Prophylactic Use of Anti-VEGF Therapy in Cataract Surgery

Can an intraoperative injection of ranibizumab or bevacizumab help to prevent development of DME, BRVO, and wet AMD in patients with diabetes?

BY A. JOHN KANELLOPOULOS, MD

It has been well established in current clinical practice that vascular endothelial growth factor inhibitors—better known as anti-VEGF agents—can stabilize or improve the clinical manifestation of wet age-related macular degeneration (AMD) in a high percentage of patients.1,2 These agents are also commonly used for the treatment of diabetic macular edema (DME) and macular edema associated with branch retinal vein occlusion (BRVO). The mode of action of anti-VEGF agents and their use as prophylaxis against retinal complications in complicated cataract surgery in patients with diabetes has been reported in the literature.3-10 Below is a personal account of their usefulness as a prophylactic against DME, BRVO, and wet AMD.

TRIAMCINOLONE OR ANTI-VEGF INJECTION?

Cataract surgery induces hypoxia within the vitreous cavity. For patients with signs of diabetic retinopathy prior to cataract surgery, this change can result in development of DME by 1 month postoperatively. In the past, I have used an intraoperative injection of triamcinolone as a prophylaxis for DME following uneventful cataract surgery. This corticosteroid was an effective preemptive treatment; however, it also increased the patient’s risk for ocular hypertension.

About 5 years ago, I began using two anti-VEGF agents, ranibizumab (Lucentis; Genentech) and bevacizumab (Avastin; Genentech), in my retina practice to treat patients with DME, BRVO, and wet AMD. When indicated, I now also use bevacizumab at the time of cataract surgery as a prophylactic against postoperative DME.

In cataract patients with existing clinically significant macular edema (CSME), anti-VEGF agents alone or in combination with focal laser photocoagulation are used preoperatively, as per accepted practice, in an attempt to control this condition. If a patient presents with clinical signs of diabetic retinopathy but no signs of CSME, I inject a dose of an anti-VEGF agent at the conclusion of surgery as prophylaxis against the development of edema.

A significant percentage of the women we treat in Southern Europe present with an epiretinal membrane that may cause macular edema after uneventful cataract surgery. Because of this, we routinely perform optical coherence tomography (OCT) before cataract surgery. This tool is also useful to establish the existence and degree of CSME in cataract surgery candidates, especially when a dense cataract prohibits clinical evaluation of the fundus. Additionally, macular OCT is an excellent tool to assess the degree of DME and establish a baseline for comparison 1 month after cataract surgery with prophylactic anti-VEGF treatment.

REVIEWING THE NUMBERS

Of 2,500 cataract surgeries I have performed in the past 5 years, 152 were identified as patients with diabetes and therefore received an intracameral injection of...
0.01 mL bevacizumab. I typically place a 30-gauge needle through an incision made 3.5 mm from the limbus, usually superotemporally at the 11-o’clock position.

Recently, I performed cataract surgery in a schoolmate who, at the early age of 48 years, developed cataracts in both eyes. Cataract formation was a possible complication of type 2 diabetes, which he has had for 20 years. My friend was diagnosed with DME about 5 years ago, but the edema resolved spontaneously after he lost nearly 70 pounds and gained control of his diabetes. There was no longer any sign of significant DME at the time of cataract surgery, but I injected 0.01 mL of bevacizumab intracameraly at the conclusion of the procedure in each eye. At 1 month postoperative, OCT images showed no signs of DME. If I had not included anti-VEGF prophylaxis for such a young patient with a previous history of DME, I suspect DME would have recurred after surgery.

CONCLUSION

I have incorporated the prophylactic intervention of anti-VEGF therapy at the conclusion of cataract surgery into my everyday practice. It is worth noting that, in the thousands of anti-VEGF injections that have been given in our medical retinal practice, we have encountered no endophthalmitis and just one chemical reaction.

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