

AMERICAN JOURNAL OF OPHTHALMOLOGY®

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ORIGINAL ARTICLES

- **1 Macular damage in glaucoma is associated with deficits in facial recognition.** *Sitara H. Hirji, Jeffrey M. Liebmann, Donald C. Hood, George A. Cioffi, and Dana M. Blumberg*

This prospective cross-sectional study of 144 eyes assessed the relationship between glaucomatous macular damage, facial recognition, and contrast sensitivity. The results demonstrated a strong association between severity of glaucomatous macular damage and impairment in facial recognition that is in part due to deficits in contrast sensitivity. These findings highlight the importance of assessing the macula to fully understand the visual disability of glaucoma patients.

- **10 Densitometric profiles of optic disc hemorrhages in the Ocular Hypertension Treatment Study.** *Clara C. Cousins, Billy X. Pan, Jonathan C. Chou, Lucy Q. Shen, Mae O. Gordon, Michael A. Kass, Robert Ritch, and Louis R. Pasquale*

Optic disc photographs from patients with disc hemorrhages in the Ocular Hypertension Treatment Study were digitized and then underwent assessment of their densitometric profile relative to nearby retinal arterioles and venules. These hemorrhages had densitometric measurements more similar in magnitude to adjacent arterioles than venules, suggesting that they were of arterial origin.

- **20 Reticular bullous epithelial edema in corneas treated with netarsudil: a case series.** *C. Ellis Wisely, Katy C. Liu, Divakar Gupta, Alan N. Carlson, Sanjay G. Asrani, and Terry Kim*

This study is a retrospective case series describing the patient characteristics and clinical courses of an unusual

pattern of reticular bullous epithelial corneal edema in a series of patients treated with netarsudil. Five patients were identified, and most had a history of corneal edema. Pre-existing stromal edema shifted to the epithelium with netarsudil treatment. In most cases, decline in visual acuity was associated with initiation of netarsudil therapy and development of the reticular bullous epithelial edema.

- **27 Comparison of rate of change between Bruch's membrane opening minimum rim width and retinal nerve fiber layer in eyes showing optic disc hemorrhage.** *Hyun-kyung Cho and Changwon Kee*

In this longitudinal observational case series, Bruch's membrane opening-minimum rim width (BMO-MRW) demonstrated a significantly greater ROC than the retinal nerve fiber layer (RNFL) in eyes showing disc hemorrhage, which are prone to glaucomatous progression and are, therefore, of clinical importance. The percentage of rate reduction was significantly greater in BMO-MRW than in RNFL at inferotemporal and superotemporal sectors. Changes of glaucomatous deterioration may be detected earlier by BMO-MRW, the new parameter, than by RNFL because BMO-MRW can show visible reduction of progression better than RNFL.

- **38 In vivo confocal microscopy morphologic features and cyst density in *Acanthamoeba* keratitis.** *Reena Chopra, Pádraig J. Mulholland, and Scott C. Hau*

Specific in vivo confocal microscopy morphologic features in *Acanthamoeba* keratitis are useful prognostic indicators. Absence of single-file round/ovoid and rod/spindle-shaped objects were associated with a better final visual outcome. Single-file round/ovoid, rod/spindle-shaped, and binary round/ovoid objects were associated with the worst clinical

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presentation of deep stromal and ring infiltrate formation. Clusters of round/ovoid objects and a greater number of the various morphologic features were associated with a higher cyst density.

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- **49 Corneal biomechanical response alteration after scleral buckling surgery for rhegmatogenous retinal detachment.** *Leonardo Taroni, Federico Bernabei, Marco Pellegrini, Matilde Roda, Pier Giorgio Toschi, Ashraf M. Mahmoud, Costantino Schiavi, Giuseppe Giannaccare, and Cynthia J. Roberts*

Scleral buckling surgery for the treatment of rhegmatogenous retinal detachment affects corneal biomechanical deformation response by limiting corneal motion and reducing dissipation of energy through a stiffer sclera. In clinical practice, routine intraocular pressure measurement is still performed by mechanical methods, but nomograms do not account for corneal/scleral biomechanical modification. Hence, a conventional algorithm for glaucoma diagnosis and follow-up may not be appropriate in these patients.

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- **55 Association between 17- β -Estradiol and Interleukin-8 and visual field progression in postmenopausal women with primary angle closure glaucoma.** *Shengjie Li, Haichen Zhang, Mingxi Shao, Yingzhu Li, Yunxiao Song, Xinghuai Sun, and Wenjun Cao*

This prospective cross-sectional and cohort study shown that decreased 17- β -estradiol and increased interleukin-8 levels at baseline are significant predictors of visual field progression in postmenopausal women with primary angle closure glaucoma. A significant negative correlation was observed between interleukin-8 levels and 17- β -estradiol. These findings suggest that high levels of estrogen may retard glaucoma-related VF progression via its anti-inflammatory effect.

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- **68 Horizontal transposition of the vertical rectus muscles to correct a head tilt in 5 patients with idiopathic nystagmus syndrome.** *Alexander de Castro-Abeger, Nancy M. Benegas, Burt Kushner, and Sean P. Donahue*

Idiopathic nystagmus syndrome can be associated with adoption of an abnormal head position in the null point of the nystagmus. Most often, this results in a head turn. However, rarely, this can result in an abnormal head tilt. Surgical correction of the abnormal head tilt by sagittal transposition of the vertical rectus muscles was successful for 5 patients in this retrospective case review with no complications, such as anterior segment ischemia.

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- **74 Ten-year Incidence of Cataract Surgery in Urban Southern China: The Liwan Eye Study.** *Lanhua Wang, Rui Gong, Stuart Keel, Zhuoting Zhu, and Mingguang He*

This population-based cohort study of a Chinese population showed that the overall 10-year incidence of cataract surgery was 9.4%, which was much lower than the incidence reported in developed countries. In the multivariate logistic regression model, higher income, higher education level, and the presence of diabetes were positively associated with 10-year incidence of cataract surgery.

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- **81 Accuracy of new generation intraocular lens calculation formulas in vitrectomized eyes.** *Xuhua Tan, Jiaqing Zhang, Yi Zhu, Jingmin Xu, Xiaozhang Qiu, Guangyao Yang, Zhenzhen Liu, Lixia Luo, and Yizhi Liu*

This study compared the prediction accuracy of intraocular lens calculation formulas in vitrectomized eyes. Without constants optimization, more hyperopic shifts were noticed, except for the Kane formula. The Barrett Universal II, Emmetropia Verifying Optical, Kane, and Haigis formulas displayed comparable performance with optimized constants. In vitrectomized highly myopic eyes, the new formulas and traditional formulas with Wang-Koch axial length adjustment exhibited

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satisfactory prediction accuracy. Silicone oil tamponade did not affect the prediction accuracy of formulas using an IOLMaster 700.

• **91 Peripapillary scleral bowing increases with age and is inversely associated with peripapillary choroidal thickness in healthy eyes.** *Ya Xing Wang, Hongli Yang, Haomin Luo, Seung Woo Hong, Stuart K. Gardiner, Jin Wook Jeoung, Christy Hardin, Glen P. Sharpe, Kouros Nouri-Mahdavi, Joseph Caprioli, Shaban Demirel, Christopher A. Girkin, Jeffrey M. Liebmann, Christian Y. Mardin, Harry A. Quigley, Alexander F. Scheuerle, Brad Fortune, Balwantray C. Chauhan, and Claude F. Burgoyne*
This study characterized peripapillary scleral bowing in non-highly myopic healthy eyes by using 2 novel parameters, one parameter based on the slope of the peripapillary sclera and the other parameter based on the depth of anterior scleral canal opening relative to a peripapillary reference plane. In 362 non-highly myopic healthy eyes, outward peripapillary scleral bowing achieved substantial levels, was markedly increased with age, and was independently associated with decreased peripapillary choroidal thickness. These findings provide a normative foundation for characterizing this anatomy in high myopia and glaucoma and in eyes with optic disc tilt, torsion, and peripapillary atrophy.

• **104 Choroidal Anatomic Alterations After Photodynamic Therapy for Chronic Central Serous Choroidopathy: A Multicenter Study.** *Claudio Iovino, Adrian Au, Jay Chhablani, Deepika C. Parameswarappa, Mohammed Abdul Rasheed, Gilda Cennamo, Giovanni Cennamo, Daniela Montorio, Allen C. Ho, David Xu, Giuseppe Querques, Enrico Borrelli, Riccardo Sacconi, Francesco Pichi, Elizabeth Woodstock, Srinivas R. Satta, Giulia Corradetti, Camiel J.F. Boon, Elon H.C. van Dijk, Anat Loewenstein, Dinah Zur, Sugiura Yoshimi, K. Bailey Freund, Enrico Peiretti, and David Sarraf*

Patients receiving photodynamic therapy show a significant decrease in total choroidal area and luminal choroidal area at 1 month after treatment. The results of our study suggest that quantification of these choroidal parameters, in addition to subfoveal choroidal thickness, may provide additional quantitative biomarkers to evaluate the choroidal anatomic response to therapy, but this awaits further prospective validation.

• **114 Descemet membrane endothelial keratoplasty: ten-year graft survival and clinical outcomes.** *Indrè Vasiliauskaitė, Silke Oellerich, Lisanne Ham, Isabel Dapena, Lamis Baydoun, Korine van Dijk, and Gerrit R.J. Melles*
This retrospective study presents the first 10-year clinical outcomes and graft survival data for a cohort of 100 Descemet membrane endothelial keratoplasty (DMEK) cases. This very first DMEK cohort, who underwent surgery mainly for Fuchs' endothelial corneal dystrophy, shows excellent and stable clinical outcomes with low postoperative complication rates and promising graft longevity over the first postoperative decade. This suggests that DMEK may be a safe long-term treatment option for corneal endothelial diseases.

• **121 Association of cardiovascular mortality and deep learning-funduscopy atherosclerosis score derived from retinal fundus images.** *Jooyoung Chang, Ahryoung Ko, Sang Min Park, Seulgie Choi, Kyuwoong Kim, Sung Min Kim, Jae Moon Yun, Uk Kang, Il Hyung Shin, Joo Young Shin, Taehoon Ko, Jinho Lee, Baek-Lok Oh, and Ki Ho Park*
The prediction of atherosclerosis using retinal fundus images and deep learning has not been shown possible. This study develops and validates a deep-learning model for atherosclerosis prediction by using retinal fundus images. A retrospective cohort analysis of cardiovascular mortality outcomes using this deep-learning funduscopy atherosclerosis score (DL-FAS) shows significantly added value beyond the Framingham risk score. The DL-FAS may

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allow retinal fundus imaging to be used as a noninvasive screening tool for cardiovascular disease.

• **131 Gradient-boosting Classifiers Combining Vessel Density and Tissue Thickness Measurements for Classifying Early to Moderate Glaucoma.** *Christopher Bowd, Akram Belghith, James A. Proudfoot, Linda M. Zangwill, Mark Christopher, Michael H. Goldbaum, Huiyuan Hou, Rafaella C. Pentado, Sasan Moghimi, and Robert N. Weinreb*
This cross-sectional observational study compares gradient-boosting classifier (GBC) analysis of optical coherence tomography angiography (OCTA)-measured vessel density (VD) and OCT-measured tissue thickness to that of standard OCTA VD and OCT thickness parameters for classifying healthy eyes and eyes with early to moderate glaucoma. A total of 108 healthy eyes and 193 glaucomatous eyes that had undergone OCTA and OCT imaging of the macula and optic nerve head (ONH) were studied. Several GBCs were evaluated that combined macula and ONH VD and thickness measurements. Results suggest that GBCs that combine OCTA and OCT macula and ONH measurements can improve diagnostic accuracy for detection of glaucoma compared to most but not all instrument-provided parameters.

• **140 Corneal abnormalities are novel clinical feature in Wolfram syndrome.** *Arleta Waszczykowska, Agnieszka Zmysłowska, Marcin Braun, Emil Zielonka, Marilyn Ivask, Sulev Koks, Piotr Jurowski, and Wojciech Młynarski*
This study summarized the evaluation of corneal features among Wolfram syndrome (WFS) patients showing that progressive corneal abnormalities similar to keratoconus are frequently present in WFS. Experimental studies on a mouse model of WFS confirmed changes in corneal thickness and cellular epithelial structure in *WFS1* gene knockout mice as compared to mice with normal function of the *WFS1* gene. Moreover, *WFS1* protein, known as

wolframin, has been shown to be expressed in human and mouse normal cornea.

• **152 Comparison of Vitreomacular Interface Changes in Myopic Foveoschisis and Idiopathic Epiretinal Membrane Foveoschisis.** *Denise Vogt, Stefan Stefanov, Stefanie R. Guenther, Felix Hagenau, Armin Wolf, Siegfried G. Priglinger, and Ricarda G. Schumann*
Myopic foveoschisis and idiopathic epiretinal membrane foveoschisis are characterized by similar fibrocellular components of pathologic premacular tissue. Since abnormalities of the internal limiting membrane were exclusively present in high myopia, modification of peeling techniques might be key for surgical success.

• **162 Determinants of cone and rod functions in geographic atrophy: AI-based structure-function correlation.** *Maximilian Pfau, Leon von der Emde, Chantal Dysli, Philipp T. Möller, Sarah Thiele, Moritz Lindner, Matthias Schmid, Daniel L. Rubin, Monika Fleckenstein, Frank G. Holz, and Steffen Schmitz-Valckenberg*
In the setting of geographic atrophy, this study demonstrates that retinal sensitivity may be inferred from structural retinal imaging by using artificial intelligence algorithms such as “random forest” regression. In contrast to burdensome fundus-controlled perimetry testing (or microperimetry), this approach provides sensitivity maps which surpass the limits of psychophysical testing in terms of area covered and spatial resolution.

• **174 Young adults with anterior ischemic optic neuropathy: a multicenter optic disc drusen study.** *Steffen Hamann, Lasse Malmqvist, Marianne Wegener, Masoud Aghsaei Fard, Valérie Biousse, Lulu Bursztyn, Gülsenay Citirak, Fiona Costello, Alison V. Crum, Kathleen Digre, J. Alexander Fraser, Ruth Huna-Baron, Bradley Katz, Mitchell Lawlor, Nancy J. Newman, Jason H. Peragallo, Axel Petzold, Patrick A. Sibony, Prem S. Subramanian, Judith*

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E.A. Warner, Sui H. Wong, and Clare L. Fraser, on behalf of the Optic Disc Drusen Studies Consortium

A series of 65 young (<50 years) patients with non-arteritic anterior ischemic optic neuropathy (NA-AION) were examined systematically including using OCT for the presence of optic disc drusen (ODD). ODD was much more prevalent in this patient group than would be expected for the population (51% vs 2%). This discrepancy cannot be accounted for by differences in vascular risk factors, suggesting ODD as a new risk factor for NA-AION, at least in young patients.

• **182 Outcomes after Müller muscle conjunctival resection versus external levator advancement in severe involutional blepharoptosis.** *Adam R. Sweeney, Christopher R. Dermarkarian, Katherine J. Williams, Richard C. Allen, and Michael T. Yen*

Müller muscle conjunctival resection ptosis repair is effective in treating patients with severe ptosis and may offer superior outcomes to external levator resection ptosis repair.

• **189 Lacrimal gland hamartoma (formerly termed dacryoadenoma).** *Tatyana Milman, Frederick A. Jakobiec, Sara E. Lally, Jerry A. Shields, Carol L. Shields, and Ralph C. Eagle, Jr*

This clinical-pathologic study of four isolated epibulbar lacrimal gland lesions, one complex choristoma, and three normal lacrimal gland tissues confirmed that isolated epibulbar lacrimal gland lesions differ morphologically and immunohistochemically from normal lacrimal gland and the lacrimal gland in a complex choristoma. These differences range from subtle to overt, suggesting that isolated epibulbar lacrimal gland lesions may have originated from precursor cellular elements indigenous to the conjunctiva (hamartia) and grew into disorganized lacrimal gland tissue.

• **198 Evaluation of tear protein markers in dry eye disease with different lymphotoxin-alpha expression levels.** *Haiyan Chen, Huijie Chen, Lifang Liang, Yanyan Zhong, Yingying Liang, Ying Yu, Shuxin Huang, and Xiaohu Lu*

Comparing tear protein maker of dry eye (DE) in different lymphotoxin-alpha (LT- α) levels showed that multiple tear protein markers were significantly elevated in the high LT- α DE group, indicating the involvement of different inflammatory processes. The level of interleukin-1 receptor antagonist correlated with the ocular surface parameters in DE, which could be the potential biomarker in tears to replace the Schirmer I test. LT- α and interleukin 17-A and tumor necrosis factor-alpha and LT- α were positively correlated in tears.

• **212 Initial high-dose prophylaxis and extended taper for mushroom keratoplasty in vascularized herpetic scars.** *Angeli Christy Yu, Asaf Friehmann, James Myerscough, Sergiu Socea, Luca Furiosi, Guiseppa Giannaccare, Cristina Bovone, and Massimo Busin*

Initial high-dose and extended taper of antiviral and steroid prophylaxis results in excellent visual outcomes and early stabilization of endothelial cell loss in eyes with vascularized herpetic corneal scars that underwent 2-piece mushroom keratoplasty. Though their prognosis after conventional keratoplasty is widely considered poor, modifications of medical and surgical treatment employed in this study suggest that these cases can be managed successfully with reduced rates of herpetic recurrence, immunologic rejection and graft failure over 10 years.

• **224 Posterior capsule opacification with two hydrophobic acrylic intraocular lenses: 3-year results of a randomized trial.** *Christina Leydolt, Daniel Schartmüller, Luca Schwarzenbacher, Veronika Röggla, Sabine Schriefl, and Rupert Menapace*

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The hydrophobic acrylic Vivinex XY1 IOL showed significantly lower PCO rates and lower YAG rates compared to the AcrySof SN60WF IOL three-years post-operatively in this intra-individual compared randomized controlled trial.

• **232 Five-year changes in corneal astigmatism after combined femtosecond-assisted phacoemulsification and arcuate keratotomy.** *Tommy C.Y. Chan, Alex L.K. Ng, Zheng Wang, John S.M. Chang, and George P.M. Cheng*

The effect of corneal astigmatism after femtosecond arcuate keratotomy remained stable over 5 years. There was a tendency toward increasing overcorrection of preoperative with-the-rule corneal astigmatism and undercorrection of against-the-rule corneal astigmatism over time.

• **240 A comparison study of polypoidal choroidal vasculopathy imaged with indocyanine green angiography and swept-source optical coherence tomography angiography.** *Kiyoung Kim, Jin Yang, William Feuer, Giovanni Gregori, Eung Suk Kim, Philip J. Rosenfeld, and Seung-Young Yu*

This study involved treatment-naïve polypoidal choroidal vasculopathy (PCV) eyes with indocyanine green angiography (ICGA) and swept-source optical coherence tomography angiography (SS-OCTA). Both images were independently graded and compared with respect to the number of polyps and total lesion area, which included both the polyps and the branching vascular networks. SS-OCTA imaging correctly diagnosed the focal areas of atrophy and the serous retinal pigment epithelial detachment. SS-OCTA imaging was comparable and might be better than ICGA in correctly identifying both polypoidal lesions and branching vascular networks in treatment-naïve PCV.

• **252 Differences in intraretinal pigment migration across inherited retinal dystrophies.** *Jin Kyun Oh, Sarah R. Levi, Joonpyo Kim, Jose Ronaldo Lima de Carvalho, Jr, Joseph Ryu, Janet R. Sparrow, and Stephen H. Tsang*

This study describes the analysis of a retrospective cohort of 392 patients with inherited retinal dystrophies and the prevalence of intraretinal pigment migration across 3 different gene categories: ciliary, nonciliary photoreceptor, and retinal pigment epithelium (RPE)-specific genes. Significant differences were seen across gene categories at all ages as fewer patients with RPE-specific gene mutations exhibited intraretinal pigment compared to patients with photoreceptor-specific gene mutations.

• **261 Physician assistants in ophthalmology: a national survey.** *Benjamin Lee, Timothy C. McCall, Noël E. Smith, Mark A. D'Souza, and Divya Srikumaran*

Physician assistants in ophthalmology currently provide a range of ophthalmic services and the development of training programs might expand the pool of qualified providers.

• **268 Optical Coherence Tomography Angiography Avascular Area Association With 1-Year Treatment Requirement and Disease Progression in Diabetic Retinopathy.** *Qi Sheng You, Jie Wang, Yukun Guo, Shaohua Pi, Christina J. Flaxel, Steven T. Bailey, David Huang, Yali Jia, and Thomas S. Hwang*

Extrafoveal avascular areas detected by optical coherence tomography angiography in diabetic eyes are significantly associated with baseline diabetic retinopathy severity, disease progression, and treatment requirement over 1 year.

• **278 In vivo evaluation of corneal nerves and epithelial healing after treatment with recombinant nerve growth factor for neurotrophic keratopathy.** *Leonardo*

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Mastropasqua, Manuela Lanzini, Harminder Sing Dua, Alessandro D' Uffizi, Marta Di Nicola, Roberta Calienno, Jessica Bondi, Dalia G. Said, and Mario Nubile

This study analyzes, by means of in vivo confocal microscopy, corneal reinnervation induced by topical treatment with recombinant nerve growth factor in patients affected by neurotrophic keratopathy. The results evidence a significant increase of density, ramification, and diameter of subepithelial nerve observed in 8 weeks of follow-up. Moreover, a complete epithelial healing was observed in all the patients, together with a significant increase of corneal sensitivity and tear film production.

• **287 Association of scleral deformation around the optic nerve head with central visual function in normal-tension glaucoma and myopia.** *Soo Ji Jeon, Hae-Young Lopilly Park, Yong Chan Kim, Eun Kyoung Kim, and Chan Kee Park*

Some normal tension glaucoma patients with myopia had worse central visual field than peripheral. The subjects with worse central visual field had greater scleral deformations at the regions near the optic nerve head.

• **297 Allogenic simple limbal epithelial transplantation versus amniotic membrane grafting in the early management of severe-grade ocular chemical injuries—a retrospective comparative study.** *Shweta Agarwal, Bhaskar Srinivasan, Rishi Gupta, and Geetha Iyer*

This paper seeks to highlight the benefits of allogenic simple limbal epithelial transplantation (alloSLET) in the acute stage of severe ocular chemical injury, by retrospectively comparing the outcomes of alloSLET in grade 4 or worse eyes with our own earlier experience with amniotic membrane grafting alone for similar-grade injuries at our tertiary eye care center.

• **305 The effect of attention on fixation stability during dynamic fixation testing in Stargardt disease.** *Etienne M.*

Schönbach, Rupert W. Strauss, Mohamed A. Ibrahim, Jessica L. Janes, Artur V. Cideciyan, David G. Birch, Janet S. Sunness, Eberhart Zrenner, Michael S. Ip, Xiangrong Kong, Srinivas R. Sadda, and Hendrik P.N. Scholl, for the ProgStar Study Group

In this international, multicenter, prospective cross-sectional study of molecularly confirmed cases of Stargardt disease type 1, the authors demonstrate that simultaneous perimetry testing during fixation tracking is associated with more unstable fixation. This persists even after eliminating the effect of test duration. The authors find that some patients with certain altered fundus autofluorescence patterns of the fovea are able to keep stable fixation only for a limited duration.

• **317 Epidemiology and clinical characteristics of episcleritis and scleritis in Olmsted County, Minnesota.** *Timothy T. Xu, Margaret M. Reynolds, David O. Hodge, and Wendy M. Smith*

This population-based study reports a lower incidence of episcleritis and higher incidence of scleritis than prior studies. Less than 25% of the scleritis patients had an associated systemic disease, and females were not more likely to have scleritis. In comparison to tertiary care center cohorts, the scleritis cases were less severe in terms of treatment required, complications, and recurrences. These findings may provide valuable information that is applicable to a primary eye care setting.

• **325 Prognostic utility of whole-genome sequencing and polymerase chain reaction tests of ocular fluids in postprocedural endophthalmitis.** *Cecilia S. Lee, Bryan Hong, Sundeep K. Kasi, Christopher Aderman, Katherine E. Talcott, Murtaza K. Adam, Bryan Yue, Lakshmi Akileswaran, Kenji Nakamichi, Yue Wu, Kasra A. Rezaei, Lisa C. Olmos de Koo, Yewlin E. Chee, Aaron Y. Lee, Sunir J. Garg, and Russell N. Van Gelder, on behalf of the Endophthalmitis Study Group*

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Molecular detection of DNA from non-*Staphylococcus epidermidis* bacteria and torque teno virus is associated with worse outcomes in postprocedure endophthalmitis. Bacteria presenting with higher loads of non-*S epidermidis* pathogen DNA correlate with worse visual outcomes. The presence of and viral load of torque teno virus are associated with the need for secondary pars plana vitrectomy, particularly for retinal detachment.

• 335 **Age-related macular degeneration: Nutrition, genes and deep learning—The LXXVI Edward Jackson Memorial Lecture.** *Emily Y. Chew*

“You are what you eat.” In addition to the beneficial effect of supplements with antioxidant vitamins and minerals, high adherence to the Mediterranean diet was associated with reduction of risk of progression to late age-related macular degeneration (AMD), especially geographic atrophy. This beneficial effect was greater in those patients with the protective genetic alleles of complement factor H. The use of deep learning in detecting and classifying AMD

may help in future clinical research and in medical management.

CORRESPONDENCE

- 348 **Comment on: management of congenital aniridia-associated keratopathy: long-term outcomes from a tertiary referral center.** *Deepali Singhal, Ritu Nagpal, and Prafulla K. Maharana*
- 349 **Reply to comment on: management of congenital aniridia-associated keratopathy: long-term outcomes from a tertiary referral center.** *Ghasem Yazdanpanah, Maria S. Cortina, and Ali R. Djalilian*
- 350 **Comment on: Racial, ethnic, and socioeconomic disparities in retinoblastoma enucleation: a population-based study, SEER 18 2000–2014.** *Sandra M. Brown*
- 351 **Reply to comment on: racial, ethnic, and socioeconomic disparities in retinoblastoma enucleation: a population-based study, SEER 18 2000–2014.** *Nitya Rajeshuni, Alice S. Whittemore, Cassie A. Ludwig, Prithvi Mruthyunjaya, and Darius M. Moshfeghi*

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