

# Journal Highlights

## NEW FINDINGS FROM *OPHTHALMOLOGY*, *AJO* AND *ARCHIVES*

### *Ophthalmology*

#### Monocular Drug Trial Poor Long-Term Predictor

July's *Ophthalmology*

For decades, ophthalmologists have accepted the monocular drug trial as a viable way of providing an estimate of long-term IOP reduction when initiating therapy with topical IOP-lowering medication. However, a study by **Tony Realini** questions the usefulness of this practice.

The investigator studied 26 patients with ocular hypertension or open-angle glaucoma who each made five study visits: two on no therapy, one on monocular therapy with latanoprost and two on bilateral therapy. The monocular therapeutic drug trial did not provide clinically relevant information regarding long-term IOP reduction after starting IOP-lowering medication. Even the unadjusted IOP change in first-treated eyes—not incorporating the monocular trial adjustment—showed poor correlation with long-term IOP reduction.

The author concludes that the monocular trial was no more informative than using the unadjusted IOP in the treated eye. Consequently, there is no value in leaving one eye untreated when trying to estimate efficacy.

#### Cerebral Infarct and Visual Field Progression

July's *Ophthalmology*

Previous studies have linked silent cerebral infarct (SCI) with the presence of normal-tension glaucoma (NTG). **Leung et al.** take these findings a step further, providing evidence that SCI may also play a role in visual field progression.

This study involved 286 eyes from 286 patients with NTG; 64 of whom had SCI and 222 who did not. They were followed every four months for 36 months for visual field progression. The researchers found that SCI was present in 29.6 percent of patients with progressive changes in visual field vs. 15.3 percent of field-stable patients. Cox proportional

hazards regression analysis showed that disc hemorrhage, systemic hypertension and central corneal thickness were associated with field progression. The most common location of SCI was at the basal ganglia. After adjusting for other risk factors, NTG patients with SCI had a 61-percent higher chance of visual field progression compared to those without SCI.

The researchers call for further studies on the relation of SCI and visual field progression.

#### Injection of Recombinant Microplasmin in Pars Plana Vitrectomy

July's *Ophthalmology*

**De Smet et al.** report findings from a phase 2a study on the use of recombinant microplasmin for intravitreal injection in human patients. This clinical trial involved 60 patients enrolled into six successive cohorts. Patients received a single intravitreal injection of microplasmin at one of four doses—25, 50, 75 and 125  $\mu\text{g}$  in 100  $\mu\text{l}$ . Doses were administered either one to two hours before planned pars plana vitrectomy for vitreomacular traction maculopathy or at 24 hours or seven days before the surgery.

Results showed that the use of microplasmin led to a progressively higher incidence of posterior vitreous detachment induction (as assessed by ultrasonography) with increasing time exposure. One retinal detachment developed shortly after microplasmin injection and two developed following surgery.

The researchers conclude that an effective dose of microplasmin combined with an appropriate exposure time may lead to a drug-induced posterior vitreous detachment and that this would simplify and perhaps obviate the anticipated surgery. However, randomized studies are necessary to determine the dose-response relationship and to confirm the efficacy and safety of the drug.



## Frontalis Suspension Using Fascia Lata Autografts

July's *Ophthalmology*

**Yoon and Lee** report a mixed outcome from a study assessing long-term functional and cosmetic outcomes after frontalis suspension using fascia lata autografts to treat congenital ptosis. This treatment approach resulted in high functional success rates over both the long and short term. However, while cosmetic success rates were high in the short term, they fell six months postsurgery.

The study involved 239 patients who underwent frontalis suspension using fascia lata autografts from 1998 to 2006. The functional success rates were 100 percent one month after surgery and 94 percent at the last follow-up period. Success of the cosmetic outcomes started out high in the early postoperative period, yet gradually decreased due to gradual elevation of lid height, medial inversion of eyelashes and poor lid creases.

The authors conclude that since cosmetic outcomes can deteriorate over time, these patients require both functional and cosmetic evaluations during both early and late postoperative periods.

*American Journal of Ophthalmology*

## Vitreomacular Adhesion's Relationship to AMD

July's *AJO*

In this case series, **Robison et al.** evaluated the vitreomacular relations in different stages of age-related macular degeneration. The investigators compared 29 previously untreated subjects who had active exudative AMD in one eye and active nonexudative AMD in the fellow eye with 10 previously untreated subjects with end-stage geographic atrophy in one eye and an end-stage fibrotic scar in the fellow eye. All subjects were studied with ultrasonography to identify the presence of posterior vitreous detachment (PVD) and with optical coherence tomography to detect vitreomacular adhesion (VMA).

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The incidence of PVD in exudative AMD eyes was 21 percent, compared with 69 percent of eyes with nonexudative AMD. VMA was present in 38 percent of eyes with exudative AMD and in only 10 percent of eyes with nonexudative AMD. The incidence of PVD in eyes with geographic atrophy was 70 percent, compared with 40 percent of eyes with disciform scar. VMA was present in no eyes with geographic atrophy and in 20 percent of eyes with disciform scars.

PVD seems to protect against exudative AMD, whereas VMA may promote exudative AMD. This phenomenon is not evident in end-stage disease because of an increased incidence of PVD and a decreased incidence of VMA in eyes with disciform scars.

## Variable-Dosing Regimen for Neovascular AMD

July's *AJO*

**Alwani et al.** reported the two-year results of the Prospective Optical Coherence Tomography Imaging of Patients With Neovascular Age-Related Macular Degeneration Treated With Intraocular Ranibizumab (PrONTO) study. The purpose of this two-year report was to evaluate the variable-dosing regimen that was based on OCT.

In this clinical study, AMD patients with neovascularization involving the central fovea and with a central retinal thickness (CRT) of at least 300  $\mu\text{m}$  as measured by OCT were enrolled to receive three consecutive monthly intravitreal injections of ranibizumab (0.5 mg). During the first year, re-treatment with ranibizumab was performed at each monthly visit if any criterion was fulfilled—such as an increase in OCT CRT of at least 100  $\mu\text{m}$  or a loss of five letters or more.

Forty patients were enrolled and 37 completed the two-year study. At month 24, the mean visual acuity improved by 11.1 letters and the OCT CRT decreased by 212  $\mu\text{m}$ . Visual acuity improved by 15 letters or more in 43 percent of patients. These outcomes

were achieved with an average of 9.9 injections over 24 months.

## Cystoid Macular Edema After Cataract Surgery in Patients With Uveitis

July's *AJO*

**Belair et al.** evaluated the incidence of cystoid macular edema after cataract surgery among eyes with and without uveitis and determined the risk factors for postoperative CME among eyes with uveitis.

In this study, 41 eyes with uveitis and 52 eyes without uveitis underwent clinical examination and OCT testing within four weeks before cataract surgery and at one- and three-month postoperative visits. Both uveitic and control eyes gained approximately three lines of vision. Incidence of CME at one month was 12 percent (five eyes) for uveitis and 4 percent (two eyes) for controls. Incidence of CME at three months was 8 percent (three eyes) for uveitis. There was no incidence of CME at three months for eyes without uveitis. Eyes with uveitis treated with perioperative oral corticosteroids had a sevenfold reduction in postoperative CME. In uveitic eyes, active inflammation within three months before surgery increased the risk of CME when compared with eyes without inflammation. CME was significantly associated with poorer vision.

## *Acanthamoeba* Keratitis Associated With Contact Lens Wear

July's *AJO*

**Por et al.** described an outbreak of *Acanthamoeba* keratitis cases among contact lens wearers.

The investigators obtained relevant demographic and clinical data from case records and interviewed patients using a standardized questionnaire. Contact lens practices, including type of contact lens and solution used, were noted. In addition, clinical features at presentation, management and clinical outcomes were recorded.

The study included 42 patients (with 43 affected eyes) treated between 2000 and 2007. Diagnosis was made

by microbiologic culture in 35 cases and by microbiologic and histologic analysis in two cases—whereas the remainder was diagnosed based on clinical features and response to treatment. There was a gradual increase in cases since 2005, with a sharp increase in 2007, when eight patients were treated. Of 30 patients for whom contact lens solution data were available, 18 reported using AMO's Complete brand multipurpose solution before the infection. Among cases treated since February 2006, seven (63 percent) of 11 patients used the Complete brand solution. Suboptimal hygiene practices were found in all patients.

Fifteen patients required corneal grafting with 11 undergoing therapeutic deep lamellar keratoplasty (DLK), two undergoing optical penetrating keratoplasty (PK), one undergoing optical DLK and one undergoing therapeutic PK. The remainder was treated successfully with combination anti-amebic therapy. The average duration of therapy was 116.2 days.

Of patients with radial keratoneuritis with or without epithelial disease, 83.3 percent achieved final vision of 20/40 or better, whereas this was achieved in 41.7 percent of those with ring infiltrate. Twenty-five percent of patients with ring infiltrate had final visual acuity of counting fingers or worse, whereas no patient with kera-

toneuritis and epithelial disease had final vision worse than counting fingers.

### *Archives of Ophthalmology*

#### **AMD and Cognitive Impairment**

*May's Archives*

**B**aker et al. examined the relationship of age-related macular degeneration and cognitive impairment in a community-based study of more than 2,000 people aged 69 to 97 years.

Participants had retinal photographs taken that were evaluated for AMD using the Wisconsin AMD grading system. To determine levels of cognition, researchers used the Digit Symbol Substitution Test (DSST), which measures the speed at which patients are able to substitute a symbol for a random succession of numbers.

After controlling for age, sex, ethnicity and study center, patients with a low DSST score were more likely to have early AMD than patients with higher scores. This association was stronger after further controlling for education level, systolic blood pressure, total cholesterol, diabetes, smoking status and apolipoprotein E genotype.

The study also evaluated cognitive function over time and found that a five-point decrease in DSST scores over a five-year period were sig-

nificantly associated with AMD. This finding suggests that declining cognitive function over time is also linked with AMD.

#### **Genetic Factors in Type 1 Diabetes**

*May's Archives*

**A**ssessing African-Americans with type 1 diabetes, Roy et al. found that single-nucleotide polymorphisms in 13 candidate genes involved in glucose metabolism, angiogenesis, inflammation, neurotransmission, hypertension and retinal development were significantly associated with severity of diabetic retinopathy. Three of these genes were also significantly associated with progression of retinopathy. Adjusting for clinical risk factors for diabetic retinopathy did not alter the results.

These findings support the role of genetic factors in accounting for severity and/or progression of diabetic retinopathy in type 1 diabetic African-Americans and identify several prime genes likely contributing to the risk of retinopathy.

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*Ophthalmology summaries are written by Lori Baker Schena and edited by John Kerrison, MD. American Journal of Ophthalmology summaries are edited by Thomas J. Liesegang, MD. Archives of Ophthalmology summaries are written by the lead authors.*

## ROUNDUP OF OTHER JOURNALS

### **Refractive Outcomes After Pars Plana Vitrectomy**

*Retina*

2009;29:487-491

**L**ee et al. described the visual acuity outcomes of patients undergoing phacoemulsification and IOL implantation after pars plana vitrectomy. The investigators then compared refractive errors after phacoemulsification and IOL implantation in vitrectomized and nonvitrectomized eyes.

The researchers reviewed office records of 45 patients undergoing

phacoemulsification after vitrectomy, focusing on BCVA before and two months after phacoemulsification. These 45 vitrectomized eyes (group V) were then compared to 50 nonvitrectomized eyes (group P). In group V, 41 of 45 eyes (91.1 percent) had an improved BCVA of more than one line after phacoemulsification and 28 eyes showed improvement of more than three lines (62.2 percent). While more hyperopic shift was seen in group V, no significant difference was found between the predicted refraction and postoperative refraction in both groups.

### **Digital Camera Telemedicine Imaging and Shaken Baby Syndrome**

*British Journal of Ophthalmology*

2009;93:424-428

**A** report by Saleh et al. shows the value of RetCam telemedicine imaging in detecting suspected abusive head injury when an ophthalmologist is not onsite to evaluate the patient. In this study, 21 children with suspected abusive head trauma due to shaken baby syndrome were examined both by standard ophthalmoscopy and RetCam-120 digital retinal camera

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photographs. These photographs were stored and later read remotely by an ophthalmologist. The children also underwent a CT scan and/or an MRI to detect intracranial hemorrhages.

Of the children examined, 85.7 percent presented with cerebral bleeding and 14 out of the 21 showed retinal hemorrhages on ophthalmoscopy. All of these retinal abnormalities were detected by the digital camera with one false-positive case reported. The sensitivity of the digital camera detection method was 100 percent with a specificity of 85.7 percent. Ultimately, the use of the digital camera helped to diagnose abusive head injuries in 92.8 percent of patients.

The authors conclude that the Ret-Cam represents a key telemedicine device for detecting abusive head trauma when an ophthalmologist is not present. The camera can be employed when decisions about a patient with suspected shaken baby syndrome must be made in a timely manner.

#### Goniotomy for Juvenile Open-Angle Glaucoma

*Journal of Glaucoma*

Published online April 16, 2009

**Y**eung and Walton have found that goniotomy represents a safe and effective treatment for acquired juvenile open-angle glaucoma.

They reviewed the medical records of 10 patients who underwent 20 goniotomy procedures for 17 eyes. The mean age at surgery was 16.3 years with a mean follow-up period of 7.8 years. They defined complete success as an IOP less than 21 mmHg, qualified success as an IOP less than 21 mmHg with use of glaucoma medications, and failure as an IOP greater than or equal to 21 mmHg even with medical therapy. Results showed an overall surgical success rate of 77 percent (13 out of 17 eyes). Complete success was achieved in nine eyes, qualified success in four and failure in four.

The authors conclude that while goniotomy is often employed as a first line of surgery for primary congenital glaucoma, practitioners should also

consider the procedure for uncontrolled juvenile open-angle glaucoma. They note that goniotomy is less traumatic, has fewer surgical complications and improves aqueous outflow through the drainage system of the eye. This is in contrast to approaches that create an artificial pathway and bypass this physiologic route.

#### Assessing Spatial Pattern of Rim Area Decline

*Investigative Ophthalmology & Visual Science*

Published online April 8, 2009

**A**ccording to Strouthidis et al., the accepted spatial pattern of neuroretinal rim loss in glaucoma was mostly established prior to the advent of semiautomated optic nerve head and retinal nerve fiber layer imaging devices. To shed new light on this subject, the investigators utilized the Heidelberg Retina Tomograph to assess the spatial pattern of rim-area decline in ocular hypertension.

For this study, 198 patients with ocular hypertension were examined with the Heidelberg Retina Tomograph. Linear regression of rim area/time was performed for each sector: temporal, superotemporal, inferotemporal, nasal, superonasal and inferonasal.

Results showed that the steepest mean slopes of rim-area loss were in the inferotemporal sector, followed by superotemporal, superonasal, inferonasal, nasal and temporal. Significant negative slopes were seen most frequently in the superotemporal sector, followed by inferonasal, inferotemporal, nasal, superonasal and temporal.

While the authors observed a steeper rate of rim-area loss in the superotemporal and inferotemporal sectors, they caution that clinicians must take into account the varying proportion of non-neural vascular tissue in each rim-area sector that could result in an underestimation of rim-area loss in the nasal sectors of the disc.

Roundup of Other Journals is written by Lori Baker Schena and edited by Deepak P. Edward, MD.