showed that African-American race was associated with a reduced risk of early/intermediate AMD (adjusted odds ratio [AOR] = 0.08, confidence interval [CI] 0.01–0.67) and neovascular AMD (AOR = 0.15, CI = 0.03–0.72).[6] In order to elucidate any postcataract surgery uveitis as a primary etiology for conversion to neovascular AMD, it would require a separate prospective well-designed longitudinal study.

MINA B. PANTCHEVA
Aurora, Colorado

REFERENCES

1. Reddy AK, Patnaik JL, Miller DC, Lynch AM, Palestine AG, Pantcheva MB. Risk factors associated with persistent anterior uveitis after cataract surgery. *Am J Ophthalmol* 2019; https://doi.org/10.1016/j.ajo.2019.02.016.
2. Donoso LA, Kim D, Frost A, Callahan A, Hageman G. The role of inflammation in the pathogenesis of age-related macular degeneration. *Surv Ophthalmol* 2006;51(2):137–152.
3. van der Schaft TL, Mooy CM, de Bruijn WC, Mulder PG, Pameyer JH, de Jong PT. Increased prevalence of disciform macular degeneration after cataract extraction with implantation of an intraocular lens. *Br J Ophthalmol* 1994;78(6):441–445.
4. Ho JD, Xirasagar S, Kao LT, Lin HC. Neovascular age-related macular degeneration is associated with cataract surgery. *Acta Ophthal* 2018;96(2):e213–e217.
5. Jabs DA, Nussenblatt RB, Rosenbaum JT. Standardization of uveitis nomenclature for reporting clinical data. Results of the first international workshop. *Am J Ophthalmol* 2005;140(3):509–516.
6. Lynch AM, Patnaik JL, Cathcart JN, et al. Colorado Age-Related Macular Degeneration Registry: design and clinical risk factors of the cohort. *Retina* 2019;39(4):656–663.

Predictors of Neovascular Glaucoma in Central Retinal Vein Occlusion

EDITOR:

WE WOULD LIKE TO ADDRESS SEVERAL ISSUES WITH THE study of Rong and associates.[1]

The study had a retrospective design and a relatively short-term follow-up (17 months), with a pretty high proportion of patients (13.26%) who developed neovascular glaucoma (NVG). It is assumed that the proportion of patients with NVG would have been greater if the gonioscopy had been uniformly performed by clinicians at each visit for detecting patients with early NVG (neovascularization of the angle and normal intraocular pressure [IOP]).

There was a selection bias attributable to inclusion in the study of patients with 2 types of central retinal vein occlusions (CRVOs) (ischemic and nonischemic forms) having definitely different pathogenesis, clinical features, prognoses, and management. Likewise, 2 completely different etiologic subgroups of patients have been encompassed, namely, patients older than 50 years who usually have common systemic conditions such as hypertension and diabetes, and patients less than 50 years of age, where other mechanisms, such as the hyperviscosity syndrome or inflammatory condition should be specifically considered and accounted for. Taken together, these findings may have confounded the results.

The diagnosis of CRVO in this series was based on acute vision loss, diffuse intraretinal hemorrhages, and venous tortuosity. Taking into account these findings as well as the fact that only 14 patients (14.28%) had relative afferent pupillary defect (RAPD), we inferred that the vast majority of the patients included in this study experienced nonischemic CRVO. Nothing was stated referring to the diagnostic criteria for the ischemic type of acute CRVO, when marked and extensive intraretinal hemorrhages prevented a clear angiographic evaluation of the retinal capillary nonperfusion zones. Accordingly, we suggested[2,3] the presence of at least 4 of the 5 following criteria: the visual acuity ≤20/400 Snellen equivalent; the ability to see ≤V/4e isopter based on the Goldmann perimeter; the presence of the RAPD in patients with 1 normal eye; the extensive ocular fundus changes (striking amount of hemorrhages, venous tortuosity, cotton-wool spots [>5], and disc and macular edema); and the intraocular pressure reduction in the occluded eye of ≥4 mmHg compared with the congener eye.

The following relevant data are missing in the study: the stratification of the CRVOs (ischemic/nonischemic forms); the type of anti–vascular endothelial growth factor (anti-VEGF) agent used and the schedule of treatment; the assessment of the macular ischemia by quantification of the diameters and area of the foveal avascular zone; the existence or not of the disorganization of the retinal inner layers and its severity; the optical coherence tomography patterns of the macular edema (diffuse/subretinal fluid/cystic changes/mixed type) and the location of the intraretinal cystoid fluid (ganglion cell layer/inner or outer nuclear layers); the damages of the photoreceptor cell layer (thinning of the outer nuclear layer/external limiting membrane band defects/ellipsoid zone disruption, interdigitation zone loss); the changes of the retinal pigment epithelial band-Bruch membrane complex (pigment migration within the neurosensory retina, retinal pigment epithelium [RPE] porosity, microrips or blowouts in the RPE, focal RPE atrophy, RPE thickening); and the proportion of the patients with ocular hypertension, cardiovascular and cerebrovascular diseases, obesity, hyperviscosity syndromes, and inflammatory conditions.

We do not agree with the authors' assertion that anti-VEGF therapy may "reset the clock" to NVG onset, extending the risk beyond the 7 months, but do not prevent the NVG occurrence. This conclusion is valid only for eyes in which initiating treatment was delayed after the diagnosis of CRVO.[3] We documented, for the first time,[4] that the prevention of NVG may be enhanced by intravitreal bevacizumab (IVB; Avastin; Genentech Inc, San Francisco, California, USA) injections administered aggressively as early as possible after the onset of occlusion. Thus, the rate of the cumulative prevalence of NVG was 4.08% in patients with acute (≤1 month after the occlusion was diagnosed) central/hemicentral retinal vein occlusions (central/hemicentral RVOs) over the course of 3 years. We believe that at a dose of 2.5 mg injected before occurrence of neovascularization and IOP elevation, IVB may offer promise for the prevention or even cure of NVG by ablation of the ischemic drive for new vessel formation in patients with acute central/hemicentral RVOs.

Altogether, the authors of this study highlighted 3 risk factors for NVG development, namely, history of systemic hypertension, worse visual acuity on presentation, and RAPD on presentation. However, the validation, extrapolation, and generalizability of these outcomes can be made only by statistical analyses including all the missing data mentioned by us in addition to the baseline characteristics already assessed in this study, serving to identify the key drivers predicting the NVG occurrence.

DAN CĂLUGĂRU
MIHAI CĂLUGĂRU
Cluj-Napoca, Romania

ALL AUTHORS HAVE COMPLETED AND SUBMITTED THE ICMJE form for disclosure of potential conflicts of interest and the following were reported. The authors indicate no financial support or financial conflict of interest. All authors attest that they meet the current ICMJE requirements to qualify as authors.

REFERENCES

1. Rong AJ, Swaminathan SS, Vanner EA, Parrish RK. Predictors of neovascular glaucoma in central retinal vein occlusion. Am J Ophthalmol. https://doi.org/10.1016/j.ajo.2019.02.038. Accessed March 9, 2019.
2. Călugăru D, Călugăru M. Intravitreal bevacizumab in acute central/hemicentral retinal vein occlusions: three-year results of a prospective clinical study. *J Ocul Pharmacol Ther* 2015;31(2):78–86.
3. Călugăru D, Călugăru M. Ranibizumab in preproliferative (ischemic) central retinal vein occlusion. The rubeosis anti-VEGF (RAVE) trial. *Retina* 2015;35(10):e59–e61.
4. Călugăru D, Călugăru M. Prevention of neovascular glaucoma. *Ophthalmology* 2013;120(7):1507–1508.

Predictors of Neovascular Glaucoma in Central Retinal Vein Occlusion

REPLY

WE APPRECIATE THE INTEREST OF DRS. CĂLUGĂRU AND Călugăru in our article.[1] We wish to respond to the points raised by the respondents.

Many of the respondents' concerns are natural limitations of a retrospective study. Gonioscopy at each clinic visit and additional historical information would have been ideal. With regard to the duration of follow-up, the peak incidence of neovascular glaucoma (NVG) development occurred within the first 7 months of central retinal vein occlusion (CRVO) presentation, as per the previous work by Hayreh et al.[2] Thus, we believe that our follow-up period was sufficient to determine whether a patient would develop neovascular complications. Regarding the rate of NVG, previous CRVO natural history studies in which ischemic status was undefined demonstrated a NVG rate of 5%-21%.[3–6] Our 13% incidence of NVG was well within this range. This was stated and referenced in the first paragraph of the discussion section. Thus, we disagree with statement by Călugăru and Călugăru that our rate was "pretty high."

It is possible that there were patients in our group who could have had retinopathy that mimicked CRVO. However, we reviewed the entire medical records of 646 patients to ensure that there were no known conditions that could have mimicked or confounded a patient's diagnosis. This was noted in our exclusion criteria. Naturally, the veracity of the clinical record would limit a retrospective study. We completed subgroup analyses, specifically evaluating age younger than 50 years compared with age older than 50 years. As discussed in our paper, we did not find this to be a statistically significant factor.

The criteria that Călugăru and Călugăru cite as their own should be more accurately credited to work performed by Hayreh et al.,[2] in which they differentiated ischemic and nonischemic CRVO via an afferent pupillary defect, visual acuity, electroretinography, and kinetic visual field testing. As we acknowledged in our introduction, many providers do not have access to resources for more extensive testing, such as fluorescein angiography, electroretinography, or Goldmann visual field testing to determine CRVO risk. Thus, the study was designed to elucidate risk factors that were attainable on a routine clinic visit. Regarding their statement on optical coherence tomography (OCT) findings in CRVO, although it is possible that one could elucidate additional OCT risk factors by studying specific changes to each retinal layer, this was not the original intent of the study. One would need a large OCT-dedicated study sufficiently powered to evaluate the possible predictive role of such OCT findings. We focused on cystoid macular edema because it is commonly found in patients