CASE REPORT

Retinal pseudoangiitis after intravitreal triamcinolone

Jose Manuel García-Campos,¹ Ignacio García-Basterra,² Radua Kamal-Salah,² Isabel Baquero-Aranda²

¹Department of Ophthalmology, Centro de investigaciones médico-sanitarias, Málaga, Spain
²Hospital Virgen de la Victoria of Málaga, Málaga, Spain

Correspondence to
 Professor Jose Manuel García-Campos,
 raduamohamed@gmail.com

Accepted 12 January 2015

SUMMARY

We present a case of a 40-year-old woman with a fundus image similar to frosted retinal angiitis after undergoing pars plana vitrectomy and intravitreal triamcinolone injection. The patient with diabetic retinopathy was referred to our hospital with vision loss in her right eye secondary to vitreous haemorrhage. After pars plana vitrectomy and injection of triamcinolone acetonide a funduscopy examination revealed deposits of triamcinolone along the retinal vessels simulating a frosted retinal angiitis. Triamcinolone deposits along blood vessels could be the result of the reabsorption process of these crystals by the perivascular macrophages. Further studies are needed.

BACKGROUND

Triamcinolone acetonide (TA) is a corticosteroid suspension that has been used locally as a periocular and intravitreal injection for the treatment of cystoid macular oedema secondary to uveitis and other vascular retinopathies.^{1–4} A variety of complications including endophthalmitis, pseudoendophthalmitis, increased intraocular pressure, cataracts and central venous chorioretinopathy have been reported after the use of intravitreal corticosteroids.²

The use of intravitreal corticosteroids was first advocated by Machemer *et al*⁵ for the treatment of proliferative vitreoretinopathy. McCuen *et al*⁶ reported the lack of ocular toxicity of intravitreal TA in an experimental rabbit model. Clinical observations did not detect toxic reactions, and over the years corticosteroid use had been used in experimental trials in patients.^{2,7}

The purpose of this report is to describe a case of simulated frosted retinal angiitis after an intravitreal injection in a vitrectomised patient.

CASE PRESENTATION

A 40-year-old woman with long-term diabetic mellitus (8 years) was admitted to our hospital because of visual loss in her right eye. The ophthalmic examination revealed a best corrected visual acuity of light perception in her right eye and 1/2 in her left eye. Intraocular pressure was 16 mm Hg in her right eye and 15 mm Hg in her left eye. Dilated fundus examination of the right eye demonstrated a vitreous haemorrhage and a severe diabetic retinopathy in her left eye. Standard sutured 20-gauge pars plana vitrectomy with conjunctival peritomy was performed in her right eye without surgical complications. Intraoperative examination demonstrated a vascular proliferation situated in the inferonasal

retina (cause of vitreous haemorrhage) and a clinically significant macular oedema, which were treated at the end of the surgery with an intravitreal injection of 4 mg/0.1 mL TA. Posterior vitreous detachment was provoked intraoperatively to achieve a complete posterior vitrectomy. Panretinal photocoagulation was initiated intraoperatively but then completed in the clinic 8 days after the surgery.

Twenty-four hours after the surgery procedure, ophthalmological examination revealed deposits of TA along retinal arteries and veins (figure 1). Visual acuity was 1/4. Five days later, these deposits disappeared and the best corrected visual acuity was 1/3 without any retinal complication. Unfortunately, we do not have other retinal photographs.

The discs of both eyes had a C/D of 0.5 with a good neuroretinal ring. Intraocular pressure was inside normal limits without treatment in all visits.

DISCUSSION

Triamcinolone (TA) is a synthetic steroid of the glucocorticoid family with a fluorine instead of a hydrogen atom in the ninth position.¹ It is minimally soluble in water but more soluble in alcohol and chloroform. The decreased water solubility accounts for its prolonged duration of action. In non-vitrectomised patients the mean elimination half-life is 18.6 days and, in postvitrectomy eyes, decreased to around 3 days.² After injection, a discrete white cloud with little or no reaction is observed. Prominent floaters are, therefore, commonly encountered after treatment but usually subside within a few days as the material drops out of the visual axis.

Figure 1 Triamcinolone deposits around retinal vasculature simulating a frosted retinal angiitis.

CrossMark

To cite: García-Campos JM, García-Basterra I, Kamal-Salah R, *et al.* *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2014-206286

To the best of our knowledge, this is the first time that this unusual funduscopy image simulating a frosted retinal angiitis after pars plana vitrectomy and TA injection at the end of the surgery has been reported. No other adverse events were observed and the deposition of TA along the retinal blood vessels had no deleterious effect on the visual outcome. Eandi *et al*⁸ reported two cases in non-vitrectomised eyes in which intravitreal TA simulated a frosted retinal angiitis. The first case corresponded to a patient with macular oedema secondary to a branch retinal vein occlusion and the second case was of a patient with neovascular age-related macular degeneration. In both cases TA deposits were located in retinal arteries and veins in conjunction with TA suspension in the vitreous. The pathophysiology of this process is still unknown. In our case, this happened in a vitrectomised patient. A possible explanation is that residual vitreous along vessels after the vitrectomy was present,

causing adherence of the crystals. TA is minimally soluble in water, its elimination is a hard and slow mechanism where macrophages engulf the crystals and migrate to the perivascular spaces.⁸ This fact probably justifies the deposition of triamcinolone crystals along the retinal vessels.

Our patient only needed conservative treatment until the particles were reabsorbed.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Gopal L, Sharma T. Use of intravitreal injection of triamcinolone acetonide in the treatment of age-related macular degeneration. *Indian J Ophthalmol* 2007;55:431–5.
- 2 Tao Y, Jonas J. Intravitreal triamcinolone. *Ophthalmologica* 2011;225:1–20.
- 3 Lim J, Lee H, Shin M. Comparison of intravitreal bevacizumab alone or combined with triamcinolone versus triamcinolone in diabetic macular edema: a randomized clinical trial. *Ophthalmologica* 2012;227:100–6.
- 4 Zhang XL, Chen J, Zhang RJ, *et al*. Intravitreal triamcinolone versus intravitreal bevacizumab for diabetic macular edema: a meta-analysis. *Int J Ophthalmol* 2013;6:546–52.
- 5 Machemer R, Sugita G, Tano Y. Treatment of intraocular proliferations with intravitreal steroids. *Trans Am Ophthalmol Soc* 1979;77:171–80.
- 6 McCuen BW II, Bessler M, Tano Y, *et al*. The lack of toxicity of intravitreally administered triamcinolone acetonide. *Am J Ophthalmol* 1981;91:785–8.
- 7 Yeung CK, Chan KP, Chiang SW, *et al*. The toxic and stress responses of cultured human retinal pigment epithelium (ARPE 19) and human glial cells (SVG) in the presence of triamcinolone. *Invest Ophthalmol Vis Sci* 2003;44:5293–300.
- 8 Eandi CM, Klais CM, Freund KB, *et al*. Intravitreal triamcinolone simulating frosted retinal angiitis. *Retina* 2005;25:528–9.

Learning points

- ▶ Triamcinolone deposits after intravitreal injection at the end of vitrectomy could be a rare adverse effect.
- ▶ This could require an active process involving the elimination of triamcinolone by macrophages.
- ▶ Further studies are needed to understand the pathophysiology of the triamcinolone retinal reabsorption.

Copyright 2015 BMJ Publishing Group. All rights reserved. For permission to reuse any of this content visit <http://group.bmj.com/group/rights-licensing/permissions>.
BMJ Case Report Fellows may re-use this article for personal use and teaching without any further permission.

Become a Fellow of BMJ Case Reports today and you can:

- ▶ Submit as many cases as you like
- ▶ Enjoy fast sympathetic peer review and rapid publication of accepted articles
- ▶ Access all the published articles
- ▶ Re-use any of the published material for personal use and teaching without further permission

For information on Institutional Fellowships contact consortiasales@bmjgroup.com

Visit casereports.bmj.com for more articles like this and to become a Fellow