
News in Review

COMMENTARY AND PERSPECTIVES

Rituximab Injections for Lymphoma

Following its systemic success, the monoclonal antibody rituximab has increasingly been used as local chemotherapy for vitreoretinal lymphoma, a diffuse large B-cell non-Hodgkin lymphoma.

Because of the rarity of the disease, intravitreal rituximab research has been minimal. For this reason, researchers at Casey Eye Institute in Portland, Ore., sought to fill in more pieces of the rituximab puzzle.

High remission rates. With the international cooperation of 12 subspecialty clinics, they collected retrospective data on 48 eyes of 34 patients—still small numbers, but the largest cohort of its kind to date.¹ The researchers found that rituximab, used either alone or in combination with intravitreal methotrexate, produced a complete or par-

tial remission in about 85 percent of treated eyes. This rate was comparable to that seen for methotrexate alone, a common treatment for vitreoretinal lymphoma.

Fewer injections. Although frequency of administration varied widely in the study, the median number of intravitreal rituximab injections was 3.5 until complete or partial remission. This is fewer than the average number used with methotrexate alone, said lead author, Kelly L. Larkin, MD, now with Houston Eye Associates in Texas.

“One commonly used intravitreal methotrexate



LYMPHOMA. Multifocal subretinal infiltrates in a patient with vitreoretinal lymphoma.

schedule is twice a week for a month, and then once a week for the next one to two months, then monthly for a total of one year,” said Dr. Larkin. This frequency and number of injections can prove a logistical challenge for patients who live far away from academic or large cancer centers, where this rare cancer is most commonly treated, she said. In addition, methotrexate can cause an irritating keratopathy.

Other complications. Complications reported in

12 eyes might have been related to rituximab, but there wasn’t strong evidence implicating either the drug or the injections in some of these complications, said Dr. Larkin. For example, nine of the eyes developed cataracts, but most of these were in older patients; in addition, eight of nine had a prior vitrectomy, which often leads to cataracts. Of the 12 eyes, only two had severe visual loss, defined as a 2-line loss of Snellen visual acuity.

Recurrence rates. Recur-

rence of vitreoretinal lymphoma continues to be problematic, despite the use of intravitreal rituximab, said Dr. Larkin. In this study, recurrence rates were no better than those with methotrexate alone.

Dr. Larkin said that she is hopeful that a drug now being studied, which is similar

to rituximab but with high affinity for CD16 and better tumoricidal activity in a mouse model, may prove more effective than both rituximab and methotrexate.

Owing to the retrospective nature of the study, its small numbers, and the wide variation in treatment

protocols, it is difficult to offer recommendations for a standardized rituximab treatment regimen, said Dr. Larkin. However, for the time being, combination therapy may be the best approach, she said. Vitreoretinal lymphoma is an aggressive disease, and it makes sense to treat

with polychemotherapy to eliminate as many tumor cells as possible.

—Annie Stuart

1 Larkin KL et al. *Br J Ophthalmol*. 2014;98(1):99-103.

Dr. Larkin has been an investigator for studies funded by AbbVie and JANIX.

Neuro News

Peripheral Prism Glasses: Effectiveness Confirmed

At last, a randomized controlled trial of prism glasses for hemianopia has been completed. These are not the traditional sector prism glasses that have been around for decades, but rather modern peripheral prism glasses. The researchers concluded that the spectacles invented in 1999 by Eli Peli, MSc, OD, at Schepens Eye Research Institute, are an effective, simple, and inexpensive mobility rehabilitation tool for patients with hemianopia.¹

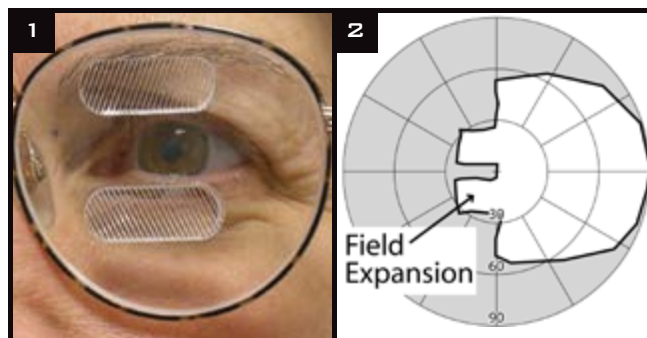
The Peli lens is a regular spectacle lens with high-power, rigid Fresnel prism segments embedded in the top and bottom, leaving the center prism-free. The prism segments optically expand the upper and lower visual fields, imaging objects from the blind side on the seeing side. “They provide constant visual field expansion while patients walk around; they act like an early warning system for objects on the blind side,”

said study author Alex Bowers, PhD, assistant professor of ophthalmology at Harvard Medical School and assistant scientist at Schepens Eye Research Institute and Massachusetts Eye and Ear Institute.

The study compared real versus sham peripheral prism glasses, addressing the lack of controlled trials identified in recent systematic reviews of interventions for homonymous visual field loss.²

Trial specs. Sixty-one participants wore two pairs of glasses, each for four weeks at home: a pair of real peripheral prism glasses and a pair of sham glasses, identical in appearance to the real pair. The real pair used 57 prism diopter segments positioned such that they provided up to 30 degrees of visual field expansion into the hemianopic field. The sham glasses provided less than 2 degrees of field expansion.

The study evaluated both



PERMANENT PERIPHERAL PRISM GLASSES. (1) Spectacles with oblique prisms for a patient with left hemianopia. (2) The prisms provide about 30 degrees of visual field expansion into the blind left visual field.

design (base out prisms) and a new “oblique” design (tilted prisms). “Although both designs were equally helpful for obstacle detection when walking, there’s been a lot of interest in the potential of prism glasses for driving,” said Dr. Bowers. “That’s why Dr. Peli invented an oblique design where the prisms are slightly tilted [at 25 degrees] to provide expansion in more central areas; i.e., in what you can see through the windshield.”

Results. A significantly higher proportion of participants wanted to continue using the real prisms (39 patients, 64 percent) rather than the sham prisms (22 patients, 36 percent; $p = 0.001$).

Participants reported that the main reason for selecting the real prism

glasses was that they were helpful for obstacle avoidance when walking. Those who selected the sham prisms reported that they gave them more comfortable vision or had caused fewer difficulties. “This highlights the importance of including a control when evaluating a rehabilitation device,” said Dr. Bowers.

“The next step should be a clinical trial with objective outcome measures that evaluate functional mobility performance,” Dr. Bowers said. —Gabrielle Weiner

1 Bowers AR et al. *JAMA Ophthalmol*. 2013 Nov. 7. [Epub ahead of print].

2 Pollock A et al. *Cochrane Database Syst Rev*. 2011;(10):CD008388.

Dr. Bowers reports no related financial interests.

Retina Report

App for Contrast Sensitivity

Until now it's been no simple task to detect the subtle, gradual vision changes that signal progression in chronic diseases such as glaucoma, diabetic retinopathy, and age-related macular degeneration (AMD). But recently, an efficient, reliable, and easy-to-use contrast sensitivity test utilizing an iPad was developed and validated by researchers based at Harvard Medical School and at the Center for Cognitive and Behavioral Brain Imaging at The Ohio State University.¹

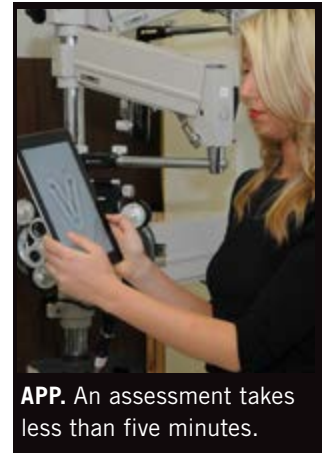
In the study, four normally sighted participants

repeatedly self-administered the iPad contrast sensitivity function (CSF) test; an ophthalmologist then performed a standard CSF test on each person. Results of the two test types were indistinguishable for all participants. All were able to complete the iPad CSF test in three to five minutes, suggesting that it would be highly efficient in clinical use. Six additional participants took the iPad CSF test under three different luminance conditions; small luminance-related changes were successfully captured for all six of them.

The study authors note

that these results are important because today's standard visual acuity tests are less-than-optimal for diagnosis and for tracking treatment responses. And while the standard CSF test provides a more comprehensive assessment that correlates well with visual performance in daily life, the test's reliance on expensive laboratory equipment makes it impractical for routine use by most ophthalmologists.

"As lab researchers working with top ophthalmologists, our goal was to come up with a CSF test that would be convenient for clinicians and patients alike," said Michael Dorr, PhD, a member of the Schepens Eye Research Institute team at the time of the study. "The new test makes it simple to track the subtle vision



APP. An assessment takes less than five minutes.

changes unique to each patient and enables individualized, personalized treatment." —Mary Wade

1 Dorr M et al. *Invest Ophthalmol Vis Sci.* 2013;54(12):7266-7273.

Dr. Dorr is currently chief technology officer of Adaptive Sensory Technology.

Glaucoma Update

Racial Variation in ONH Parameters in Newborns

Handheld spectral-domain optical coherence tomography (SD-OCT) is showing promise as a way of imaging the optic nerve head (ONH) in neonates. Use of this technology has provided insight into racial differences in the ONH.¹ These findings may help identify disease states in infants, and the data obtained can be used as a base to establish a normative dataset in newborns.

"We became interested in OCT as a means of studying these changes because it is

a quantitative, noninvasive method that is very well tolerated in children," said Mays A. El-Dairi, MD, assistant professor of neuro-ophthalmology and pediatric ophthalmology and strabismus at the Duke Eye Center in Durham, N.C.

"Early on, we were looking to use OCT to help diagnose and monitor glaucoma in children, and the establishment of a pediatric normative database became necessary. In our initial study of the eyes of normal children, using Stratus OCT,

we found racial variations in the optic nerve head and macular morphologies, as well as in the retinal nerve fiber layer distribution," she said.

"The aim of the current study was to determine whether these changes are present at birth," she said. The study included 58 consecutive newborns: 22 white, 15 black, and 21 Hispanic.

According to Dr. El-Dairi, the researchers' most important finding was that the cup-to-disc ratio in African-Americans is indeed larger from birth compared with that in Caucasians. Specifically, the mean vertical cup-to-disc ratio was 0.40 ± 0.17 in blacks, 0.34 ± 0.10 in whites, and 0.33 ± 0.20 in Hispanics.

Dr. El-Dairi added that

she hopes that the results of this study will shed light on the reasons behind African-Americans' higher risk of glaucoma.

In future studies, Dr. El-Dairi and her group will use segmentation software to characterize the peripapillary nerve fiber layer, as well as different layers of the macula in newborn infants. They expect to find similar racial variations in these areas. The researchers' goal is to develop a normative database for the handheld OCT that can be used to diagnose and manage infants with optic nerve or retinal diseases.—Marianne Doran

1 Allingham MJ et al. *J AAPOS.* 2013;17(5):501-506.

Dr. El-Dairi reports no related financial interests.