Adult-Onset Vitelliform Detachment Unresponsive to Monthly Intravitreal Ranibizumab

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ABSTRACT
A 72-year-old woman with decreased visual acuity secondary to an adult-onset vitelliform detachment was treated with three monthly intravitreal injections of 0.5 mg of ranibizumab. Treatment response was monitored by visual acuity and by the eye-tracking feature of the Heidelberg Spectralis spectral domain optical coherence tomography (Heidelberg Engineering, Inc., Carlsbad, CA). There was no improvement in functional or anatomic outcome after three monthly injections of ranibizumab. The eye-tracking feature of the spectral domain optical coherence tomography system was highly accurate in making comparisons between serial optical coherence tomography examinations.

INTRODUCTION
Adult-onset vitelliform detachment is an accumulation of yellowish subretinal material in the macula that can occur in a variety of macular disorders, including adult-onset vitelliform macular dystrophy, basal laminar/cuticular drusen, pattern dystrophy, and age-related macular degeneration.1-5 Recent investigations using clinicopathological and optical coherence tomography (OCT) studies have shown that the vitelliform material is sequestered in the subretinal space anterior to the retinal pigment epithelium.6-9 These lesions generally progress slowly, but some may develop secondary choroidal neovascularization (CNV).10 More commonly, the accumulation of this subretinal material can, over time, cause disruption and attenuation of the photoreceptors and retinal pigment epithelium that is largely responsible for a decline in the quality of vision.

We treated an eye with an adult-onset vitelliform detachment to determine whether visual acuity would improve in response to an anti-vascular endothelial growth factor (anti-VEGF) therapy. Anatomical improvement was monitored by taking advantage of the eye-tracking feature of the Spectralis OCT (Heidelberg Engineering, Inc., Carlsbad, CA). This feature enables accurate rescanning by using retinal recognition technology.

CASE REPORT
A healthy 72-year-old woman presented with a several month history of decreased visual acuity and metamorphopsia in her left eye. Best-corrected visual acuity was 20/20 in the right eye and 20/60 in the left eye. Clinical examination revealed focal retinal pigment epithelium changes in the right eye (Fig. 1A) and an adult-onset vitelliform detachment overlying a shallow pigment epithelial detachment with pigment hyperplasia in the left eye (Fig. 1B). OCT did not show any subretinal fluid (Fig. 1C) and fluorescein angiography did not show CNV. Neither eye had basal...
laminar/cuticular drusen on clinical examination, fluorescein angiography, or OCT evaluations. There was no family history of Best macular dystrophy or pattern dystrophy. The patient was observed regularly during the next several years with a gradual decline in acuity of her left eye.

Five years after initial presentation, visual acuity was stable at 20/25 in the right eye and had decreased to 20/400 in the left eye. Clinical examination demonstrated increased drusen in both eyes and retinal pigment epithelium changes in the left eye with no obvious signs of exudation (Fig. 1D). OCT of the left eye demonstrated an adult-onset vitelliform detachment at the fovea without subretinal fluid and the fluorescein angiography showed some staining without evidence of CNV (Figs. 1E and 1F).

One year later, the patient presented with worsening complaints of severe distortion and poor visual acuity in the left eye over the prior 3 months. Best-corrected visual acuity in the right (Fig. 1G) and left (Fig. 1H) eye was found to be stable at 20/25 and 20/400, respectively. OCT of the left eye revealed a stable adult-
onset vitelliform detachment with continued absence of subretinal fluid (Fig. 1I). Due to the patient’s worsening distortion, she was offered a trial of three monthly injections of intravitreal ranibizumab (.5 mg/.05 mL) in the left eye. Eye-tracked SD-OCT was obtained prior to the first injection and at each monthly visit thereafter for the duration of the 3-month follow-up.

The patient did not experience any adverse effects from the three injections. Figure 2 demonstrates the OCT findings pre-injection (A1, B1, C1), 1 month post-injection #1 (A2, B2, C2), 1 month post-injection #2 (A3, B3, C3), and 1 month post-injection #3 (A4, B4, C4). There was no change in best-corrected visual acuity (it remained 20/400 through all visits), nor were there any detectable changes on OCT or clinical examination.

DISCUSSION

Prior to the availability of intravitreal anti-VEGF therapy, there were several reports describing disappointing visual outcomes for adult-onset vitelliform detachment treated with verteporfin photodynamic therapy. In some of these cases, patients with adult-onset vitelliform detachment were offered photodynamic therapy due to a mistaken interpretation that their fluorescein angiography showed poorly defined CNV.11-13 With the emergence of anti-VEGF agents, investigators have reported outcomes following the use of intravitreal bevacizumab for adult-onset vitelliform detachment and for juvenile vitelliform detachments occurring in Best macular dystrophy. Both Lee et al.14 and Montero et al.15 demonstrated anatomical improvements after bevacizumab injection in two patients with adult-onset vitelliform detachment, but neither patient experienced improvement in visual acuity. Leu et al.16 and Querques et al.17 reported single cases where young patients with juvenile vitelliform detachments secondary to Best macular dystrophy realized visual improvement following a single injection of intravitreal bevacizumab; however, both of these eyes harbored CNV in addition to the vitelliform lesion.

Chong et al. did not find any functional or anatomical improvement in a patient with adult-onset vitelliform detachment associated with basal laminar/cuticular drusen after one injection each of bevacizumab and ranibizumab.18 The patient in their report is simi-
lar to our patient in that there was no evidence of CNV on fluorescein angiography.

One rationale for treating adult-onset vitelliform detachments with anti-VEGF treatment is that there is evidence that at least some vitelliform lesions occur due to subretinal fluid producing a loss of apposition between the photoreceptor outer segment tips and the apical surface of the retinal pigment epithelium with subsequent accumulation of the vitelliform material in the subretinal space. Examples of this include central serous chorioretinopathy and acute exudative polymorphous vitelliform dystrophy. By stabilizing the outer blood–retinal barrier and reducing subretinal fluid, an anti-VEGF agent could theoretically restore normal outer segment turnover, thus allowing the elimination of at least the non-cellular components of the vitelliform detachment in some eyes.

In our case, three monthly injections of intravitreal ranibizumab failed to produce visual or morphological improvement in an eye with adult-onset vitelliform detachment occurring in the setting of age-related macular degeneration. To our knowledge, this is the first report in which eye-tracking combined with SD-OCT was used to evaluate the anatomic response to treatment in a patient with adult-onset vitelliform detachment. This technology greatly facilitated the monitoring of sequential SD-OCT examinations because the anatomical findings were followed with more precision than previously possible.

REFERENCES