

INNOVATION AWARD: *John C. Hagan, III, MD, FACS, FAAO*

## Relief Promised for Acute Migraine Patients



Migraine is the most prevalent neurological disorder in the world and a leading cause of medical disability. Ophthalmologist

**John C. Hagan, III, MD, FACS, FAAO,** is championing a promising therapy that could soon bring relief to large numbers of acute migraine sufferers. For his efforts, Dr. Hagan has been chosen to receive the 2021 KCMS Innovation Award.

This therapy is the topical use of beta blockers in the form of eye drops or nasal spray to relieve acute migraine attacks. While oral administration of beta blockers is a staple of preventing chronic migraines, oral pills had been proven ineffective for quick-onset acute cases. The advantage of topical administration is that it is absorbed much more quickly into the blood stream.

Work was sparked by a casual conversation on the golf course in 2014. Kansas City ophthalmologist Carl Migliazzo, MD, mentioned to Dr. Hagan that he observed a number of his glaucoma patients experiencing acute migraine relief when they began taking beta blockers such as timolol 0.5% ophthalmic solution for their glaucoma.

“Carl, this is new knowledge; we have to write this up,” Dr. Hagan recalls telling his colleague.

Their paper appeared in the July-August 2014 edition of *Missouri Medicine*, the nationally indexed journal that Dr. Hagan edits for the Missouri State Medical Association. They reported seven cases where beta blocker eye drops were used success-

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fully to treat acute migraines.

This led to a clinical trial conducted jointly by the departments of ophthalmology and neurology at the University of Missouri-Kansas City, published in *JAMA Neurology* in 2018. It showed positive results. Another study published in 2020 in *JAMA Neurology* reported statistically significant benefit from the treatment in 50 patients.

More recent research by Dr. Hagan, who practices at Discover Vision Centers, has shown that intra-nasal is the preferred route for administering beta blocker solution. He worked with compounding pharmacist Eric Everett, PharmD, owner of O'Brien Pharmacy in Mission, Kan., to develop a prototype nasal spray; this work was published in the *International Journal of Pharmacy Compounding* in 2020.

Positive momentum continues. This September, Dr. Hagan gave a lecture on use of the beta blocker drops to the 2021 Migraine Symposium of the Association for Migraine Disorders. He has a scientific correspondence published in the October 26, 2021 issue of *JAMA*.

Besides this beta blocker work, Dr. Hagan has done other original research

including development of surgical instruments and was the first ophthalmic physician to report surgically re-implanting a traumatically extruded intra-ocular lens. He has published over 213 papers in peer-reviewed journals.

About the award, Dr. Hagan said, “I am honored and delighted to receive this award. In a career filled with clinical research, this is the most important I have ever done. My hope is that the award will draw attention to this innovative therapy for acute migraine and hopefully engender interest on the part of pharma to begin studies for commercial development, or stimulate a department of neurology to write a grant proposal for further study.”

Dr. Hagan is a past president KCMS and recently retired from the board after many years of service. ☺