Bilateral cataracts and glaucoma induced by long term use of steroid eye drops

Jeremy M Butcher, Michael Austin, James McGalliard, Robert D Bourke

All but the shortest courses of steroid eye drops require referral to an ophthalmologist

The adverse effects of topical steroid administration to the eye are well known and include glaucoma, cataract, exacerbation of corneal infection, and systemic effects secondary to systemic absorption.^{1,2} Previous reports have highlighted the potential reactivation or exacerbation of herpes simplex keratitis, together with an increased risk of other infections.^{3,4} We report a case of steroid induced glaucoma and cataracts (with irreversible visual loss) following prolonged unsupervised administration of topical steroid eyedrops.

Case report

A 47 year old woman presented to the accident and emergency department with a chronic history of irritable eyes, a right upper lid chalazion, and decreasing vision over three months. The ophthalmic history was of left amblyopia and an episode of acute anterior uveitis several years previously. This uveitis had been treated at St Paul's Eye Hospital with topical steroids for four weeks. The only relevant medical history was of hypothyroidism.

On examination her best corrected visual acuities were 6/36 in the right eye and 6/36 in the left eye (previously 6/6 and 6/36 respectively). There was a right relative afferent pupillary defect, a right divergent squint, and a dense posterior subcapsular cataract in each eye. Her intraocular pressures were 58 mmHg in the right eye and 54 mmHg in the left, with open angles. Both optic discs showed advanced cupping, the right being worse, and her maculas looked normal. She had pronounced blepharitis and a left upper lid chalazion.

On further inquiry the patient admitted to having administered 0.1% betamethasone drops and 0.1% dexamethasone drops, each three times daily, to both eyes over the previous three years. These drugs were obtained from her general practitioner on a repeat prescription basis and had been started for the treatment of an uncomfortable eye. Her intraocular pressure and visual acuity had not been monitored. Steroid induced glaucoma and cataract were diagnosed and the steroid drops discontinued. She was treated with topical levobunolol 0.5% and oral acetazolamide slow release 250 mg daily for two days for her glaucoma.

On outpatient review adequate control of intraocular pressure was achieved with the addition of pilocarpine 1% four times daily to the right eye. In view of the severe irreversible glaucomatous damage to the right eye (previously the better eye) she was listed for left cataract extraction and intraocular lens implantation, this now being the eye with the better visual potential, despite amblyopia.

Discussion

The cause of this patient's glaucoma and cataracts was chronic steroid administration without ophthalmic supervision. This resulted in significant, irreversible visual loss that was wholly iatrogenic. The symptoms, however, were of ocular surface irritation due to blepharitis, which is in the main an innocuous condition. The appropriate treatment is warm flannel

compresses to the lid, lid scrubs with cotton buds and diluted baby shampoo, antibiotic ointment, and, occasionally, low dose systemic tetracycline.

Steroids will induce a rise in intraocular pressure (glaucoma) after a few weeks in 40% of normal people.⁵ Glaucoma is more often associated with topical ocular or periocular steroids than with systemic steroids, and recommended screening includes a baseline intraocular pressure measurement and further measurement every few weeks initially, then every few months.⁶

Steroid induced cataracts, typically of the posterior subcapsular type, occur in an appreciable number of patients taking oral steroids for systemic disease—for example chronic obstructive airways disease—and after organ transplantation. Several studies have shown that there is no clear relation between the steroid use and the degree of lens opacity,⁷⁻⁹ although it has been suggested that 10-15 mg of prednisone for one year may be sufficient to cause cataract.⁶ Cataract may also result from topical administration, and a dosage of one drop of topical steroid a day for one year is sufficient to cause cataract formation.¹⁰

In correspondence following a previous lesson of the week⁴ it was argued that general practitioners can examine eyes in some detail, using magnification and vital staining, and that steroids should be withheld only when there is evidence of visual loss.¹¹ However, the assessment of intraocular pressure was not addressed other than in the passing comment that there was no case of steroid induced glaucoma in the Moorfields study.⁴ Our case serves to emphasise the dangers of the inappropriate and unsupervised use of this class of drug. The *British National Formulary* states that topical steroid preparations "should normally only be used under expert supervision" and "should not be prescribed for the undiagnosed 'red eye'".¹² We endorse these recommendations and emphasise the need for monitoring intraocular pressure in patients receiving long term topical steroids. In practice, this means that patients receiving steroid eyedrops for more than three weeks should be referred to an ophthalmologist.

1 Thygesen P, Hogan MJ, Kimura SJ. Cortisone and hydrocortisone in ocular infection. *Trans Am Acad Ophthalmol* 1955;57:64-85.

2 Royal Pharmaceutical Society of Great Britain and British Medical Association. *British national formulary*. London: Pharmaceutical Press, 1992:379 (No 24, September.)

3 St Clair Roberts D. Steroids, the eye, and general practitioners. *BMJ* 1986;292:1414-5.

4 Lavin MJ, Rose GE. Use of steroid eye drops in general practice. *BMJ* 1986;292:1448-50.

5 Armaly MF. Statistical attributes of the steroid hypertension response in the clinically normal eye. I. The demonstration of three levels of response. *Invest Ophthalmol Vis Sci* 1965;4:187-97.

6 Renfro L, Snow JS. Ocular effects of topical and systemic steroids. *Dermatol Clin* 1992;10:505-12.

7 Debnath SC, Abomelha MS, Jawdal M, Chang R. Ocular side effects of systemic steroid therapy in renal transplant patients. *Ann Ophthalmol* 1987;19:435-7.

8 Limaye SR, Pillai S, Tina LU. Relationship of steroid dose to degree of posterior subcapsular cataracts in nephrotic syndrome. *Ann Ophthalmol* 1988;20:225-7.

9 Majure M, Mroneh S, Spock A. Risk factors for the development of posterior subcapsular cataracts in patients with cystic fibrosis and allergic bronchopulmonary aspergillosis treated with corticosteroids. *Paediatr Pulmonol* 1989;6:260-2.

10 Urban RC, Cotlier E. Corticosteroid induced cataracts. *Surv Ophthalmol* 1986;31:102-10.

11 Steroids, the eye, and general practitioners. *BMJ* 1986;292:1737-8.

(Accepted 13 December 1993)

Department of
Ophthalmology, Royal
Liverpool University
Hospital Trust, Liverpool
L7 8XP

Jeremy M Butcher, senior
house officer
Michael Austin, registrar
James McGalliard, consultant
Robert D Bourke, fellow

Correspondence to:
Mr J M Butcher,
Manchester Royal Eye
Hospital, Manchester
M13 9WH.

BMJ 1994;308:43