Dramatic Resolution of Choroidal Neovascular Abnormalities After Single Aflibercept Injection Following Years of Ranibizumab Use

Aflibercept (Eylea) is the most recent anti–vascular endothelial growth factor (anti-VEGF) product approved by the US Food and Drug Administration to treat choroidal neovascularization (CNV) secondary to age-related macular degeneration. Compared with the other anti-VEGF agents commonly used to treat CNV, bevacizumab (Avastin) and ranibizumab (Lucentis), aflibercept has a longer intravitreal half-life and a higher binding affinity to VEGF-A receptor. While this drug is capable of inhibiting both VEGF-A (all isoforms) and placental growth factor, it has not been shown to be superior to ranibizumab. However, aflibercept given every 4 weeks for 3 doses followed by administration every 8 weeks has been shown to have visual acuity outcomes equivalent to those from administration of ranibizumab every 4 weeks through 1 year, providing an opportunity to evaluate its use in persistent retinal thickening from CNV despite years of monthly ranibizumab treatments. We provide an example of one such case demonstrating dramatic improvement 1 month after switching from 5 years of ranibizumab use to the first dose of aflibercept.

Report of a Case. A 66-year-old African American man visited in February 2005 with symptoms of blurry vision in the right eye. Visual acuity measured 20/20 OD and 20/16 OS. Ophthalmoscopic examination showed multifocal serosanguineous pigment epithelial detachments in the subfoveal and extrafoveal regions of his right macula; the left fundus showed multiple large drusen without any sign of CNV. Fluorescein angiography revealed multifocal areas of occult CNV in the right eye, consistent with a polypoidal pattern of CNV (although no indocyanine green angiographic images were obtained). The area of extrafoveal CNV was treated with laser photocoagulation and the area of subfoveal CNV was observed, as no definite treatment was available for the subfoveal CNV at that time (Figure 1A). Sixteen months later (June 2006), visual acuity gradually decreased to 20/50 OD. Fluorescein angiography showed growth of the subfoveal CNV (Figure 1B). One dose of intravitreal bevacizumab initiated in 2006. C, Choroidal neovascularization growth (arrow), with ranibizumab administered in 2008. D, Before adding photodynamic therapy in 2010. E, After adding photodynamic therapy in 2010. F, Choroidal neovascularization growth (arrow) following brief observation in 2011.
Zumab (1.25 mg/0.05 mL) was given with a slight decrease in angiographic leakage but no change in visual acuity. By August 2006, the treatment was switched to monthly intravitreal ranibizumab (0.5 mg/0.05 mL) injection. From August 2006 to May 2012, the patient received ranibizumab injections every 4 to 8 weeks for a total of 48 doses and had gradual visual acuity loss and gradual growth of the CNV. In addition, from June 2009 to January 2010, injections were combined with verteporfin (Visudyne) photodynamic therapy every 3 months for 3 times. Through 70 months, visual acuity decreased from 20/50 to 20/125 (Figure 1C-E), while optical coherence tomography (OCT) showed persistent cystoid macular edema overlying the CNV tissue. The patient was advised to continue anti-VEGF injections, ideally monthly, despite the gradual decrease in visual acuity because documentation of new growth of CNV occurred with recognition of decreased visual acuity each time treatment was withheld when the visual acuity and findings on clinical, OCT, and angiographic images appeared stable (Figure 1F).

In July 2012, visual acuity remained 20/125 and OCT showed prominent intraretinal cystoid abnormalities with subfoveal fluid; the macular thickness had increased to 797 μm despite continued monthly intravitreal ranibizumab injections (Figure 2A and B). The patient then received 1 intravitreal injection of aflibercept (2 mg/0.05 mL). In August 2012 at the 4-week follow-up visit, visual acuity remained 20/125 and the patient noticed no change in his vision. Fluorescein angiography revealed decreased staining and leakage of the lesion (Figure 2C) and OCT showed dramatic resolution of intraretinal and subretinal fluid, with macular thickness decreasing from 797 to 320 μm (Figure 2D). Only a few cystoid abnormalities overlying the fibrovascular tissue were seen, with marked attenuation of the outer retinal tissue apparent and prominent subfoveal scar. Outer retinal tubular formation, a round hyporeflective space with hyperreflective borders in the outer nuclear layer on B-scan OCT, suggestive of degenerating photoreceptors, also was noted (Figure 2D). A second dose of intravitreal aflibercept was administered at this visit because of the improvement and to treat the residual thickening. Four weeks after the second injection, visual acuity remained 20/125 and OCT showed even smaller intraretinal cystoid abnormalities, with macular thickness decreasing to 258 μm.

Comment. Despite monthly administration of intravitreal anti-VEGF agents, a minority of patients still have sudden or gradual visual acuity loss with poor anatomical response to the monthly anti-VEGF treatments. The recent US Food and Drug Administration approval of aflibercept allows evaluation to determine whether this drug might cause a response in cases with persistent leak-
age from CNV or retinal vascular disease following monthly administration of bevacizumab or ranibizumab for years. This case dramatically demonstrates the ability of such a switch to promptly resolve this leakage, albeit in the absence of any short-term visual acuity improvement, presumably because of outer retinal atrophy and scar. Further follow-up of similar cases seems warranted. In addition, whether similar but earlier intervention with aflibercept might avoid visual acuity loss earlier in the disease and whether cases initially unresponsive to aflibercept might show similar responses when switching to another anti-VEGF medication such as ranibizumab will require additional study.

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**Figure 1.** Slitlamp and B-scan ultrasonographic findings. A, Slitlamp photograph of the recurrent epithelial inclusion cyst. The penetrating trauma site was over the inferotemporal cornea, where a small penetrating keratoplasty was performed. B, B-scan ultrasonography demonstrates the cyst behind the iris, measuring 8.89×3.62 mm.

Intralesional Ethanol for an Unresectable Epithelial Inclusion Cyst

Epithelial inclusion cysts are challenging to manage, particularly when large and extensive. Herein, we describe the use of intralesional ethanol to manage a cyst that was much too large to surgically excise.

Report of a Case. A healthy 37-year-old woman was referred for decreasing vision in her left eye with no associated dis-

comfort for 3 weeks. She had sustained a penetrating injury to the left eye with a pencil point at age 12 years. Her right eye was normal. Visual acuity was 20/160 OS and intraocular pressure was 14 mm Hg OS. On slitlamp examination, the inferior cornea was very thin and the iris was pulled down toward this region. The thin area was Seidel negative. The iris was bowed forward temporally from a cyst, resulting in a very shallow anterior chamber. The cyst almost completely filled the pupil. B-scan ultrasonography revealed a cyst behind the iris measuring 9.48×4.00 mm.

The patient was prophylactically treated with an antibiotic eyedrop and instructed to return in a few days for a likely miniature penetrating keratoplasty. When she returned, the cyst had completely resolved. The excised corneal button had epithelium on the inner surface, confirming the diagnosis of an epithelial inclusion cyst. However, cyst recurrence was found at her 5-month follow-up visit (Figure 1). On ultrasonography, the cyst measured...