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*Eye* (2006) **20**, 1456–1458. doi:10.1038/sj.eye.6702334; published online 17 March 2006

### Sir,

Intractable glaucoma following posterior sub-tenon's triamcinolone acetonide for central retinal vein occlusion in a young adult

Recently, intravitreal triamcinolone acetonide (TA) has been used to treat neovascular, proliferative, edematous and inflammatory ocular diseases.<sup>1,2</sup> The most concerned adverse effect of intravitreal injection of TA except for endophthalmitis is elevated intraocular pressure (IOP). Accumulative studies have shown that the incidence of an IOP over 21 mmHg is about 30–40% in patients receiving intravitreal TA.<sup>1–4</sup> Although most of these patients can be treated systemically or topically, there was still about 1% with intractable glaucoma must undergo filtering or vitrectomy to normalize IOP.<sup>2–4</sup>

Posterior sub-Tenon's (PST) injection of steroid is an alternative route with proven effectiveness in resolution of cystoid macular oedema and only few patients developed IOP raised.<sup>5–7</sup> Herein, we report a young adult receiving PST injection of TA for central retinal vein occlusion (CRVO) who developed intractable glaucoma despite maximal antiglaucoma medication and surgical excision of the depot TA. He underwent trabeculectomy and IOP was well controlled rapidly after surgery.

## Case report

A 38-year-old man with an insignificant medical and ocular history presented with a sudden decrease in vision of left eye for 2 days. Best-corrected visual acuity (BCVA) was 20/200 in the left eye and 20/20 in the right eye. IOP was normal in both eyes. The patient was diagnosed with CRVO in the left eye (Figure 1). The right eye was normal. The patient received conservative treatment with eye drop (0.1% flumetholone, FML<sup>®</sup>; Allergan, Westport, County Mayo, Ireland) and oral medication (streptokinase and streptodornase, Varidase<sup>®</sup>; Wyeth, Princeton, NJ). Two months later, there was no improvement in BCVA. IOP was also normal in left eye. After being advised of risks and

benefits, the patient was treated with PST injection of TA (1 ml, 40 mg) in the left eye. Treatment was repeated at 2-week interval for a total of three injections. Two weeks after the second injection, her BCVA was 20/100 in the left eye. Her visual acuity continued to improve, and 2 weeks after the third injection, BCVA in the left eye was 20/50. Fundus examination at that time in the left eye showed almost resolution of retinal haemorrhages (Figure 2). One month after the 3rd injection, IOP started rising, from 25 to 55 mmHg. Iris neovascularization was not observed and the gonioscopy revealed a wide-open angle with absence of triamcinolone accumulation at 360 degrees. It was uncontrolled despite maximal antiglaucoma mediation



**Figure 1** Preinjection colour fundus photograph demonstrates a central retinal vein occlusion with intraretinal haemorrhage in all quadrants. The veins are dilated and tortuous.



**Figure 2** At 2 weeks after the third injection, the colour fundus photograph in the left eye showed almost resolution of retinal haemorrhages except for little haemorrhage in posterior pole.



including Cosopt, brimonidine and latanoprost, and oral acetazolamide and manitol. He received surgical excision of the depot TA but still failed to control IOP. Therefore, he underwent trabeculectomy and IOP quickly returned to normal after surgery.

# Comment

Secondary glaucoma is a risk with any form of corticosteroid therapy including topic, systemic, peribulbar or intravitreal delivery. The biochemical and morphological changes in the trabecular meshwork induced by corticosteroid may lead to increased outflow resistance and IOP rise.8 The corticosteroid-induced raised IOP when present for a long time may become irreversible as well as a challenge to resolve for ophthalmologist. The main advantages of periocular administration of TA vs intravitreal injection were a lower risk of endophthalmitis and IOP rise although the effect in reducing macular edema is not nearly as strong as is that of intravitreal injection.<sup>7,9</sup> Specially, it has been reported that younger age is a risk factor for a marked IOP rise after intravitreal TA.<sup>2</sup> Therefore, in our clinic, we choose to administrate TA by PST delivery when patients are at a younger age (usually <45 years). However, although intractable glaucoma due to peribulbar corticosteroids was rarely seen, it still occurred. In our patient, the IOP was still uncontrolled after excision of deposited TA and needed trabeculectomy to normalized IOP. Chew et al.<sup>10</sup> found diurnal IOP rise in young patients with CRVO and stressed that many 'normal' patients may be latent glaucoma suspects. This may predispose these patients to a high IOP response to corticosteroids and may partly explain the occurrence of intractable glaucoma in our case.

In conclusion, it is of course important to control elevated IOP to avoid further optic nerve damage and to restore retinal circulation. We caution the use of either intravitreal or PST injection of TA in young patients with CRVO although we believe that intravitreal or PST injection of TA is not necessarily contraindicated for young patients.

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The authors have no proprietary or financial interest in any material or device mentioned

*Eye* (2006) **20,** 1458–1459. doi:10.1038/sj.eye.6702335; published online 21 April 2006

## Sir,

# Macular hole secondary to X-linked retinoschisis

X-linked retinoschisis (XLR) is a leading cause of macular degeneration in male children. Stellate foveal schisis is pathognomonic, with a peripheral retinoschisis in half the cases. However, a high degree of clinical variability is observed.<sup>1</sup> We report a rare case of full-thickness macular hole secondary to foveal schisis in XLR.