Unexpected outcome (positive or negative) including adverse drug reactions

Brilliant crystallisation in the anterior chamber and subretinal space following adjunctive intravitreal ranibizumab for diabetic vitrectomy

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Summary

To report a unique case of crystallisation in the anterior chamber and subretinal space in a Malay lady following inadvertent subretinal injection of ranibizumab prior to vitrectomy for proliferative diabetic retinopathy.

BACKGROUND

I hope to share with my colleagues the anterior segment photographs documenting unusual brilliant, birefringent crystals appearing in the anterior chamber after a ranibizumab injection. The crystals were subsequently also discovered in a subretinal location during subsequent vitrectomy.

CASE PRESENTATION

A 28-year-old woman presented with right eye blurring of vision for 1 year. Three years back she had undergone left vitrectomy, membrane peeling, endolaser and silicone oil for vitreous haemorrhage (VH) and tractional retinal detachment secondary to proliferative diabetic retinopathy (PDR) followed 6 months later by phacoemulsification, silicone oil removal and intraocular lens implantation. During this early follow-up she was noted to have right VH, extensive neovascularisation and clinically significant macular oedema (figure 1). She received photocoagulation but chose to defer surgery. Her visual acuity at last review was counting fingers oculus dexter and 5/60, 6/24 oculus sinister.

At her representation 20 months later, her right visual acuity was bare light perception with a dense intumescent cataract. B scan ultrasonography showed a mobile, thickened 'posterior hyaloid' with a dense subhyaloid haemorrhage (figure 2). Preoperative adjunctive intravitreal ranibizumab 0.5 mg/0.05 ml (Lucentis, Genentech, San Francisco, California, USA) was given 4 days prior to vitrectomy. A 1 ml insulin syringe with a 27G (white) needle was used.

Day 1 postinjection, the patient was comfortable. The most significant finding was spectacular multicoloured crystals in the lower half of the anterior chamber which also dusted the iris (figure 3). There was anterior chamber flare and cells of 2+ but no hypopyon. Vision remained a vague perception to light. A diagnosis of infectious endophthalmitis was made.

Figure 1 Right fundus photograph taken 1 year prior to current presentation in which there is an advanced proliferative diabetic retinopathy and maculopathy.

Figure 2 B scan ultrasonography of the right eye showing dense subhyaloid haemorrhage present prior to injection.

Figure 3 Anterior segment photography under diffuse illumination shows brilliant crystallisation in the anterior chamber on the first day following intravitreal injection of adjunctive ranibizumab.

INVESTIGATIONS

- ▶ B scan ultrasonography—unchanged
- ▶ Vitreous tap for Gram stain, culture and sensitivity
- ▶ Aqueous tap for Gram stain, culture, sensitivity and cytology

DIFFERENTIAL DIAGNOSIS

- ▶ Infectious exogenous endophthalmitis
- ▶ Syringe/needle contaminants
- ▶ VH resulting in spill-over of an unusual type of synchysis scintillans

TREATMENT

Intravitreal injection of 1 mg vancomycin and 2.25 mg cefazidime in 0.1 ml was given for infective endophthalmitis.

OUTCOME AND FOLLOW-UP

Two days later, phacoemulsification and 23G vitrectomy were performed. A total rhegmatogenous retinal detachment with proliferative vitreoretinopathy grade C posterior was noted intraoperatively. There was minimal VH and fresh blood in the subretinal space associated with the same brilliant crystals. The original break could not be found. A broad 360° retinectomy was performed and the crystals were removed. The remaining retina was attached under silicone oil. There was no recurrence of crystallisation. Cytology performed on the aqueous aspirate revealed scattered lymphocytes and necrotic retinal tissue associated with occasional granulomata containing polarisable rectangular-shaped crystalline materials consistent with a foreign body granuloma.

Six months postoperatively she was comfortable with no recurrence of the crystals and a flat retina under silicone oil. Her visual acuity however, could not be salvaged and she had no light perception at the last review.

DISCUSSION

Intraocular crystallisation is an unusual event noted in silicone intraocular lenses¹ following triamcinolone intravitreal injections. Infectious crystalline keratopathy occurs in *Mycobacterium* and *Pseudomonas* infections.² Synchysis scintillans, characterised by cholesterol crystals in the vitreous, occurs following prolonged VH.³ Crystallisation in the anterior chamber and subretinal space in a Malay lady following inadvertent subretinal injection of ranibizumab prior to vitrectomy for PDR has never been previously reported.

The crystallisation could be due to an unusual infection as it was associated with intraocular inflammation and isolation of Gram-positive organisms from the aqueous aspirate day 1 postinjection. Endophthalmitis is a known complication of intravitreal injections.⁴ However, ranibizumab injections have been associated with inflammation or uveitis⁵ and the organisms could be a contaminant. Another possibility is non-infectious contaminants present in the syringe and/or needle used in the injection as evidenced by the compartmentalisation of the crystals, absence of symptoms and the cytological report. The third possibility is subretinal crystallisation following prolonged VH. The crystals may have been pushed anteriorly through the zonules into the anterior chamber following inadvertent subretinal injection of ranibizumab which expanded the subretinal space.³ This is a truly unique case of intraocular crystallisation seen in the anterior chamber and subretinal space following intravitreal ranibizumab injection.

Learning points

- ▶ Intraocular crystallisation can occur following intravitreal injection of adjunctive ranibizumab for diabetic vitrectomy.
- ▶ Presence of intraocular crystals following intravitreal injection should be managed in accordance with endophthalmitis protocols in the first instance.
- ▶ Contaminants from the syringe or needle used for intravitreal injections may appear as brilliant crystals in the anterior chamber and subretinal space.

Competing interests None.

Patient consent Obtained.

REFERENCES

1. Olson RJ, Caldwell KD, Crandall AS, et al. Intraoperative crystallization on the intraocular lens surface. *Am J Ophthalmol* 1998;**126**:177–84.
2. Hu FR. Infectious crystalline keratopathy caused by *Mycobacterium fortuitum* and *Pseudomonas aeruginosa*. *Am J Ophthalmol* 1990;**109**:738–9.
3. Spraul CW, Grossniklaus HE. Vitreous hemorrhage. *Surv Ophthalmol* 1997;**42**:3–39.
4. Pili S, Kotsolis A, Spaide RF, et al. Endophthalmitis associated with intravitreal anti-vascular endothelial growth factor therapy injections in an office setting. *Am J Ophthalmol* 2008;**145**:879–82.
5. Rosenfeld PJ, Brown DM, Heier JS, et al. MARINA Study Group. Ranibizumab for neovascular age-related macular degeneration. *N Engl J Med* 2006;**355**:1419–31.

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Please cite this article as follows (you will need to access the article online to obtain the date of publication).

Bastion M-LC, Mustapha M, Ho I. Brilliant crystallisation in the anterior chamber and subretinal space following adjunctive intravitreal ranibizumab for diabetic vitrectomy. *BMJ Case Reports* 2012;10.1136/bcr-2012-007260, Published XXX

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