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The Risk of Endophthalmitis Following Intravitreal Triamcinolone Injection in the DRCRnet and SCORE Clinical Trials

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Abstract

Purpose—To report the incidence of endophthalmitis following intravitreal injection using a standardized injection procedure.

Design—Two randomized clinical trials

Methods—Nonpreserved intravitreal triamcinolone acetate in prefilled syringes (Allergan, Inc., Irvine, CA) was injected intravitreally in the Diabetic Retinopathy Clinical Research Network (DRCRnet) and the Standard Care vs. Corticosteroid for Retinal Vein Occlusion (SCORE) clinical trials. The standardized injection procedure did not include the use of topical antibiotics during the days prior to the injection.

Results—As of December 31, 2006, 1,378 intravitreal injections (538 eyes) have been administered in the DRCRnet DME trial and 631 injections (301 eyes) in SCORE. There was one case of endophthalmitis in the 2,009 injections to date (0.05%, 95% confidence interval 0.001% to 0.277%).

Conclusions—A low rate of endophthalmitis is achievable using a standardized procedure for intravitreal injection without prescribing antibiotic prophylaxis on the days prior to the injection.

Endophthalmitis is one of the most serious complications of intravitreal injection, with the reported risk per injection ranging from 0.1% to 1.6%.¹ Controversy exists with regard to the pre-injection ocular surface preparation, particularly the pre-injection use of topical antibiotics. Povidone iodine is the only substance proven to reduce the risk of endophthalmitis after intraocular surgery.² Although there may be a synergistic effect of topical antibiotics and topical povidone iodine in reducing the culture positive rate of the preoperative conjunctival surface,³ topical antibiotics have never been shown to reduce the risk of endophthalmitis.⁴ Nevertheless, some retinal surgeons prescribe topical antibiotics for several days prior to an intravitreal injection and several clinical trials have required this practice.^{5,6} Herein, we report the endophthalmitis risk with the preparation and injection procedure used in the intravitreal triamcinolone protocols of the Diabetic Retinopathy Clinical Research Network (DRCRnet) and the Standard Care vs. Corticosteroid for Retinal Vein Occlusion (SCORE) clinical trials.

The DRCRnet and SCORE protocols use the same standardized procedure for the preparation and intravitreal injection procedure using preservative-free triamcinolone (1 mg or 4 mg) in

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prefilled syringes (provided by Allergan, Inc., Irvine, CA). Topical -gatifloxacin (Zymar, Allergan, Inc., Irvine, CA) was placed on the ocular surface at least 3 times over a 15 or more minute period prior to the injection. Immediately prior to the injection, a drop of topical proparacaine hydrochloride ophthalmic solution 0.5% (Bausch and Lomb, Rochester, NY) from a newly opened bottle was placed on the ocular surface. At investigator discretion, additional anesthesia could be used (e.g. application of a cotton-tipped applicator soaked in topical anesthetic over the intended injection site, use of topical lidocaine gel, or use of a subconjunctival anesthetic). Povidone iodine was applied over the intended injection site either with a cotton-tipped applicator soaked in 5% povidone iodine or a 10% povidone iodine Swabstick, with or without the preceding placement of 2–3 drops of 5% povidone iodine in the lower fornix. As an alternative, the ocular surface could be flushed with 5% povidone iodine using a forced stream from an angio-catheter. After a sterile eyelid speculum was placed to stabilize the eyelids, triamcinolone was injected into the vitreous cavity via the pars plana. Post-injection, patients were instructed to use gatifloxacin four times a day for three days. Both trials had institutional board approval and all subjects provided written informed consent.

As of December 31, 2006, 1,378 intravitreal injections (538 eyes) have been administered in the DRCRnet DME trial by 162 ophthalmologists and 631 injections (301 eyes) by 159 ophthalmologists in SCORE. There has been only one case of endophthalmitis (coagulase negative staphylococcus) in the 2,009 injections to date (0.05%, 95% confidence interval 0.001% to 0.277%).

The rate of endophthalmitis in the DRCRnet and SCORE intravitreal triamcinolone trials should be interpreted in the context of the procedure that was used. The use of a prefilled syringe, which reduces the possibility of contamination, and the injection procedure, which includes the use of povidone iodine and a lid speculum, may be important factors in achieving a low incidence of endophthalmitis. Of note, topical antibiotics were not prescribed prior to the day of the injection. These results indicate that a low rate of endophthalmitis can be achieved using an intraocular injection protocol that did not include antibiotic prophylaxis on the days prior to the injection. Since a topical antibiotic was prescribed following the injection, we cannot determine whether post-injection topical antibiotic prophylaxis is necessary.

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