- 1 Baum JL. Cholesterol keratopathy. *Am J Ophthalmol* 1969; 67: 372-5.
- 2 Fine BS, Townsend WM, Zimmerman LE, Lashkari MH. Primary lipoidal degeneration of the cornea. *Am J Ophthalmol* 1974; 78: 12-23.
- 3 Friedlander MH, Cavanagh HD, Sullivan WR, Gallagher MJ, Dickersin GR. Bilateral central lipid infiltrates of the cornea. *Am J Ophthalmol* 1977; 84: 781-7.
- 4 Alfonso E, Arellanes L, Boruchoff SA, Ormerod LD, Albert DM. Idiopathic bilateral lipid keratopathy. *Br J Ophthalmol* 1988; 72: 338-43.
- 5 Duran JA, Rodriguez-Ares MT. Idiopathic lipid corneal degeneration. *Cornea* 1991; 10: 166-9.
- 6 Kyrklund T. Two procedures to remove polar contaminants from a crude brain lipid extract by using prepacked reversed-phase columns. *Lipids* 1987; 22: 274-7.
- 7 Shapiro LA, Farkas TG. Lipid keratopathy following cornea hydrops. *Arch Ophthalmol* 1977; 95: 456-8.
- 8 Spence MW, Callahan JW. Sphingomyelin-cholesterol lipidosis: the Niemann-Pick group of diseases. In: Scriver CR, Beaudet AL, Sly WS, Valle D, eds. *The metabolic basis of inherited diseases*. New York: MacGraw-Hill, 1989; Vol 11: 1665-76.

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Serious corneal complication of 5-fluorouracil

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The success of filtering surgery in eyes with a poor prognosis can be improved by 5-fluorouracil (5-FU).¹⁻⁵ 5-FU is known to be potentially toxic to corneal epithelium and epithelial defects have been reported.^{2,6} It has been suggested that the doses of 5-FU originally recommended were excessive and that with lower doses corneal problems may be less common.⁷

Case report

This case reports an adverse effect of 5-FU occurring in the left eye of an 81-year-old man who underwent a fornix based trabeculectomy to lower raised intraocular pressure uncontrolled by medical treatment. The patient had a 15 year history of open angle glaucoma, and the left eye had previously undergone an extracapsular cataract extraction (corneal section) with implantation of a posterior chamber lens. Before surgery both eyes had mild idiopathic band keratopathy (Fig 1) for several years, with intact overlying epithelium. The patient was diabetic and preoperatively he was receiving topical timolol and pilocarpine in the left eye. At surgery 0.2 ml (5 mg) of undiluted 5-FU was injected subconjunctivally in the inferior fornix with a further 5 mg of undiluted 5-FU the following day. At his first outpatient review 9 days following surgery a central corneal epithelial defect was noted and no further 5-FU was given (Fig 2).

Figure 2 Corneal epithelial defect noted at 9 days following surgery in left eye.

The epithelial defect failed to heal despite topical treatment associated with padding. Because of discomfort due to the epithelial defect, a bandage contact lens was inserted into the eye 4 months later. This made the eye comfortable but no healing of the ulcer occurred. He subsequently presented with reduced visual acuity in the eye, associated with intense pain. Examination revealed the presence of a deep ulcer with a corneal abscess and hypopyon (Fig 3).

On intensive treatment with topical cefuroxime and gentamicin the infection was

Figure 1 Band keratopathy in right eye of patient. The band keratopathy in the left eye undergoing trabeculectomy with 5-FU was identical to the appearance of the right eye preoperatively.

Figure 3 Corneal abscess in the left eye at 4 months postoperatively.

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cured but the epithelial defect persisted. To provide a therapeutic ptosis botulinum toxin was injected into the upper lid. Subsequently the epithelium healed and there has been no recurrence of the defect to date. There is however a residual central stromal scar.

Comment

5-FU is an antimetabolite which interferes with normal cell mitosis. It interferes with the S phase and the G2 phase of the cell cycle which correspond, respectively, with the synthesis of DNA and cellular components required for mitosis.⁸ As corneal epithelial cells are constantly undergoing replication they are particularly susceptible to its toxic effects.

Reduction of dosage has been suggested as a method of reducing complications including potential toxicity to corneal epithelium.⁷ However in this case minimal dosage resulted in toxicity to the cornea.

Diabetes mellitus is associated with impaired healing of corneal epithelium owing to the increased thickness of the basal lamina resulting in impaired organisation of epithelial cells and anchorage to underlying stromal collagen.^{9,10}

This case demonstrates that in patients with compromised corneas even judicious use of very small doses of 5-FU may result in serious corneal

complications. We feel that band keratopathy is a contraindication to subconjunctival injections of 5-FU and the possible delay in healing of epithelial defects in patients with diabetes means that in such cases it should be used with extreme caution and stopped immediately if epithelial defects appear.

- 1 Heuer DK, Parrish RK II, Gressel MG, Hodapp E, Palmberg PF, Anderson DR. 5-Fluorouracil and glaucoma filtering surgery. II. A pilot study. *Ophthalmology* 1984; 91: 384-94.
- 2 Heuer DK, Parrish RK II, Gressel MG, Hodapp E, Desjardins DC, Skuta GL, et al. 5-Fluorouracil and glaucoma filtering surgery. III. Intermediate follow-up of a pilot study. *Ophthalmology* 1986; 93: 1537-46.
- 3 Rockwood EJ, Parrish RK II, Heuer DK, Skuta GL, Hodapp E, Palmberg PF, et al. Glaucoma filtering surgery with 5-fluorouracil. *Ophthalmology* 1987; 84: 1071-8.
- 4 The fluorouracil filtering surgery study group. Fluorouracil filtering surgery study one year follow up. *Am J Ophthalmol* 1989; 109: 168-73.
- 5 Jampel HD, Jabs DA, Quigley HA. Trabeculectomy with 5-fluorouracil for adult inflammatory glaucoma. *Am J Ophthalmol* 1989; 109: 168-73.
- 6 Knapp A, Heuer DK, Stern SA, Driebe WT Jr. Serious corneal complications of glaucoma filtering surgery with postoperative 5-fluorouracil. *Am J Ophthalmol* 1987; 103: 183-7.
- 7 Weinreb RN. Adjusting the dose of 5-fluorouracil after filtration to minimize side effects. *Ophthalmology* 1987; 94: 564-70.
- 8 Salmon SE, Scatellari AC. Cancer chemotherapy. In: Katzung BG, ed. *Basic and clinical pharmacology*. California: Lange Medical Publications, 1987: Chapter 58, 667-8.
- 9 Taylor HR, Kimsey RA. Corneal epithelial basement membrane changes in diabetics. *Invest Ophthalmol Vis Sci* 1981; 20: 548-53.
- 10 Kenyon K, Wafai Z, Michels R, Conway B, Tolentino F. Corneal basement membrane abnormality in diabetes mellitus. (ARVO abstract.) *Invest Ophthalmol Vis Sci* (suppl) 1978; 17: 245.

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Bilateral streptococcal corneoscleritis complicating β irradiation induced scleral necrosis

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Bacterial corneoscleritis may complicate scleral necrosis induced by β irradiation following pterygium removal.¹² Previous cases have been unilateral. We report a case of severe bilateral corneoscleritis caused by *Streptococcus pneumoniae*.

Case report

A 66-year-old man underwent surgical excision of bilateral pterygia and a course of 2200 cGy of β irradiation in three divided doses to each eye. He remained asymptomatic for 15 years until he complained of irritation in both eyes attributed to calcific plaques at the base of deep scleral ulcers. These were removed and covered by conjunctival flaps. He was given chloramphenicol drops four times daily to both eyes. One week later the patient reattended with a right panophthalmitis and spontaneous perforation (Fig 1), and a large deep medial scleral abscess in

the left eye (Figs 2 and 3). He was referred to our institution and immediately underwent debridement of necrotic sclera of the right eye and injection of intravitreal vancomycin and gentamicin. A complete vitrectomy proved technically impossible, owing to corneal and lens opacification. Urgent Gram staining of sclera from both eyes showed Gram positive diplococci, and cultures ultimately grew *Streptococcus pneumoniae*.

He began intravenous and intensive topical benzylpenicillin and the infection slowly improved. Ultimately a large eccentric right penetrating keratoplasty was necessary to facilitate resolution of the corneal abscess and to reform the anterior chamber following spontaneous perforation (Fig 4). The scleral abscess in the left eye improved without surgical intervention. Visual acuity is perception of light in the right eye due to a dense lens opacity and 6/5 in the left.

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