Comparison of Intravitreal Steroids for Treatment of Cystoid Macular Edema Due to Retinal Vein Occlusion

Two steroid options demonstrated similar levels of efficacy and safety.

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Retinal vein occlusion (RVO) causes vision loss mostly because of the development of intraretinal leakage that leads to macular edema. The treatment of cystoid macular edema (CME) secondary to RVO has evolved considerably during the past decade. Anti-VEGF agents have become the standard of care for CME secondary to both branch (BRVO) and central retinal vein occlusion (CRVO). Because the underlying pathophysiologic mechanism responsible for the formation of macular edema in these conditions is driven by inflammatory mediators in addition to VEGF, a considerable number of RVO patients with CME either do not respond well to, or become recalcitrant to, anti-VEGF treatment.[1,2]

Administration of intravitreal steroids is an effective alternative to anti-VEGF therapy in these cases. Two intravitreal steroids available for the treatment of CME due to RVO are the dexamethasone intravitreal implant (Ozurdex, Allergan) and triamcinolone acetonide (TA).

The GENEVA study evaluated the efficacy of the dexamethasone implant for the treatment of BRVO and CRVO. In addition to confirming the safety of the implant, the study also reported faster resolution of CME with treatment compared to observation. However, this study did not compare the efficacy of the dexamethasone implant with any other medication or with laser treatment.[3]

The SCORE study compared 1 mg or 4 mg TA with observation in CRVO and with grid laser photocoagulation in BRVO. The SCORE-CRVO trial reported a significantly greater BCVA improvement in the steroid group compared with the observation group. The SCORE-BRVO study did not find a significant difference in BCVA change between the steroid group and the grid laser group.[4]

Although both TA and dexamethasone are corticosteroids, their structures, availability, half-lives, and costs are different. Their efficacy, side-effect profiles, and cost effectiveness have not been compared previously in the setting of CME due to RVO.

The recently published OMAR study was the first designed to investigate the efficacy and the cost-effectiveness of the dexamethasone intravitreal implant and intravitreal TA injection for the treatment of recalcitrant CME in patients with RVO.[5]

At a Glance

- In a study comparing two treatments for CME secondary to RVO, researchers found similar safety and efficacy in patients who had previously undergone anti-VEGF therapy and switched to TA or the dexamethasone intravitreal implant.
- Significant changes in cost were observed when patients were switched from anti-VEGF therapy to steroid therapy. The cost significantly decreased in patients switched to TA, whereas it significantly increased in those switched to the dexamethasone intravitreal implant.

THE OMAR STUDY

The study included 38 patients with recalcitrant CME secondary to BRVO and 36 patients with recalcitrant

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CME secondary to CRVO. All patients included in the study had been treated previously with at least three intravitreal injections of anti-VEGF agents. Treatment was then switched to an intravitreal steroid (either TA 4 mg/0.1 cc or dexamethasone implant 0.7 mg) because of nonresponse to treatment and persistent CME.

The mean interval between anti-VEGF injections before the initiation of intravitreal steroid injection was 1.5 months. The mean interval between injections increased to more than 4 months after initiation of steroids; that is, the injection frequency was decreased by a mean of 30%. The increase in interval between consecutive injections was more prominent in the dexamethasone implant groups compared with the TA groups for both CRVO and BRVO.

The study also investigated functional outcomes (best corrected visual acuity; BCVA) and anatomic outcomes (central macular thickness as measured by optical coherence tomography) after the initiation of steroids. Although the mean anatomic outcome was significantly improved with both steroid treatments after the initiation of steroids, in both CRVO and BRVO, no significant change was seen in the mean functional outcome. This finding may be secondary to loss of visual potential due to long-lasting chronic CME, ischemia, and accompanying irreversible damage to photoreceptors. The mean BCVA throughout the study period was significantly better in the BRVO groups compared with the CRVO groups; however, mean central macular thickness values were not significantly different between the groups. This finding emphasizes a mismatch between macular thickness and BCVA.

The authors hypothesized that earlier initiation of steroids in the course of treatment of CME may have improved functional outcomes. The questions of when to determine that a patient is nonresponsive to anti-VEGF treatment and when to consider switching from anti-VEGF to steroid therapies remain to be answered.

A combination of anti-VEGF and steroid therapies may be beneficial; however, this option was not investigated in the OMAR study. Scatter laser for peripheral retinal nonperfusion for the control of CME is another treatment approach that was not assessed in the OMAR study.

The OMAR study also evaluated steroid-related ocular complications, including cataract and intraocular pressure (IOP) elevation. In this head-to-head comparison, no significant differences between the dexamethasone implant and TA were seen in ocular side effects.

The study also evaluated the costs of treatment. The mean monthly cost of treatment increased from $222 to $239 before initiation to $313 to $351 after initiation of steroids in the dexamethasone implant groups. The mean monthly cost of treatment decreased from $213 to $219 before initiation to $80 to $92 after initiation of steroids in the TA groups. Given the similar efficacy and side-effect profiles, the difference in monthly treatment costs is notable.

CONCLUSION

The OMAR study provided important data regarding two intravitreal steroids for the treatment of recalcitrant CME due to RVO. Both steroids achieved similar levels of efficacy and safety. Both agents decreased the treatment burden when the switch was made from anti-VEGF to steroid therapy. The cost difference between the two steroids was striking. Further studies comparing treatment options are needed to facilitate conscientious medical decision-making in the treatment of CME due to RVO. ■

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