positive correlation between vitreous AGEs and VEGF levels disappeared when retinal ischaemia was not sufficiently controlled. Therefore, with the progress of diabetic retinopathy, retinal ischaemia and subsequent hypoxia may become a major determinant of VEGF. Our findings suggest that inhibition of AGE formation could prevent the development of early diabetic retinopathy by suppressing VEGF expression.

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Postoperative subconjunctival 5-fluorouracil in the management of recurring pterygium

The treatment of choice for pterygium is surgical excision. Recurrence is the most common undesirable treatment outcome. Surgery and other modalities of treatment including β -irradiation, topical thiotepa, intraoperative and postoperative use of mitomycin C, 5-fluorouracil (5-FU) and daunorubicin, have been described to reduce recurrence.¹⁻⁹ Multiple surgery is itself a risk factor for recurrence.⁹ We present a case in which the fourth surgery for recurrent pterygium resulted in further recurrence, which was thwarted by multiple intralesional injections of 5-FU.

Case report

A 34-year-old Afro-Caribbean woman was referred to us in October 2004 for the management of recurrent pterygium in the right eye. She had two previous surgeries, the first in 2002 with conjunctival autograft and the second in 2003 leaving behind bare sclera. A third attempt at removal in 2004 was aborted owing to excessive intraoperative bleeding.

Her unaided visual acuity was 6/9 right eye and 6/6 left eye. The right eye showed a highly vascularised, fleshy nasal pterygium measuring 11 $\times$ 8 mm. It had encroached 2.5 mm into the cornea (fig 1A). The recurrent pterygium in the right eye was excised for the third time in March 2005. On this occasion, mitomycin C (0.04%) was applied intraoperatively to the

scleral bed for 5 min and a double-layered amniotic membrane was grafted to cover the conjunctival defect. A recurrence at the original site was noted 2 months later (fig 1B), and in an attempt to arrest progression, topical 0.02% mitomycin C was given four times daily for 7 days (three cycles with an interval of 10 days between cycles). The recurrent pterygium, however, progressed to encroach on to the cornea (Fig 1C). At this point, subconjunctival injections of 5-FU into the advancing lesion, under topical anaesthesia, was started. A 26-gauge needle was used to deposit the injection in the core of the fibrovascular tissue away from the cornea. Over 5 months, she received 10 injections of 5-FU (5 mg in 0.2 ml/injection) given 1-2 weeks apart until the recurrent pterygium became less vascular and atrophic. No complications were noted. Now, 8 months after the last injection, there is no progression (fig 1D).

Comment

Pterygium recurrence is thought to be due to fibroblast proliferation and migration and hence use of 5FU, which inhibits fibroblastic activity, is believed to reduce recurrence rates. 5-FU is toxic only to proliferating cells and is considered to be safer than other agents.¹⁰ Postoperative use of 5-FU to halt the progression of recurrence has been described before, but involved a maximum of four injections with a maximum dose of 3 mg.¹¹ Our patient received 10 injections totalling 50 mg of 5-FU with no complications.

In cases with a high risk of recurrence, such as the one described, intralesional subconjunctival injection of 5-FU even at large doses seems to be safe, effective and well tolerated by the eye. Such an intervention should be considered as an option in the management of difficult cases of recurrent pterygium.

Figure 1 (A) Anterior segment photograph showing the fleshy recurrent pterygium before the third excision. (B) Photograph showing conjunctival recurrence of the pterygium 2 months after the third excision with intraoperative mitomycin C and amniotic membrane. (C) Photograph showing progression of recurrence and encroachment into the cornea. (D) Photograph showing appearance of the pterygium 8 months after the tenth 5-fluorouracil injection. Informed consent was obtained for publication of this figure.

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A novel technique to treat traumatic corneal perforation in a case of presumed brittle cornea syndrome

The management of corneal perforation can be difficult. We describe a novel technique to manage corneal perforation in brittle cornea syndrome (BCS).

Case report

A 14-year-old daughter of consanguineous Pakistani parents presented with a history of a bottle cap having struck her left eye. She had a history of multiple trauma to both eyes since childhood.

At presentation, there was limbus-to-limbus corneal perforation in the left eye. The right eye

had a failed corneal graft (for extensive corneal opacities). An examination under general anaesthesia showed a collapsed left eye with rolled-in corneal edges, without any scleral injury. There was partial aniridia, aphakia and prolapsed vitreous, with no obvious retinal detachment. She was also noted to have hypermobility of the small joints of her hands, with bilateral camptodactyly of the fifth fingers and over-riding toes.

During primary repair, the cornea was noted to be soft, with cheese-wiring of 10/0 nylon sutures. At review on post-operative day 1, she had a flat anterior chamber, necessitating a second operation. During this operation, suture track leaks were observed with the use of fluorescein. These were successfully tamponaded with air. To allow sufficient duration of tamponade, a non-expansile (14%) perfluoropropane (C₃F₈) gas exchange was performed after transcorneal three port vitrectomy to gain maximal gas fill. Postoperatively, the cornea was Siedel negative. The patient was kept supine for 10 days, at the end of which the globe remained formed (fig 1).

A month later, the patient received a penetrating corneal injury to the right eye while not using her protective goggles. She underwent primary surgical repair similar to the left eye using C₃F₈ gas. The final visual acuity was hand movement by both eyes.

Discussion

The patient's history suggested an underlying connective tissue disorder affecting the eyes.

BCS is a generalised connective tissue disorder characterised by corneal rupture, after a minor trauma, or spontaneously.¹ Other features include keratoconus or keratoglobus, blue sclera, red hair, hyperelasticity of the skin without excessive fragility, and hypermobility of the joints.² BCS has been reported mainly in Middle Eastern consanguineous families, although no underlying genetic defect has been identified to date.³

A differential diagnosis is Ehlers-Danlos syndrome type VI, which is associated with kyphoscoliosis and thin sclera (with rupture after trivial trauma). It is characterised by the absence or mutation of the procollagen lysyl hydroxylase gene on chromosome 1, causing a deficiency of the enzyme lysyl-hydroxylase.⁴ This leads to a build-up of urinary hydroxylslypyridinoline. In contrast, BCS has normal total urinary pyridinoline ratios. The urinary test results of this patient showed a normal ratio of total lysyl-pyridinoline to total hydroxylslypyridinoline, suggesting a diagnosis of BCS.

Repair of corneal perforations using tissue adhesives and viscoelastic agents,⁵ and onlay epikeratoplasty with a donor corneoscleral button to repair a ruptured keratoglobus,⁶ has been reported previously. Air tamponade is also commonplace, but the intraocular gas tamponade we

used is a novel technique. Prolonged C₃F₈ gas contact with the corneal wound prevented aqueous egress, allowing sufficient wound integrity while keeping the globe formed. This is the first case report of the use of a non-expansile volume of C₃F₈ gas to repair the brittle cornea in BCS, which could be generally applied to fragile leaking corneas.

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Sympathetic ophthalmia after ruthenium plaque brachytherapy

Sympathetic ophthalmia is a rare, bilateral inflammatory process with an incidence of 0.03/100 000 in the UK and Ireland.¹ It usually follows either penetrating eye injury or intraocular surgery. Although sympathetic ophthalmia has previously been described after irradiation of ocular melanoma,^{2,3} it has never been reported after simple ¹⁰⁶Ru plaque brachytherapy. We present a case which confirms that there is a risk of developing sympathetic ophthalmia after charged-particle therapy in the absence of a penetrating injury of the uveal tract.

Case report

A 41-year-old lady was referred by her optician for a slow-growing iris lesion. Fine needle aspiration biopsy confirmed the diagnosis of ciliary body malignant melanoma. Systemic investigations for metastatic disease were negative. The patient underwent routine surgery for the insertion and subsequent removal of a ¹⁰⁶Ru plaque. Postoperative recovery was uneventful.

At 6 months after surgery, the patient presented with a 1-week history of reduced vision in both eyes to 6/24 OD and 6/36 OS. This was accompanied by photophobia, soreness and redness of both eyes.

Figure 1 The left eye after the corneal perforation was repaired. Informed consent was received for publication of this figure.