CASE REPORT

Resolution of idiopathic granulomatous orbital inflammation with intraorbital triamcinolone

Elizabeth M McElnea,¹ Sean Hynes,² Gerry T Fahy¹

¹Department of Ophthalmology, University College Hospital Galway, Galway, Ireland
²Department of Pathology, University College Hospital Galway, Galway, Ireland

Correspondence to
 Dr Elizabeth Margaret McElnea, elizabethmcelnea@yahoo.com

Accepted 6 February 2014

SUMMARY

A 77-year-old man presented with a right lower eyelid swelling. Biopsy and histopathology of the lesion identified idiopathic granulomatous orbital inflammation. Clinical resolution of this patient's orbital mass was achieved with injection of 40 mg triamcinolone acetonide, perilesionally, at three sites in the right orbit. Such treatment may thus form an alternative to oral corticosteroid therapy in the management of granulomatous orbital inflammation.

BACKGROUND

This case report reiterates the necessity for caution in the treatment of patients with a history of tuberculosis (TB) with systemic corticosteroids.

It outlines the successful use of the perilesional injection of triamcinolone acetonide (TA) as an alternative to systemic corticosteroids in the treatment of granulomatous orbital inflammation and establishes this as a first-line treatment modality for select patients.

CASE PRESENTATION

A 77-year-old man presented with a 4-week history of painless right lower eyelid swelling. At examination, a firm, non-tender mass was palpable in the lid.

This man had a history of pulmonary TB for which he underwent partial right upper lobectomy and received a short course of anti-TB medications, therapy inadequate for the successful treatment of TB.

INVESTIGATIONS

As can be seen from [figure 1](#), CT orbits showed a homogeneous mass inferiorly in the right orbit, which extended circumferentially around the globe,

Figure 1 Coronal CT orbits at presentation showing a large mass medially in the inferior portion of the right orbit.

greatest medially. Biopsy and histopathology of the lesion identified a non-necrotising, granulomatous inflammation ([figure 2](#)). Immunohistochemical staining with the T-cell and B-cell markers CD3 and CD20, respectively, confirmed the presence of a polyclonal lymphoid population. The mass did not represent lymphoma. As [figure 3](#) shows, staining with acid-fast bacteria and Grocott's methenamine silver stains for acid-fast bacilli and fungal organisms failed to reveal either excluding TB and fungal infection, respectively. Antineutrophil cytoplasmic antibody was negative, making Wegener's granulomatosis unlikely. This patient's calcium and ACE levels were within the normal range, making a diagnosis of sarcoid also unlikely.

This patient's chest X-Ray showed a marked lung volume loss and bilateral upper lobe retraction. Bronchoscopy did not reveal lesions suggestive of TB. Samples obtained at bronchoalveolar lavage were culture negative for mycobacteria.

DIFFERENTIAL DIAGNOSIS

A diagnosis of idiopathic orbital inflammatory syndrome (IOIS) was made on the basis of the aforementioned histopathological findings.

TREATMENT

We planned to treat this patient's orbital inflammation with oral corticosteroids. Anti-TB treatment was started prior to initiation of this to prevent TB reactivation. The patient developed acute hepatitis secondary to isoniazid treatment, however. His anti-TB therapy was discontinued. Forty milligram TA was injected perilesionally—medially, inferomedially and inferolaterally into the right orbit.

Figure 2 Histological section stained with H&E demonstrating a circumscribed non-necrotising granuloma with epithelioid macrophages and a multinucleated giant cell (arrow).

CrossMark

To cite: McElnea EM, Hynes S, Fahy GT. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2013-009761

Figure 3 (A) Ziehl-Neelsen and (B) Grocott's methenamine silver (GMS) stains, negative for acid-fast bacilli and fungal organisms, respectively. Magnification $\times 20$.

OUTCOME AND FOLLOW-UP

Significant clinical improvement was noted 1 month later. At 3 months following this, however, the orbital mass recurred. Intraorbital injection of 40 mg TA was repeated. As [figure 4](#) shows, MRI of orbits 2 months after this showed a marked reduction in the size of the original mass. At 24 months postpresentation, there was no clinical evidence of an orbital mass.

DISCUSSION

IOIS describes a non-infectious, non-neoplastic, inflammatory, space occupying condition of the orbit of unknown aetiology.¹ It may be subdivided further on the basis of the predominant histological findings. Giant cells and non-necrotising granulomas are the key findings in non-specific granulomatous inflammation of the orbit.² A rare clinical entity, idiopathic orbital inflammation is a diagnosis of exclusion.³

Granulomatous orbital inflammation may be idiopathic as in the case we describe here or as occurs in sarcoid, TB infection and Wegener's granulomatosis, or as a tissue reaction to trauma, a ruptured dermoid cyst or a foreign body.¹ Orbital and systemic clinical examination, orbital CT or MRI and orbital biopsy usually establish the specific diagnosis.

Systemic corticosteroids are an established treatment for all variants of orbital inflammation including granulomatous inflammation. Intralesional steroid has been used successfully to treat eyelid capillary haemangioma,⁴ chalazia,⁵ cutaneous

sarcoid⁶ and vernal conjunctivitis.⁷ The use of intraorbital steroid injections to treat orbital inflammatory disease has not, however, been reported widely. Orbital xanthogranulomata, idiopathic orbital inflammation, thyroid orbitopathy and dacryoadenitis have been reported in only small case series to benefit from intraorbital steroid. Ebner *et al* described six patients with orbital xanthogranulomata treated with intralesional TA injection (20–120 mg). Local control was obtained in all patients. Four patients required repeated injections.⁸ Orbital TA injections were shown to have beneficial effects on extraocular muscle size and diplopia in 20 patients with thyroid related-orbitopathy in whom a series of monthly injections of 20 mg TA were given.⁹ Five patients with acute isolated idiopathic dacryoadenitis treated with intralesional β -methasone injection (14–48 mg) experienced complete resolution of disease after a single injection. No recurrence was noted at 19 months.¹⁰ In 10 patients with clinically, radiologically and histologically confirmed idiopathic orbital inflammation who received 20–40 mg/mL of TA intralesionally with repeat injection at 4-week intervals, if resolution was not achieved, substantial improvement (in 1 patient) and complete resolution (in 8 patients) were noted during a mean follow-up of 9.8 months.¹¹

Orbital injections of TA involve placement of the medication posterior to the orbital septum, into the area around the lesion. A 25 gauge needle is well tolerated and allows easy passage of the particulate injection. TA is most commonly used but β -methasone and methylprednisolone have also been injected intraorbitally.¹² A 40 mg (1 mL) injection of TA is approximately equivalent to a 20 mg dose of oral prednisolone.¹³ Periocular injections may need to be repeated to achieve the desired therapeutic effect. The total systemic dose given remains substantially smaller, however, compared with long-term daily oral corticosteroid.¹¹ The elimination rate of TA from the orbit is not known but active corticosteroid has been found at the site of injection 13 months later in some patients.¹⁴ Side effects related to the drug's effect on the adrenal gland are reported much more commonly with oral steroid use (54.1%) than with intralesional steroid use (10.4%).¹⁵

Side effects of intraorbital triamcinolone are raised intraocular pressure,¹⁶ ptosis,¹⁷ skin depigmentation,¹⁸ eyelid skin and

Figure 4 MRI orbits following perilesional injection of triamcinolone acetate showing a significant reduction in size of the granulomatous mass in the right orbit.

conjunctival necrosis,¹⁹ granuloma formation,¹³ fat herniation and atrophy.²⁰ Lipomatosis, an excessive deposition of adipose tissue, though uncommon, has also been described with corticosteroid injection.²¹ Acute loss of vision has also been reported following intraorbital steroid injection. The mechanism is thought to be occlusion of the retinal circulation with steroid particles.²² Cataract progression has also been reported following periocular injection of TA.²³

Learning points

- ▶ Perilesional intraorbital triamcinolone acetonide injections may be an attractive alternative to oral corticosteroid therapy in the treatment of granulomatous orbital inflammation.
- ▶ The injections are well tolerated, are repeatable when required, are associated with decreased corticosteroid-related systemic toxicity compared with typical oral therapy and appear to achieve results which are at least comparable to such established treatment.
- ▶ In selected patients, as here, in whom systemic steroid therapy is relatively contraindicated, intraorbital steroid may be considered as a first-line treatment.

Contributors All authors contributed to the conception and design of this case report, the acquisition of relevant data, drafting of the article and its critical revision and approval prior to submission.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Garner A. Pathology of pseudotumours of the orbit: a review. *J Clin Pathol* 1973;26:639.
- 2 Mombaerts I, Schlingemann RO, Goldschmeding R, et al. Idiopathic granulomatous orbital inflammation. *Ophthalmology* 1996;103:2135–41.
- 3 Jacobs D, Galetta S. Diagnosis and management of orbital pseudotumor. *Curr Opin Ophthalmol* 2002;13:347–51.
- 4 Kushner BJ. The treatment of periorbital infantile hemangioma with intralesional corticosteroid. *Plast Reconstr Surg* 1985;76:517–26.
- 5 Pizzarello LD, Jakobiec FA, Hofeldt AJ, et al. Intralesional corticosteroid therapy of chalazia. *Am J Ophthalmol* 1978;85:818–21.
- 6 Bersani TA, Nichols CW. Intralesional triamcinolone for cutaneous palpebral sarcoidosis. *Am J Ophthalmol* 1985;99:561–2.
- 7 Holsclaw DS, Whitche JP, Wong IG, et al. Supratarsal injection of corticosteroid in the treatment of refractory vernal keratoconjunctivitis. *Am J Ophthalmol* 1996;121:243–9.
- 8 Elner VM, Mintz R, Demirci H, et al. Local corticosteroid treatment of eyelid and orbital xanthogranuloma. *Trans Am Ophthalmol Soc* 2005;103:69–73; discussion 73–64.
- 9 Ebner R, Devoto MH, Weil D, et al. Treatment of thyroid associated ophthalmopathy with periocular injections of triamcinolone. *Br J Ophthalmol* 2004;88:1380–6.
- 10 Mohammed Ael N. Intralesional steroid injection for management of acute idiopathic dacryoadenitis: a preliminary result. *Ophthalm Plast Reconstr Surg* 2005;21:138–41.
- 11 Leibovitch I, Prabhakaran VC, Davis G, et al. Intraorbital injection of triamcinolone acetonide in patients with idiopathic orbital inflammation. *Arch Ophthalmol* 2007;125:1647–51.
- 12 Ferrante P, Ramsey A, Bunce C, et al. Clinical trial to compare efficacy and side-effects of injection of posterior sub-Tenon triamcinolone versus orbital floor methylprednisolone in the management of posterior uveitis. *Clin Experiment Ophthalmol* 2004;32:563–8.
- 13 Goldberg RA. Orbital steroid injections. *Br J Ophthalmol* 2004;88:1359–60.
- 14 Kalina PH, Erie JC, Rosenbaum L. Biochemical quantification of triamcinolone in subconjunctival depots. *Arch Ophthalmol* 1995;113:867–9.
- 15 Wasserman BN, Medow NB, Homa-Palladino M, et al. Treatment of periocular capillary hemangiomas. *J AAPOS* 2004;8:175–81.
- 16 McGhee CNJ, Dean S, Danesh-Meyer H. Locally administered ocular corticosteroids: benefits and risks. *Drug Saf* 2002;25:33–55.
- 17 Viola F, Morescalchi F, Ratiglia R, et al. Ptosis following an intravitreal injection of triamcinolone acetonide. *Eye* 2006;21:421–3.
- 18 Cohen B, Tripathi R. Eyelid depigmentation after intralesional injection of a fluorinated corticosteroid for chalazion. *Am J Ophthalmol* 1979;88:269–70.
- 19 Allen QB, Lowder CY, Meisler DM. Conjunctival necrosis following the administration of subconjunctival corticosteroid. *Ophthalmic Surg Lasers* 1998;29:779–80.
- 20 Droste P, Ellis FD, Sondhi N, et al. Linear subcutaneous fat atrophy after corticosteroid injection of periocular hemangiomas. *Am J Ophthalmol* 1988;105:65–9.
- 21 Gupta OP, Boynton JR, Sabini P, et al. Proptosis after retrobulbar corticosteroid injections. *Ophthalmology* 2003;110:443–7.
- 22 Shorr N, Seiff S. Central retinal artery occlusion associated with periocular corticosteroid injection for juvenile hemangioma. *Ophthalmic Surg* 1986;17:229–31.
- 23 Tanner V, Kanski J, Frith P. Posterior sub-Tenon's triamcinolone injections in the treatment of uveitis. *Eye* 1998;12:679–85.

Copyright 2014 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