

Sustained Delivery for Retinal Vein Occlusion

For many patients, this method of drug delivery is preferable to rapid attenuation.

BY ANTONIO CAPONE JR., MD

The dexamethasone intravitreal implant (Ozurdex, Allergan) has become a useful tool in the treatment of retinal vein occlusion (RVO) because of its pharmacokinetics. Intravitreal injections of anti-VEGF agents and triamcinolone acetonide have what could be termed “whipsaw” kinetics. The patient receives a large dose of the drug, and then the dose rapidly attenuates. Patients may respond well initially, due to the high dose of drug that is administered, but then there is a rapid attenuation of both the drug concentration and the therapeutic effect, over a period of 4-6 weeks for an anti-VEGF agent, or over 12 weeks for triamcinolone.

The kinetics of the dexamethasone intravitreal implant provide for sustained control of edema. Over the long term patients do better when they have steady constant effect as opposed to resolution, followed by exacerbation, followed by another resolution, and so forth. The degradation of vision in such a setting is slow—maybe only a few letters from visit to visit—but over the course of 1 or 2 years the patient will gradually lose vision if the retina swells and compacts repeatedly. Therefore, the kinetics of the dexamethasone intravitreal implant are more favorable in terms of establishing and maintaining an effect.

TREATING RETINAL VEIN OCCLUSION

The best way to treat a patient for central RVO (CRVO) or branch RVO (BRVO) depends on a number of variables. If vision is still good with minimal-to-moderate edema, my first-line approach for both conditions is observation. On occasion, however, patients

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will present with reasonably good vision but rather dramatic cystoid macular edema. Although these patients may see well, their vision will most likely deteriorate in the near future, and I may treat that sort of individual promptly. Most patients, however, come in either with good vision and minimal macular pathology, or bad vision and significant macular pathology.

For a BRVO I may treat with macular laser first, using a grid pattern. For CRVO I do not typically treat with laser. If laser treatment is not appropriate, or if attempted and not effective, I move to pharmacologic therapy. The choice of treatment then depends on the phakic status of the patient. If the patient is pseudophakic and does not have glaucoma, the first choice for me is the dexamethasone intravitreal implant. If the patient is phakic or has a history of glaucoma and is on medication for that, then I will more likely choose to treat with an anti-VEGF agent.

PREPARING FOR AND ADMINISTERING THE IMPLANT

I have performed approximately 100 injections of the dexamethasone intravitreal implant. My preparation is

basically the same as for an anti-VEGF injection, except for the injection site. I usually use a superotemporal quadrant approach for anti-VEGF agents, but I like to use an inferotemporal quadrant approach for the dexamethasone intravitreal implant because the implant tends to float before lodging in the inferior vitreous base. I place a speculum and apply povidone-iodine on the conjunctiva prior to the injection.

I enter the conjunctiva via a beveled angle and then redirect and point the applicator posteriorly. I warn the patient about the sound of the click because it sometimes startles them. Then I administer the implant, withdraw slowly, stabilizing the globe with a cotton-tipped swab, and massage the wound to make sure there is no vitreous wick.

My only postinjection instruction for the patient is the use of topical antibiotics for 3 days.

FOLLOW-UP VISITS

If a patient has never had an injection or is within the first 3 injections, I see him or her at 4-week intervals until the next dexamethasone intravitreal implant injection is required. This is done for 2 reasons: first, to monitor intraocular pressure (IOP), and second to assess that patient's individual response to the dexamethasone intravitreal implant with regard to resolution or recurrence of the edema.

In my experience, some patients require an implant every 3-6 months, others require it at 8-10 weeks, and a small number require an interval anti-VEGF injection in order to truly compact the retina. In order to rapidly achieve and maintain control of the edema, however, while ensuring that the patient does not have problems with IOP for the first 3 to 9 months, I see them back for follow-up every 4 to 6 weeks, depending on their response.

After I have a sense of how a patient responds in regard to macular edema and IOP, I typically treat them only at their injection interval, which by then has been established. I do, however, see patients at the midpoint of the treatment interval to monitor IOP. So for instance, if I have a patient who levels out to an every 3 month injection, which is the average, I see him or her at 6-week intermediate intervals to monitor IOP.

EFFECTIVENESS OF TREATMENT

My level of success in achieving desired results with the dexamethasone intravitreal implant often depends on the age of the patient. Younger patients have higher rates of resolution of the RVO, allowing me to stop the injections. If a patient has had 3 or 4 injections with a small amount of residual edema, and at the next

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visit the optical coherence tomography is normal, I stop injecting and have the patient come back every 4-6 weeks for monitoring. If the OCT remains stable, I continue to monitor. Younger patients who resolve generally develop optociliary shunt vessels. For older patients, it is less common that the edema or RVO resolves completely.

LEVELS OF SATISFACTION

Patients receiving the dexamethasone intravitreal implant are generally happy with their improvement in vision and that they need less frequent injections than with anti-VEGF agents. Rarely are IOP problems severe enough that treatment with the dexamethasone intravitreal implant must be stopped. I occasionally have to intervene with ocular hypotensive therapy, but often patients can continue receiving the dexamethasone intravitreal implant if there is only a modest IOP rise into the mid 20s (mm Hg). Once the IOP begins to increase into the 30s, it is likely to go higher with successive injections, so I typically will switch that patient to an anti-VEGF agent at that time.

CONCLUSIONS

The dexamethasone intravitreal implant is an important addition to our pharmacologic options for the treatment of RVO. It has been my experience that patients with macular edema secondary to RVO who undergo multiple injections with the dexamethasone implant have more muted edema than those who undergo multiple anti-VEGF injections. ■

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