

OCT ANGIOGRAPHY MAY HASTEN GLAUCOMA DIAGNOSIS

Scientists from the New York Eye and Ear Infirmary of Mount Sinai and the Icahn School of Medicine at Mount Sinai used optical coherence tomography (OCT) angiography to identify vascular factors that contribute to different types of glaucoma, according to a Mount Sinai press release.

"This is the first time we have been able to identify certain characteristic patterns of blood flow that correspond to different types of glaucoma, which may allow us to identify certain forms of glaucoma in their early stages," said lead investigator Richard Rosen, MD. "The findings could lead to new therapeutic strategies to avoid progressive damage in glaucoma patients, and provide a new metric for monitoring early damage that eventually leads to vision loss."

The researchers analyzed 92 patients over the age of 50 and divided them into three groups: those with primary open-angle glaucoma (POAG), those with normal-tension glaucoma (NTG), and those with no glaucoma.¹ The researchers developed software to map the perfused optic nerve capillaries in each eye to reveal the patterns of the blood vessels feeding the optic nerve fiber layer. They evaluated how the blood flow distribution differed among patients with POAG versus patients with NTG, then compared the patterns of the blood supply to the patterns of the optic nerve fiber layer loss. In POAG, the pattern of blood flow loss closely matched the optic nerve fiber loss, whereas in NTG cases, the pattern tended to be more diffuse.

"Normal-tension glaucoma is often picked up late because it is not recognized if patients don't have high pressure, causing them to lose nerve fiber and blood supply before diagnosis," said James C. Tsai, MD, MBA, chair, Department of Ophthalmology, Mount Sinai Health System. "This study points to vascular factors contributing to normal-tension glaucoma and we can use this to help identify ways to detect the disease earlier, and possibly prevent vision loss."

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1. Scipessma NK, Garcia PM, Baviera R. Optical coherence tomography angiography analysis of perfused peripapillary capillaries in primary open-angle glaucoma and normal-tension glaucoma. *Invest Ophthalmol Vis Sci*. 2016;57(9):OCT611-OCT620.

ENV515 (travoprost XR) Phase 2 Interim Data Show IOP Reduction

An interim analysis of ENV515 (travoprost XR; Envisia Therapeutics) phase 2 trial data showed clinically meaningful IOP reduction for 9 months after a single administration of the drug, according to a company press release. ENV515 demonstrated an IOP-lowering effect comparable to prestudy topical prostaglandin analogues (Xalatan [latanoprost ophthalmic solution; Pfizer] and Lumigan [bimatoprost ophthalmic solution; Allergan]) and in-study topical timolol maleate 0.5% ophthalmic solution (daily eye drops).

The ongoing phase 2 trial is a 12-month safety and efficacy evaluation that enrolled five glaucoma patients at sites within the United States. The mean IOP after a single dose of ENV515 was 19.4 mm Hg. ENV515 was well tolerated, and

there were no serious adverse events, no changes in corneal endothelial cell counts, and no changes in corneal thickness. The most common adverse event was early-onset transient hyperemia.

Encapsulated Cell Therapy May Stimulate Optic Nerve

The BrightFocus Foundation is funding a phase 2 clinical trial designed to test NT-501 encapsulated cell therapy (NT-501 ECT; Neurotech), an experimental glaucoma treatment, according to a press release.

NT-501 ECT consists of a capsule filled with human cells that have been genetically modified to secrete ciliary neurotrophic factor, which promotes nerve growth and activity.

The capsule, implanted into the eye, releases a steady stream of those growth factors to protect the optic nerve. The focus of this treatment is on ciliary neurotrophic factor growth factors that may help the eyes' retinal ganglion cells resist damage. The treatment has been previously tested in age-related macular degeneration and retinitis pigmentosa with no serious adverse effects to date.

Q Biomed Targeting Schlemm Canal With New Drug

Q BioMed is developing MAN-01, a first-in-class drug targeting Schlemm canal and its role in regulating IOP. No other glaucoma company is targeting the Schlemm canal, according to a company press release. This drug is currently in the lead optimization stage of its preclinical testing.

Dextenza Meets Efficacy Endpoints in Phase 3 Trial

In a phase 3 clinical trial, Dextenza (dexamethasone insert; Ocular Therapeutix) 0.4 mg met its two primary efficacy endpoints for inflammation and pain, according to a company press release. Dextenza is administered by a physician as a bioresorbable intracanalicular insert. It is designed for drug release to the ocular surface for up to 30 days.

The trial showed statistically significant differences between the treatment group and the placebo group for the absence of inflammatory cells on day 14 and the absence of pain on day 8. In the study, 52.3% of patients treated with Dextenza showed an absence of inflammatory cells in the anterior chamber of the study eye on day 14 compared to 31.1% of those receiving the placebo vehicle control punctal plug ($P < .0001$). Furthermore, 79.6% of patients treated with Dextenza reported an absence of pain in the study eye on day 8 compared to 61.3% of those receiving the placebo vehicle control punctal plug ($P < .0001$).

Dextenza has exhibited a strong safety profile and has been generally well tolerated, the company reports. There were no treatment-related serious adverse events observed in this trial. Dextenza inserts were visible in almost all subjects through day 30, with 99% present at the primary efficacy endpoint visits.

Secondary efficacy endpoints included differences between the Dextenza treatment group and the placebo group for the absence of anterior chamber cells at days 2, 4, 14, and 30 and for the absence of pain at days 2, 4, 14, and 30. All eight of these secondary endpoints were met at a level of statistical significance with the exception of the endpoint for the absence of anterior chamber cells at day 2.

This was the third phase 3 clinical trial that the company has conducted with Dextenza for the treatment of ocular inflammation and pain following ophthalmic surgery. Based on the results from the first two phase 3 clinical trials, Ocular Therapeutix submitted a new drug application (NDA) to the FDA for Dextenza for the treatment of ocular pain occurring after ophthalmic surgery. The third phase 3 clinical trial is part of the company's label expansion strategy for Dextenza. Accordingly, subject to the approval of the NDA for post-surgical ocular pain by the FDA, Ocular Therapeutix intends to submit an NDA supplement for Dextenza to broaden its label to include a postsurgical inflammation indication.

iStent Reduced IOP and Medication Use in Hispanic Population

A study of 134 predominantly Hispanic eyes with open-angle glaucoma (OAG) showed mean IOP of 12.9 mm Hg and a 61% decrease in mean medication burden 1 year following implantation of the iStent Trabecular Micro-Bypass Stent (Glaukos) in combination with cataract surgery.¹ The retrospective, consecutive case series included 168 eyes of 128 patients who underwent iStent implantation with concomitant cataract surgery, of which 134 eyes in 100 patients have been followed through 1 year. Study researchers reported that 87% of subjects had moderate to severe OAG and 80% were Hispanic, a population segment with a higher-than-average incidence and prevalence of OAG. Up to 21% of Hispanics are expected to develop OAG by age 80.²

All procedures in the series were performed at a single site in El Paso, Texas, by Mark J. Gallardo, MD. Before surgery, patients were placed into three subgroups in accordance with the surgeon's typical clinical practice and based on the patient's IOP level, medication burden, and treatment goal. In the 134 eyes with 1-year postoperative follow-up, the safety profile was favorable, and treatment success was achieved in all three subgroups.

"Importantly, these results were achieved in a real-life clinical setting, where the treatment goals differ by patient, based on their individual needs and disease state," Dr. Gallardo stated in the press release. "The study's high success rate overall and within each patient subgroup underscores the tangible benefits of using trabecular bypass stenting to manage IOP and medication burden in a demographically diverse glaucoma patient population." ■

1. Gallardo MJ, Supnet RA, Giamporcaro JE, Hornbeak DM. Outcomes of combined trabecular micro-bypass and phacoemulsification in a predominantly Hispanic patient population [published online ahead of print on October 11, 2016]. *Clin Ophthalmology*. doi: 10.2147/OPTH.S117403.

2. Varma R, Ying-Lai M, Francia BA, et al; Los Angeles Latino Eye Study Group. Prevalence of open-angle glaucoma and ocular hypertension in Latinos: the Los Angeles Latino Eye Study. *Ophthalmology*. 2004;111(8):1439-1448.