$\beta = -1.88 \mu\text{m}$ (95% CI -3.51 to -0.26), $p = 0.02$] were thinner as compared with individuals with NGM.

Conclusion: Temporal RNFL thinning is already present in individuals with prediabetes. More widespread RNFL thinning occurs in individuals with DM2 w/o DRP, i.e. before vascular changes are detected. This suggests preferential retinal nerve fiber layer loss in areas related to the papillo-macular bundle.

Early phacoemulsification in the management of patients with acute angle closure

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Purpose: To evaluate the effect of phacoemulsification in the early management of acute angle closure (AAC) after treatment of an acute attack by medical therapy and performing standard laser peripheral iridotomy.

Methods: This retrospective analysis comprised 37 patients presenting with AAC and coexisting cataract between 2005 and 2015. Patients were included if they were treated through a standardized protocol, which comprised topical and systemic medical therapy and laser peripheral iridotomy. Patients underwent routine small incision phacoemulsification with implantation of an intraocular lens (IOL) in the bag by experienced surgeons within 3 months after the attack. The effect on intraocular pressure (IOP), number of antiglaucoma medications used, visual acuity and complications was assessed.

Results: Mean age was 69 ± 11 years, 22% male, mean refractive error 1.62 ± 1.85 diopters. Mean time between AAC and phacoemulsification was 38 ± 24 days. There were no intra and postoperative complications, however, in six eyes a capsular tension ring was used. IOP decreased significantly from 19 ± 9 preoperatively to 14 ± 5 mmHg 3 months postoperatively. Mean number of antiglaucoma medications used decreased from 3 ± 1 preoperatively to 1 ± 1 at 3 months postoperatively with 51% of patients totally off medications compared to 0% preoperatively. Visual acuity improved from 0.77 ± 0.93 log MAR (0.16 ± 0.12 Snellen) preoperatively to 0.27 ± 0.40 log MAR (0.54 ± 0.40 Snellen) 3 months after phacoemulsification.

Conclusions: After an attack of AAC in patients and coexisting cataract, routine small incision phacoemulsification with IOL implantation resulted in a significant reduction in IOP and antiglaucoma medications used. Although surgery may be challenging, results are good with significant improvement of visual acuity.

Evidence for white matter abnormalities in non-visual cortical tracts in monocular glaucoma

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Introduction: Glaucoma is a chronic, progressive, age-related optic neuropathy characterized by morphological changes at the optic nerve and retinal nerve fiber layer. Progressive death of retinal ganglion cells