tration of the allergen is too low, or the vehicle is inappropriate. To increase sensitivity intracutaneous injection may be carried out. If delayed hypersensitivity is suspected the results are read at 48 and 96 hours.

Various β blocking ophthalmic preparations have been implicated in allergic contact conjunctivitis⁴ and allergic contact dermatitis¹⁵⁻¹⁴ (Table 1). Positive allergic reactions to more than one β blocker in the same patient have raised the question of cross sensitivity between various β blockers, which has been demonstrated for some β blockers⁹⁻¹¹ and not for others.¹²⁻¹⁴ It is likely that cross sensitisation exists between certain β blockers only, but the numbers reported to date are small.

Contact urticaria describes a particular reaction after contact with the skin or mucous membranes. The prototype is the weal and flare response, but a spectrum exists from pruritus only through weal and flare to a systemic reaction. The diagnosis of contact urticaria may be difficult when the eyes are involved. The weal and flare response may not be apparent and the diagnosis is suggested by the symptoms of burning or stinging rather than the signs which are more easily discernible on the skin elsewhere. Symptoms occur early, being precipitated by instillation of the offending substance into the eye.

Contact urticaria is classified into immunological, non-immunological, and unknown categories.¹⁵ Regardless of the mechanism the final common pathway is probably the same and eventuates in histamine and probably other mediators being released from mast cells. Immunologically triggered contact urticaria may involve IgE mediated hypersensitivity as indicated by a positive radioallergosorbent test (RAST). Prick or scratch tests will be positive in the affected individual and negative in healthy controls, in contrast to non-immunological contact urticaria which may be elicited in healthy asymptomatic individuals.

Sensitisation to pilocarpine is rarely noted, but a case each of allergic contact dermatitis and of

allergic contact and photocontact dermatitis has been reported.^{16,17} Contact urticaria due to pilocarpine has not, to our knowledge, previously been reported.

Our patient is of interest because in addition to type IV hypersensitivity to three ophthalmic β blockers he developed contact urticaria to pilocarpine. He is currently using levobunolol hydrochloride to control his glaucoma without showing an adverse reaction as yet.

We are grateful to Ms E Kritzing for referring the patient, and to the following pharmaceutical companies who kindly supplied β blockers for skin testing: Alcon, Allergan, Dispersa, Merck Sharp and Dohme, and Smith and Nephew.

- O'Donnell BF, Foulds IS. Contact allergy to beta-blocking agents in ophthalmic preparations. *Contact Dermatitis* 1993; 28: 121-2.
- Herbst RA, Maibach HI. Contact dermatitis caused by allergy to ophthalmic drugs and contact lens solutions. *Contact Dermatitis* 1991; 25: 305-12.
- Podmore P, Storrs FJ. Contact lens intolerance; allergic conjunctivitis? *Contact Dermatitis* 1989; 20: 98-103.
- Cameli N, Vicenzi C, Tosti A. Allergic contact conjunctivitis due to timolol in eyedrops. *Contact Dermatitis* 1991; 25: 129-30.
- Romaguera C, Grimalt F, Vilaplana J. Contact dermatitis by timolol. *Contact Dermatitis* 1986; 14: 248.
- Fernandez-Vozmediano JM, Alonso Blasi N, Romero-Cabrera MA, Carrascosa-Cerquero A. Allergic contact dermatitis to timolol. *Contact Dermatitis* 1986; 14: 252.
- van der Meer HLM, Meurs PJ. Sensitization to levobunolol eyedrops. *Contact Dermatitis* 1993; 28: 41-2.
- Schultheiss E. Ueberempfindlichkeit gegenueber levobunolol. *Derm Beruf Umwelt* 1989; 37: 185-6.
- Van Joost Th, Middelkamp Hup J, Ros FE. Dermatitis as a side-effect of long-term topical treatment with certain beta-blocking agents. *Br J Dermatol* 1979; 101: 171-6.
- de Groot AC, Conemans J. Contact allergy to metipranolol. *Contact Dermatitis* 1988; 18: 107-8.
- Corazza M, Virgili A, Mantovani L, Taddei Masieri L. Allergic contact dermatitis from cross-reacting beta-blocking agents. *Contact Dermatitis* 1993; 28: 188-9.
- Kanzaki T, Kato N, Kabasawa Y, Mizuno N, Yuguchi M, Majima A. Contact dermatitis due to the beta-blocker befunolol in eyedrops. *Contact Dermatitis* 1988; 19: 388.
- Gailhofer G, Ludvan M. 'Beta-blockers': sensitizers in periorbital allergic contact dermatitis. *Contact Dermatitis* 1990; 23: 262.
- Mancuso G. Allergic contact dermatitis due to befunolol in eyedrops. *Contact Dermatitis* 1992; 27: 198.
- Greaves MW, Kaplan AP. Urticaria and angioedema. In: Samter M, Talmage DW, Frank MM, Frank Austen K, Claman HN, eds. *Immunological diseases*. 4th ed. Boston/Toronto: Little, Brown, 1988: 1187-204.
- Ortiz FJ, Postigo C, Ivars J, Ortiz PL, Merino V. Allergic contact dermatitis from pilocarpine and thimerosal. *Contact Dermatitis* 1991; 25: 203-4.
- Helton J, Storrs FJ. Pilocarpine allergic contact and photocontact dermatitis. *Contact Dermatitis* 1991; 25: 133-4.

Iris cyst after traumatic implantation of an eyelash into the anterior chamber

H B Hoh, M J Menage, C Dean-Hart

Bristol Eye Hospital
H B Hoh
M J Menage
C Dean-Hart

Correspondence to:
Dr H B Hoh, Bristol Eye
Hospital, Lower Maudlin
Street, Bristol BS1 2LX.
Accepted for publication
15 June 1993

Cilia may be passively introduced into the eye during a penetrating injury and are often well tolerated in the anterior chamber (AC). The decision to surgically remove the cilium is difficult and must be based on the individual clinical situation and the possible consequences of leaving organic material in the AC.

We report a case of late development of an implantation cyst from an intraocular cilium.

Case report

A 16-year-old male presented after striking his right eye on the corner of a cardboard box. His

Figure 1 Implantation cyst at the inferior aspect of the iris with embedded cilium (arrow).

Figure 2 Low power view of the implantation cyst. The section demonstrates keratinising epidermis with pigment cells in the stroma and is consistent with an implantation cyst (haematoxylin and eosin, $\times 20$).

visual acuity was counting fingers. There was a shelved, full thickness corneal laceration that had self-sealed and was Siedel test negative. A cilium was observed in the AC at some distance from the corneal wound. There was fibrin in the AC and a microscopic hyphaema.

The patient was admitted and treated conservatively with padding and topical antibiotics. The cornea healed spontaneously and the visual acuity returned to 6/6 after some months despite the continued presence of the cilium in the AC.

Four years after the injury an iris cyst was observed at the basal end of the cilium where it

had become embedded in the iris inferiorly (Fig 1). Observation over a period of months showed the cyst to be slowly enlarging.

YAG laser photoablation was unsuccessful and surgical removal was undertaken. The AC was entered at the inferior limbus and viscoelastic was introduced. The cilium and cyst were excised with a broad iridectomy. Light microscopy demonstrated keratinising epidermis with attached stroma containing pigment cells (Fig 2). The appearances were consistent with an implantation cyst. The postoperative phase was unremarkable with eventual recovery of an acuity of 6/6.

Comment

The passive introduction of a cilium into the eye during intraocular trauma is a relatively rare complication.¹⁻³ In contrast to other organic material, it is relatively inert and is rarely associated with infection. If the end of the cilium is within the corneal wound then a patent route for microbial infection might be maintained and consequently surgical removal will be both more desirable and easier to achieve. An immediate granulomatous reaction has been described.⁴ Rarely, a delayed inflammatory response leading to visual loss may occur if the cilium is left in situ. Cyst formation has been mentioned by several authors but to our knowledge there has not been documentation of a specific case with histological confirmation.¹⁴

Various methods of removal of foreign material from the AC have been described.⁵⁶ The difficulty of atraumatic surgical removal in an eye with potentially excellent vision explains the initial decision to leave the cilium in the AC in this case. The late development of an implantation cyst at the base of the cilium necessitated surgical removal. Despite the inferior broad iridectomy, the patient has not subsequently complained of glare and has retained excellent visual acuity.

Although cilia are often well tolerated in the AC, the risk of later development of an implantation cyst should be considered.

1 Sharpe OA. Cilia in the anterior chamber. *Am J Ophthalmol* 1925; 8: 301-6.

2 Cowen JP. Cilia implantation in anterior chamber through traumatic corneal perforation. *Am J Ophthalmol* 1942; 25: 721-4.

3 Steahly LP, Galas SM. Eyelash tolerated in the anterior chamber and cornea. *Ann Ophthalmol* 1975; 8: 971-3.

4 Duke-Elder S, MacFaul PA. Mechanical injuries. In: Duke-Elder S, ed. *System of ophthalmology*. London: Kimpton, 1972; 14 (part 1): 553-60.

5 Moshe S, Osrael K. Eyelash complications in the anterior chamber. *Ann Ophthalmol* 1992; 24: 9-11.

6 Thorpe HE. Foreign bodies in the anterior chamber angle. *Am J Ophthalmol* 1966; 61: 1339-43.