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Correlation Between Sleep Apnea and Glaucoma Progression: A Longitudinal Study

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Obstructive sleep apnea (OSA) is a prevalent sleep disorder associated with intermittent hypoxia and systemic inflammation. Emerging evidence links OSA to glaucoma pathogenesis and progression, yet long-term data are limited. This 5-year prospective study monitored 300 glaucoma patients, stratified by OSA diagnosis, assessing visual field progression and optic nerve changes. OSA was diagnosed by polysomnography and treated with continuous positive airway pressure (CPAP) therapy in affected patients. Visual field mean deviation and retinal nerve fiber layer thickness were measured annually using standard automated perimetry and OCT.

Results showed that patients with untreated OSA exhibited significantly faster visual field deterioration (mean annual progression of -1.5 dB) and greater optic nerve thinning compared to non-OSA patients (-0.6 dB, $p < 0.01$). Those compliant with CPAP therapy had slower progression rates (-0.8 dB), suggesting a protective effect. Mechanisms may involve vascular dysregulation and oxidative stress induced by intermittent hypoxia. Screening for OSA in glaucoma patients is recommended to identify those at higher risk. Interdisciplinary management incorporating sleep medicine may improve visual prognosis and quality of life.

Biography

Dr. David Martinez is an Associate Professor of Ophthalmology at the University of Texas Southwestern Medical Center. His research focuses on the intersection of systemic health factors and ocular disease progression, aiming to improve understanding and management of vision-threatening conditions through a holistic, patient-centered approach.