Fax: +44 116 2586965.
E-mail: drsaurabhjain@hotmail.com

Eye (2007) **21,** 253–254. doi:10.1038/sj.eye.6702485; published online 9 June 2006

Sir,
Reply

Comments

Comment 1
The technique of administering the intravitreal injection, and the optimum dosage required to gain a therapeutic benefit still remains a matter of debate. Ozkiris and colleagues administer intravitreal triamcinolone acetonide (IVTA) after performing an anterior chamber paracentesis; in practice, this may be difficult as one is injecting into an already ''soft'' eye.

Answer 1
As you know, the total volume of the eye is approximately 7 ml. If you perform an anterior chamber paracentesis and withdraw 0.1–0.2 ml of aqueous humour (1/70 of the total volume), it does not cause a soft eye and intravitreal injection is not difficult. However, if you perform a detailed search on intravitreal injection of triamcinolone acetonide, you may see that lots of surgeons administer intravitreal triamcinolone acetonide (IVTA) after performing an anterior chamber paracentesis.[1]

Comment 2
The dosage for several studies looking at the use of IVTA in the treatment of macular oedema in branch retinal vein occlusions is 4 mg and in one study was 20–25 mg. Ozkiris and colleagues used 8 mg to treat their patients, but the reasoning for this dose is not commented upon.

Answer 2
The optimum dosage for IVTA injection is still unclear, and further investigations in optimal dosage have been conducted by several researchers. However, the dosages of 4, 8, and 25 mg have been currently used to treat the patients.[2–7]

Comment 3
The authors do not comment on whether they would recommend repeat injections, either to maintain the post-treatment improvement in visual acuity in those that responded or to treat the two cases that were refractory to initial IVTA.

Answer 3
As you know, the mean elimination half-life of triamcinolone is 18.6 and 3.2 days in non-vitrectomized and vitrectomized patients, respectively, and that after a single intravitreal injection, measurable concentrations of triamcinolone would be expected to last for approximately 3 months (93 ± 28 days) in the absence of a vitrectomy. In addition, Gillies *et al* have speculated that significant levels of triamcinolone persisted in the eye for at least 4 months after a single intravitreal injection of triamcinolone. Vasumathy and *et al* reported that clinically visible depot of intravitreal triamcinolone might be observed even after 120 days. Unfortunately, repeat injections may be required after 6 months of first injection in most patients.

Comment 4
Repeated intravitreal injections are not without risk – the authors did not report any injection- or corticosteroid-related complications.

Answer 4
I completely agree with you. Our study included a total of 19 eyes of 19 patients with persistent macular oedema due to BRVO. Pre- and post-treatment IOPs are presented in the study. During the follow-up period of 6.2 months, no other injection- or corticosteroid-related complications were observed. As you recognized, the total number of the patients is relatively low and the follow-up time is relatively short. However, in our another study that included a total of 212 eyes of 180 patients who underwent IVTA injection for various indications with a mean follow-up time of 9.2 months, the complications of IVTA injection that may be attributable to the injection procedure or to the corticosteroid suspension were reported.[4]

Comment 5
The authors do not discuss their feelings on the statistically significant IOP rise postinjection, except to mention that one eye with a persistently elevated IOP was successfully treated with topical medication.

Answer 5
Please see Answer 4.

Comment 6
The exclusion criteria of the study excluded patients if they had diabetes mellitus, presumably due to either the potential corticosteroid-related complications associated with this intervention, or because of any co-existing

macular oedema, which may have been a confounding factor. However, the authors mention diabetes as a risk factor for BRVO; therefore, excluding these patients is excluding a large patient group from this treatment.

Answer 6

As you know, an increased risk of BRVO has been suggested in persons with a history of systemic hypertension, atherosclerosis, cardiovascular disease, glaucoma, high body mass index, and inflammatory or thrombophilic conditions that may lead to retinal endothelial vascular damage. The interruption of venous flow in these eyes almost occurs at a retinal arteriovenous intersection, where a retinal artery crosses a retinal vein. Arterial compression of the vein is believed to be the main cause of BRVO. Compression of the vein may lead to turbulent flow in the vein. The turbulent flow in combination with the pre-existing endothelial vascular damage from the different conditions creates a local environment favourable to intravascular thrombus formation. The most common causes of BRVO are systemic hypertension and atherosclerosis. Diabetes mellitus is relatively a very low-risk factor. Moreover, some authors alleged that diabetes mellitus is not risk factor for BRVO.

In our study, a detailed history of the patients was obtained to evaluate the effect of IVTA in the treatment of persistent macular oedema in branch retinal vein occlusion. Therefore, excluding these patients does not mean excluding a large patient group from this treatment. The efficacy of IVTA in patients with diabetic macular oedema was reported in our another study.[7]

References

1 Martidis A, Duker JS, Greenberg PB, Rogers AH, Puliafito CA, Reichel E *et al*. Intravitreal triamcinolone for refractory diabetic macular edema. *Ophthalmology* 2002; **109**(5): 920–927.
2 Ito M, Okubo A, Sonoda Y, Yamakiri K, Sakamoto T. Intravitreal triamcinolone acetonide for exudative age-related macular degeneration among Japanese patients. *Ophthalmologica* 2006; **220**(2): 118–124.
3 Ozkiris A, Evereklioglu C, Oner A, Erkilic K. Pattern electroretinogram for monitoring the efficacy of intravitreal triamcinolone injection in diabetic macular edema. *Doc Ophthalmol* 2004; **109**(2): 139–145.
4 Ozkiris A, Erkilic K. Complications of intravitreal injection of triamcinolone acetonide. *Can J Ophthalmol* 2005; **40**(1): 63–68.
5 Ozkiris A, Evereklioglu C, Erkilic K, Ilhan O. The efficacy of intravitreal triamcinolone acetonide on macular edema in branch retinal vein occlusion. *Eur J Ophthalmol* 2005; **15**(1): 96–101.
6 Ozkiris A, Evereklioglu C, Erkilic K, Dogan H. Intravitreal triamcinolone acetonide for treatment of persistent macular oedema in branch retinal vein occlusion. *Eye* 2006; **20**(1): 13–17.
7 Ozkiris A, Evereklioglu C, Erkilic K, Tamcelik N, Mirza E. Intravitreal triamcinolone acetonide injection as primary treatment for diabetic macular edema. *Eur J Ophthalmol* 2004; **14**(6): 543–549.

A Özkiriş

Department of Ophthalmology, Erciyes University Medical Faculty, Yıldırım Beyazıt mah. Mustafa Simsek, Cad. Kardelen Apt. No.: 121/16, Melikgaz, Kayseri TR-38030, Turkey

Correspondence: A Özkiriş,
Tel: +90 352 4374901;
Fax: +90 352 4374912.
E-mail: aozkiris@erciyes.edu.tr

Eye (2007) **21,** 254–255. doi:10.1038/sj.eye.6702489; published online 28 July 2006

Sir,

Reply to Ozkiris *et al*

I read with interest the study by Ozkiris *et al*,[1] and feel it poses several interesting points.

The technique of administering the intravitreal injection, and the optimum dosage required to gain a therapeutic benefit still remains a matter of debate. Ozkiris and co-workers administer intravitreal triamcinolone acetonide (IVTA) after performing an anterior chamber paracentesis; in practice, this may be difficult as one is injecting into an already 'soft' eye. However, there seems to be a wide variation in injection technique, and few appear to be evidence-based, as highlighted in a recently published survey.[2] The dosage for several studies looking at the use of IVTA in the treatment of macular oedema in branch retinal vein occlusions is 4 mg,[3–5] and in one study was 20–25 mg.[6] Ozkiris and co-workers used 8 mg to treat their patients, but the reasoning for this dose is not commented upon. The varying doses administered to patients in different studies can make it difficult to draw any definite conclusions about the appropriate therapeutic dose.

A statistically significant improvement in visual acuity (VA) was seen after IVTA, with the maximal response between 1 and 3 months postinjection. This suggests that in order to maintain the best-achieved VA, repeat injections may be necessary. The authors do not comment on whether they would recommend repeat injections,