scribed by Spaide et al. Using this technique, we have noted that the characteristic peripapillary lesions may be associated with choroidal thickening with or without hyporeflective areas of cavitation (Figure 1, Figure 2, and video [http://www.archophthalmol.com]). We reaffirm the findings of Toranzo and colleagues; however, we propose the term \textit{peripapillary choroidal thickening and cavitation} to more accurately reflect a spectrum of optical coherence tomographic findings associated with this lesion.

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Frequency of Intraocular Pressure Increase Within Days After Intravitreal Triamcinolone Acetonide Clinical Research Network

In a previously published randomized trial comparing intravitreal triamcinolone acetonide to focal/grid photocoagulation for diabetic macular edema, the Diabetic Retinopathy Clinical Research Network (DRCR.net) measured intraocular pressure (IOP) 4±3 days (referred to as the 4-day visit) after study participants assigned to the triamcinolone arm underwent an intravitreal injection. These data provide the opportunity to evaluate the frequency of IOP increase within a few days following an intravitreal triamcinolone injection.

Methods. In the aforementioned randomized trial, IOP was measured at the 4-day visit after each injection of 1 mg or 4 mg of triamcinolone acetonide (Trivaris). From the IOP measurements at this visit, we determined the frequency of an IOP event, defined as an increase from the preinjection IOP of more than 10 mm Hg to an IOP of 30 mm Hg or greater.

Results. Rates of IOP events assessed 1 to 7 days after injections are shown in the Table. Of the 3 eyes (0.6%) with IOP events following the baseline injection, all were treated with IOP-lowering medication after the event and had an IOP lower than 30 mm Hg at the last available study visit, although 1 eye (in the 1-mg group) was still taking IOP-lowering medication. Of the 12 eyes (3%) that had IOP events following multiple injections, 11 were treated with IOP-lowering drugs. All but one (in the 4-mg group) were controlled, with IOPs lower than 30 mm Hg by the last available study visit, although 3 of the 11 (1 in the 1-mg group and 2 in the 4-mg group) were still taking IOP-lowering medication at the last visit. Of note, there were 74 postbaseline injections for which an eye was already receiving IOP-lowering medication during the corresponding 4-day visit, and IOP events were observed in 2 (3%) of these cases (both in the 4-mg group). A flowchart detailing all of the IOP events, including the preinjection and postinjection IOPs, use of IOP-lowering medication, and resolution of each event, are shown in the Figure.

Comment. Immediately after intravitreal injection, volume expansion causes an expected IOP elevation that is typically transient, with IOP normalization usually occurring within 30 minutes.4,5 Steroid-induced IOP elevation is a well-described phenomenon that has been reported to occur typically a few weeks after exposure to corticosteroids.4,6 Detection of a substantial IOP increase at the 4-day postinjection visit in a few study participants in this study was unexpected and, to our knowledge, previously unreported. The reasons for elevated IOP in this time frame are unclear. There were no reports of triamcinolone detected in the anterior segment of these eyes.

The IOP was not measured 1 to 7 days after the initial treatment visit in the 330 laser-treated eyes; however, none of these eyes met IOP event criteria at the 4-month study visit. Whether an increase in IOP 1 to 7 days after the injection is related to the injection alone or to the steroid can-

<table>
<thead>
<tr>
<th>Triamcinolone Acetonide Injection Dosage</th>
<th>No. of Events/No. of Injections (%)</th>
</tr>
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<tbody>
<tr>
<td>Triamcinolone Acetonide Injection Dosage</td>
<td>Baseline Visit, Initial Injection</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>1 mg</td>
<td>2/249 (0.8)</td>
</tr>
<tr>
<td>4 mg</td>
<td>1/244 (0.4)</td>
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</tbody>
</table>

*Intraocular pressure event is defined as a 4-day postinjection visit intraocular pressure of 30 mm Hg or higher that also increased 10 mm Hg or more from the preinjection intraocular pressure.
not be determined from this study. However, of the 5 eyes that had an event following a baseline or 4-month injection, only 1 eye had documentation of any long-term sequelae, specifically, taking IOP-lowering medications beyond the 1-year visit (1 other study participant [1 eye] did not return for the 4-month or any subsequent visits, and 3 eyes had an IOP <30 mm Hg and were not taking any IOP-lowering medications). It is scientifically interesting that IOP occasionally increased within 1 to 7 days of intravitreal steroid injection as study criteria excluded those patients who might be at risk for developing IOP problems following intravitreal steroid injection. Patients with IOP 25 mm Hg or higher, neovascular glaucoma, history of open-angle glaucoma, or history of steroid-induced glaucoma were excluded from entering the study. However, the low risk of this IOP increase and the lack of evidence of long-term clinical harm from delay in diagnosis do not seem sufficient to justify routine assessment of patients within 1 to 7 days of injection in patients with our study characteristics.

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**Role of the Sponsor:** The funding organization participated in oversight of the conduct of the study and review of the manuscript but not directly in the design of the study, the conduct of the study, data collection, data management, data analysis, interpretation of the data, or preparation of the manuscript. As per the DRCR.net Industry Collaboration Guidelines (http://www.drcr.net), DRCR.net had complete control over the design of the protocol, ownership of the data, and all editorial content of presentations and publications related to the protocol.


**Selective Abnormality of Cone Outer Segment Tip Line in Acute Zonal Occult Outer Retinopathy as Observed by Spectral-Domain Optical Coherence Tomography**

Optical coherence tomography (OCT) plays an important role in the diagnosis of retinal diseases with minimal ophthalmoscopic changes. For example, in eyes with acute zonal occult outer retinopathy (AZOOR),1,3 an abnormality of the photoreceptor inner segment–outer segment (IS/OS) junction found by OCT was spatially correlated with the region of visual field defect. Recent high-resolution spectral-domain OCT images have shown a thin line between the IS/OS junction and the retinal pigment epithelium. This line has been identified as the cone OS tip (COST) line.6 However, the pathophysiological interpretation of its appearance has not been established, and the diagnostic value of the COST line has yet to be determined.

We report 2 cases of AZOOR, both of which showed acute central scotoma with an enlarged blind spot. The ophthalmoscopic and angiographic changes were minimal, but electroretinography (ERG) revealed reduced responses in the affected regions. In both cases, the IS/OS junction on the OCT image was normal, but the COST line was not present or appeared indistinct in the region of visual field defect. Our findings suggest that the COST line may be an early indicator of cone photoreceptor dysfunction in eyes with minimal ophthalmoscopic abnormalities.

**Report of Cases.** Patient 1 (a 24-year-old woman) and patient 2 (a 28-year-old woman) both had sudden unilateral visual disturbances following photopsia. The visual acuities were 0.02 OD and 1.5 OS in patient 1 and 0.15 OD and 1.5 OS in patient 2. Goldmann kinetic perimetry revealed a blind spot enlargement and central scotoma in the right eye of both patients (Figure 1 and Figure 2). The anterior segment and fundus were normal; however, fluorescein angiography showed a slightly mottled hyperfluorescence around the macula in the affected eye of both patients. The full-field scotopic ERGs were normal, but there were phase delays in the photopic 30-Hz ERGs in the affected eyes: 5.7 milliseconds in patient 1 and 8.0 milliseconds in patient 2. In addition, the amplitudes of the photopic b-waves were reduced in both patients. The focal macular ERGs (ER80; Kowa Co, Tokyo, Japan, and Mayo Co, Nagoya, Japan) in the central 15° were almost flat in the affected eye in both patients. Neither patient had systemic disorders such as viral infections or autoimmune diseases.

Spectral-domain OCT (Carl Zeiss Meditec, Dublin, California) showed the IS/OS junction clearly, even in the region of the scotoma. However, the COST line was not detected in patient 1 and appeared indistinct in patient 2 (Figure 1 and Figure 2). Moreover, the bulge structure of the IS/OS junction at the fovea (with the foveal bulge indicating a domelike appearance of the IS/OS junction due to an elongated cone OS at the fovea)7 could not be observed in the affected eyes. The visual disturbances of these patients did not recover, and these abnormalities in the OCT images were observed at all examinations for 50 months in patient 1 and 18 months in patient 2 after the onset.

**Comment.** To our knowledge, this is the first report of AZOOR where the boundary of the IS/OS junction in the OCT images was well preserved but the COST line was absent or indistinct from the initial examination through the entire follow-up period. Earlier studies demonstrated that a loss or irregularity of the IS/OS junction observed by OCT corresponded well with the visual field defects even at the early stages of AZOOR,2,3 and the abnormality in the IS/OS junction can improve following recovery of the scotoma. These findings have led to the hypothesis that photoreceptor OS dysfunction is the primary lesion in AZOOR.

The COST line corresponds to the junction between the photoreceptor tips and the apical processes of the retinal pigment epithelium, where photoreceptor OS disc membranes are continuously shed for renewal.8 Thus, the appearance of the COST line may reflect the normal function of the photoreceptor OSs more closely than the IS/OS junction. In fact, in all of the AZOOR cases we have recently examined, the COST line was always absent in the region of IS/OS abnormalities, suggesting that the abnormality of the COST line may precede that of the IS/OS junction. In our 2 cases, the fundus appeared normal and the IS/OS junction was clearly observed in the region of the COST line abnormality for 50 and 18 months after the onset. The focal macular ERGs, however, were markedly reduced in the affected areas. In the OCT images, the cone photoreceptor dysfunction corresponding to the region of scotoma could be detected only by the abnormality of the COST line.