Subconjunctival corticosteroids for benign lymphoid hyperplasia

Appropriate treatment of subconjunctival benign lymphoid hyperplasia (BLH) has been unclear. Most have noted poor response to oral or topical corticosteroids. Many recommend observation. Radiotherapy has been used, but there are risks of vision loss.

In this case, we found dramatic response to local subconjunctival injection of long acting corticosteroids, which may represent a therapeutic option for subconjunctival benign lymphoid hyperplasia.

Case report

A 72 year old woman noticed an enlarging mass on the nasal conjunctiva over the previous year. She denied any discomfort, diplopia, or visual changes. She was pseudo-phakic in both eyes, and did not have any past ocular trauma, infection, or eye disease. She had a history of hypothyroidism, multiple myeloma, tuberculosis, and pulmonary sarcoidosis. Two months before presentation she was found to have colon carcinoma treated with colectomy and chemotherapy. She was reported free of any tumour metastasis.

Her visual acuity was 20/30 in the right eye and 20/40 in the left, and extraocular movements were full in both eyes. Examination revealed a salmon coloured, raised, and moderately firm patch on the nasal conjunctiva of the right eye without significant neovascularisation (fig 1A). Dilated fundus examination was unremarkable. A head MRI scan showed moderate enlargement of the medial rectus muscle without involvement of the muscle tendon. A simple biopsy (2 mm × 2 mm × 1 mm) was performed.

Pathological examination revealed benign lymphohistiocytic infiltrates (fig 2). The lymphoid reaction showed a predominance of T cells (CD3+), numerous histiocytes, and a smaller number of B cells (CD20+). There was no evidence of neoplastic plasma cells, metastatic carcinoma, or well defined sarcoid granulomas.

The patient elected to have surgical treatment over other options including observation. The patient received a 20 mg/0.5 ml subconjunctival injection of triamcinolone (in 0.5 ml in the nasal bulbar conjunctiva) just superior to the mass. On follow up examination 2 months later, the patient continued to deny any discomfort or visual changes and was very pleased about her response to the treatment. Remarkably, the lesion completely resolved being no longer visible or palpable (fig 1B). This patient unfortunately died 9 months later from complications secondary to a fall, but during this time there was no recurrence of the conjunctival lesion.

Comment

A patient presenting with a slow growing salmon coloured subconjunctival mass should always raise suspicion of neoplastic causes. Patients with ocular BLH and lymphoma will often have the similar presenting symptoms and demographic profiles. In addition they appear very similar radiologically, and thus definitive diagnosis requires tissue biopsy. A pathological diagnosis of BLH traditionally requires reactive follicles, polyclonality, and the absence of cytological atypia. Lymphoproliferative lesions can occur throughout the ocular adnexa, and some studies suggest a more benign course for conjunctival BLH compared to those in the orbit. Coupland et al found that of 112 cases, 32 (29%) were in the conjunctiva, 52 (46%) in the orbit and the remainder in the eyelid, lacrimal gland, and caruncle. The optimal treatment for BLH is uncertain. Many recommend frequent observation. Others have tried focal radiotherapy with some success, but there is significant risk of vision loss.

In this case report, we found a dramatic response to local subconjunctival injection of a long acting corticosteroid. The corticosteroid near the reactive follicle must have been sufficient to suppress lymphocyte proliferation. This response may represent a therapeutic option for BLH.

References

Congenital upper eyelid eversion complicated by corneal perforation

Congenital upper eyelid eversion is a rare condition more frequently seen in black infants and in Down’s syndrome. If recognised early, the condition can be managed conservatively without recourse to surgery. We highlight a case that presented late with severe sight threatening complications. Surgical intervention was consequently the only appropriate way to manage the patient.

Case report

A 7 month old black female was referred to the emergency room of the King Khalid Eye Specialist Hospital in Riyadh, Saudi Arabia. She had a history of a white spot in the right cornea, and a right upper lid that had flipped up since birth.

She was born by breech delivery and was subsequently diagnosed as having Down’s syndrome. On examination she had complete eversion of the right upper lid with mild conjunctival chemosis. The lid could be repositioned with ease but when the child cried it reverted. There was a corneal opacity with a central descematocele and iris adhesion to the endothelium. The child was admitted and started on intensive topical antibiotics. In spite of manual inversion of the upper lid, well as a moist chamber, the lid continued to re-evert. A lateral tarsorrhaphy and penetrating keratoplasty were performed under general anesthesia but, postoperatively, the eyelid continued to evert (fig 1).

Because of the risk of exposure to the transplanted cornea, a full thickness skin graft to the right upper lid was performed (fig 2). Subsequently, the lid retained its normal position and the child could fix and follow objects with the eye. The transplanted cornea was clear at the 10 week postoperative visit after which the patient was lost to follow up.

Comment

Congenital eversion of the upper eyelid was first described in 1896 by Adams who called the condition “double congenital ectropion.” The exact incidence of this condition is not known. Sellar reviewed the literature in 1992 and found 51 reported cases. Since then two more case reports could be found in the literature. The eversion is usually present at birth, but late onset of total eversion of the upper eyelids has been described in infancy, and as late as 11 years of age.

The condition typically is bilateral and asymmetrical but unilateral cases have been described. The underlying pathophysiology is obscure and several possible mechanisms have been proposed and associations recognised. The incidence appears to be higher in black infants, infants with trisomy 21, and in infants born with colloidion skin disease. Abnormalities such as orbicularis hypoplasia, birth trauma, vertical shortening of the anterior lamellae or vertical elongation of the posterior lamellae of the eyelids and failure of the orbital septum to fuse with the levator aponeurosis (with adipose tissue interposition), absence of effective lateral canthal ligament, and lateral elongation of the eyelids have all been implicated as possible pathophysiological factors. Once everted, orbicularis spasm may act as a sphincter that leads to a vicious cycle of conjunctival strugulation and oedema secondary to venous stasis. This chemotic conjunctiva usually protects the cornea from exposure and, hence, corneal complications have thus far not been reported in infants. To our knowledge this is the first reported case of congenital eyelid eversion complicated by corneal exposure, descematocele, and perforation.

Congenital eyelid eversion either resolves spontaneously with conservative treatment or with surgical intervention such as a subconjunctival injection of hyaluronic acid, tarsorrhaphy with excision of redundant conjunctiva, fornix sutures, and full thickness skin graft to the upper lid. In this patient because of failure of all conservative measures, the chronicity (7 months) and severity (corneal ulcer/perforation), we elected to do anterior lamellar thinning by means of a full thickness upper lid skin graft. Corneal perforation necessitating penetrating keratoplasty is a rare complication of congenital eyelid eversion, but in this case it was essential to maintain the integrity of the globe and to, hopefully, retain vision and prevent deep amblyopia.

The condition in this reported case of congenital eyelid eversion complicated by a corneal ulcer, large descematocele and perforation, is rare. Congenital upper lid eversion may present “once in a lifetime” to the ophthalmologist or newborn nursery paediatrician. It is nevertheless important to create awareness among healthcare professionals in obstetric and neonatal care of the existence of this potentially sight threatening congenital anomaly, as the condition is very amenable to early treatment.

H Al-Hussain, A Al-Rajhi, S Al-Qahtani, D Meyer
University of Stellenbosch/King Khaled Eye Specialist Hospital, Faculty of Health Sciences, PO Box 19059, Tygerberg, South Africa
Correspondence to: Professor David Meyer, University of Stellenbosch, Faculty of Health Sciences, PO Box 19059, Tygerberg, South Africa; dm2@sun.ac.za

doi: 10.1136/bjo.2004.053348

Accepted for publication 20 October 2004

References


Homozygous mutation (L527R) of TGFβ1 in an individual with lattice corneal dystrophy

Lattice corneal dystrophy (LCD), an inherited form of amyloidosis, is characterised by the development of lattice lines and opacity in the cornea. LCD is classified clinically into four subtypes: I, II, III, and IIA. Several distinct mutations of TGFβ1 have been associated with LCDIIIIA: P501T, L527R, N544S, A546T, N622K (T1913G and T1913A), and V627S. All cases of LCD characterised at the molecular genetic level to date have been attributed to heterozygous point mutations of TGFβ1. We now present the first example of a homozygous point mutation of TGFβ1 in an individual with LCD, a diagnosis supported by clinical, histological, and molecular genetic findings.

Case report

A 52 year old Japanese man visited our corneal clinic in July 1997 with a main complaint of gradual impairment of vision. His parents, who were related, were no longer alive and he had no children. He had two brothers and four sisters. His reporting
suggeste that his father had had LCD and that his younger sister had also developed this condition.

Slit lamp examination revealed a large region of opacity and thick lattice lines in the middle to deep portion of the corneal stroma in both eyes (fig 1A and B). Given that his visual acuity in both eyes decreased to 20/40, we performed penetrating keratoplasty on his left eye in December 2000 and on his right eye in May 2002. After the surgeries, his visual acuity improved to 20/25 in each eye and no recurrence has been observed to date.

Histological analysis revealed that the amorphous component of the middle to deep region of the stroma of both corneas stained with eosin (fig 1C) and with Congo red (fig 1D). The detection of apple green dichroism by polarised light microscopy was also consistent with amyloid deposition in the middle to deep region of the corneal stroma (fig 1E). Although most of the epithelial cell layer, basement membrane, and hemidesmosomes of the right cornea appeared normal by transmission electron microscopy (TEM) (fig 1F), a region was detected that seemed to be devoid of basal cells, basement membrane, and hemidesmosomes. TEM also revealed amyloid deposits in the middle to deep corneal stroma (fig 1G), although Descemet's membrane and endothelial cells appeared normal.

After obtaining informed consent, we purified DNA from the white blood cells isolated from 10 ml of the patient's blood. With appropriate primers, we amplified exons 4 and 12 of TGFBI by the polymerase chain reaction (PCR) and directly sequenced the products. We detected a homozygous point mutation, CTG→CGG (L527R), in codon 527 of TGFBI in the proband (fig 2). Direct sequencing of PCR products corresponding to exon 12 of TGFBI of the patient. A homozygous T→G mutation (arrow) was detected at codon 527.

which have been associated with corneal dystrophies.

Comment
Fujiki et al reported that LCDIIIA in L527R heterozygotes is characterised by a late onset and mild clinical findings. Hirano et al reported that the condition caused by L327R heterozygosity was associated with amyloid deposition in the deep corneal stroma but not with corneal erosion. In contrast, LCD in our patient with a homozygous L527R mutation was characterised by onset in middle age, recurrent corneal erosion, and amyloid deposition in the middle to deep region of the stroma. The deposits in the proband showed right eye-left eye asymmetry in size and shape, as previously described for some L327R heterozygotes.

In general, corneal dystrophies caused by homozygous point mutations in TGFBI are characterised by an earlier onset, more severe symptoms, and a higher frequency of recurrence after keratoplasty compared with those attributable to the corresponding heterozygous mutations. Our study and the two previous studies of this mutation suggest that this is also the case for L527R. However, the difference in the findings of slit lamp examination between L527R heterozygotes and homozygotes with LCD appears to be less marked than that observed between R124H heterozygotes and homozygotes with Avellino corneal dystrophy. The reason for this discrepancy remains unclear at present.

Acknowledgements
This research was supported by grants from the Japan Society for the Promotion of Science (JSPS) and the Ministry of Education, Culture, Sports, Science, and Technology of Japan (to MI and TN).

N Yamada, T-Chikama, N Morishige, R Yanai, T Nishida
Department of Biomolecular Recognition and Ophthalmology, Yamaguchi University School of Medicine, Ube City, Yamaguchi 755-8505, Japan

N Yamada, R Yanai, M Inui
Department of Pharmacology, Yamaguchi University School of Medicine, Ube City, Yamaguchi 755-8505, Japan

K Seki
Department of Ocular Pathophysiology, Yamaguchi University School of Medicine, Ube City, Yamaguchi 755-8505, Japan
Correspondence to: Naoyuki Yamada, MD, PhD, Department of Biomolecular Recognition and Ophthalmology, Yamaguchi University School of Medicine, 1-1-1 Minami Kogushi, Ube City, Yamaguchi 755-8505, Japan; n.yamada@poc.yamaguchi-u.ac.jp.

doi: 10.1136/bjo.2004.056168

Accepted for publication 1 November 2004

References


Vitreous amyloidosis in alanine 71 transthyretin mutation

Familial amyloid polyneuropathy (FAP) associated with mutations in the transthyretin (TTR) gene is the commonest form of hereditary amyloidosis. The incidence of vitreous opacities in FAP varies from 5.4% to 33%, but vitreous opacities as part of systemic amyloidosis are virtually pathognomonic of FAP. Hereditary non-neuropathic systemic amyloidosis is associated with mutations in the genes for lysozyme, apolipoprotein A-I, or fibrinogen Aα-chain. There are some 80 known mutations in TTR gene of which the methionine 30 variant is the most common. The rare alanine 71 (Ala 71) variant with vitreous opacities has been described in one family from France and another from Spain. We report a case of FAP Ala 71 without a family history of the disease who presented with a monocular inferior visual field defect and a corresponding vitreous opacity. Amyloid deposition was subsequently diagnosed on vitreous and sural nerve biopsy.

Case report

A 46 year old woman presented with an inferior visual defect in her left eye. Ocular and systemic evaluation was normal including brain computed tomography scan. Eighteen months later, the patient developed bilateral floaters and visual loss in the left eye reducing her vision to 20/15 right and 20/30 left. Deposits of white "fluffy" material were noted on the posterior capsule of the left eye (fig 1A) as well as bilateral "branching" vitreous opacities, peripheral retinal haemorrhages and perivascular sheathing (fig 1B). The left eye had a partial posterior vitreous detachment (PVD), a large vitreous float and old inferior vitreous haemorrhage (VH).

Vitreous opacification progressed and visual acuity was reduced to hand movement in 1 year later. A full blood count, coagulation screen, and biochemical profile were normal. Creatinine clearance demonstrated a mild reduction in renal function and plasma cell dyscrasia was ruled out. Pars plana vitrectomy successfully cleared the vitreous debris, restoring vision to 20/20 in the left eye. Eighteen months later the patient developed a right foot drop, progressive lower limb numbness, and numbness in both hands. A sural nerve biopsy established the diagnosis of amyloidosis and immunohistochemistry confirmed that TTR was the major protein constituent of the deposits. Cardiac involvement was demonstrated on echocardiography and renal involvement was confirmed by serum amyloid P (SAP) scintigraphy. Sequencing of her TTR gene confirmed that she was heterozygous for the amyloidogenic Ala 71 variant.

The patient's right visual acuity deteriorated to 20/120 because of increasing white vitreous opacities and nodular opacities on the anterior vitreous face. Right vitrectomy resulted in a return of visual acuity to 20/20. An unrelated right vitreous biopsy confirmed large amounts of amyloid of the TTR type (fig 2). The patient currently awaits orthoptic liver transplantation (OLT).

Comment

Vitreous opacification was initially attributed to old VH secondary to idiopathic retinal vasculitis. Vitreous biopsy subsequently confirmed amyloid in the fellow eye. VH may occur secondary to vascular adventitial amyloid deposition or vitreous separation leading to a retinal tear, although vitreous opacities may be misinterpreted as Kantarjian and de Jong first reported vitreous amyloid in FAP. Amyloid of the vitreous body has been described as "glass wool, sheet-like veils or string of pearls white opacities," which differs from localised ocular amyloid in the orbit, lacrimal gland, conjunctiva, eyelids, sclera, and more specific forms in the cornea. Previous studies have reported abnormal conjunctival vessels, pupillary abnormalities, keratoconjunctivitis sicca, glaucoma, and vitreous opacities.

Almost all of the circulating TTR is produced in the liver and OLT can halt the progression of this disease and lead to clinical improvement. SAP scintigraphy is a method for identifying and quantitatively monitoring amyloid deposits in vivo, but this technique is not sensitive enough to monitor vitreous amyloid. Surprisingly, progressive vitreous amyloid deposition has been reported following OLT, suggesting the TTR that forms vitreous amyloid may be produced locally. Previous reports have established that TTR has a widespread distribution in the eye but TTR mRNA has exclusively been located in the retinal pigment epithelium (RPE). Given that plasma TTR does not cross Bruch's membrane, it appears that ocular TTR is synthesised at least in part in the RPE, but the exact factors determining amyloid deposition are not understood.

Bilateral "branching" vitreous deposits of unknown aetiology should always raise the possibility of systemic amyloidosis. A relevant family history should be sought, but even in its absence, mutations of the TTR gene should be looked for.

H J Zambarakji, D G Charteris

Moorfields Eye Hospital, Vitreoretinal Service, London, UK

Figure 1 Dense nodular white deposits on the posterior capsule of the left eye were presumed to be of amyloid origin (A), and fundus periphery demonstrates intraretinal haemorrhages and perivascular white deposits (B).

Figure 2 Apple-green birefringence with Congo red stain viewed with polarised microscopy of a vitreous biopsy confirming the presence of amyloid deposits.
OPTIC NEUROPATHY IS THE MOST IMPORTANT MAY BE ASSOCIATED WITH OCULAR TOXICITY. ETHAMBUTOL IS AN EFFECTIVE DRUG IN THE FIRST LINE TREATMENT FOR TUBERCULOSIS BUT ITS USE TOXICITY AT THE RETINAL LEVEL.** WE REPORT A PATIENT WITH ETHAMBUTOL RELATED TOXIC OPTIC NEUROPATHY ASSOCIATED WITH BILATERAL MACULAR TOXICITY AS DEMONSTRATED BY MULTIFOCAL ELECTRORETINOGRAM (mFERG). TO OUR KNOWLEDGE, EVALUATION OF ETHAMBUTOL RELATED MACULAR TOXICITY WITH mFERG HAS NOT BEEN PREVIOUSLY REPORTED.

**Case report**

A 45 year old man with pulmonary tuberculosis presented with a 3 week history of gradual bilateral visual loss. He has been on antituberculosis therapy with ethambutol 900 mg (15 mg/kg/day), rifampicin 600 mg, isoniazid 300 mg, and pyrazinamide 2 g for 4 months. The baseline best corrected visual acuity (BCVA) before antituberculosis therapy was 20/30 in the right eye and 20/20 in the left eye. On presentation, the BCVA was 20/200 bilaterally without afferent pupillary defect. Colour vision testing showed red green dyschromatopsia. Dilated fundus examination showed bilateral central scotomas (fig 1A). Visual field examination showed bilateral central scotoma (fig 1B). Magnetic resonance images (MRI) of the brain and orbits were normal. A diagnosis of toxic optic neuropathy due to ethambutol was made.

Since the optic discs and fundus changes were relatively subtle compared with the reduction in visual acuity and the central visual field defects and red-green dyschromatopsia were atypical, further investigations were performed to evaluate potential associated retinal toxicity. These included electrooculogram (EOG), flash electroretinogram (ERG), pattern visual evoked potential (VEP), and mFERG. EOG and flash ERG of both eyes were normal. Pattern VEP showed no response for smaller checkers, with weak and delayed response for large checkers of 1.8°. mFERG demonstrated bilateral generalised reduction in N1 and P1 retinal response amplitudes suggestive of toxic maculopathy (fig 2A).

In view of the optic neuropathy and maculopathy, all antituberculosis drugs were stopped after discussion with the physicians. The patient’s BCVA gradually improved and 3 months later, his BCVA improved to 20/30 bilaterally. No abnormality was seen on fundus examination. Repeat mFERG recording showed recovery of the retinal responses in both eyes (fig 2B).

**Comment**

The exact mechanism of ethambutol induced toxic optic neuropathy is unclear but it may be due to retinal ganglion cells or bipolar cells toxicity at the retinal level.†† MFERG is a technique that allows objective assessment of macular function in retinal diseases.‡‡ In contrast with conventional full field flash ERG which stimulates and measures the response of the entire retina, mFERG stimulates individual macular areas and measures responses from different retinal locations. It is useful in differentiating macular and optic nerve diseases as the mFERG in patients with optic nerve disease should be normal.‡‡ With the use of mFERG, we demonstrated that there was generalised reduction in mFERG responses at the macula and the areas of sparing of visual acuity and red-green colour vision impairment." In additional to the optic nerve toxicity, studies have also demonstrated that ethambutol may also be toxic at the retinal level.** We report a patient with ethambutol related toxic optic neuropathy associated with bilateral macular toxicity as demonstrated by multifocal electroretinogram (mFERG). To our knowledge, evaluation of ethambutol related macular toxicity with mFERG has not been previously reported.

References

abnormality were more extensive than the apparent localised visual field defects detected by automated perimetry. The abnormal mfERG suggests that in addition to toxic optic neuropathy, ethambutol may also cause macular toxicity at the neurosensory retinal level. The improvement in the patient’s BCVA paralleled the improvement in mfERG responses and therefore mfERG may be a useful tool not only in diagnosis but in the serial assessments of ethambutol related ocular toxicity, particularly in patients with central visual loss.

Case report

An 87 year old man presented with a 2 week history of right eye redness, pain, and decreased vision. He complained of horizontal diplopia for 2 years, which had been corrected with prisms, but never investigated. Past medical history was notable only for chronic lymphocytic leukaemia (CLL), which was first diagnosed 17 years before presentation. He was treated intermittently with chlorambucil, but this was stopped as his white cell count had been stable at $30 \times 10^9/\text{L}$ with minimal cervical and axillary lymphadenopathy. Vision was 6/18 right eye and 6/9 left eye. Intraocular pressure (IOP) was 18 mmHg in each eye. His vision was reduced by bilateral early cataracts and his right eye showed inferior scleral injection (fig 1A), a fibrinous anterior uveitis, and scattered posterior synechiae.

The patient was treated with topical corticosteroids and cycloplegics, but over the 3 weeks following presentation his vision dropped to 6/60 right eye because of choroidal effusions. He had restricted movement of the right eye, ptosis, and shallowing of the anterior chamber with an increase in IOP to 26 mmHg. Ultrasound revealed thickening of the inferior sclera. A CT scan of the right orbit revealed a mass in the inferior fornix that was attached to the sclera (fig 1B). Excision biopsy revealed patchy infiltration by foci of densely packed small lymphocytic cells, mainly around small blood vessels (fig 2A). Immunostaining showed a predominance of weakly stained CD20 positive B lymphocytes with scattered CD3 positive T cells consistent with CLL. Haematological analysis revealed a total white cell count of 49.1 $\times 10^9/\text{L}$. He received orbital radiotherapy 27.5 Gy in 11 fractions using 6 MV x rays, completing the course 5 months after presentation. The inflammation, choroidal effusions, and orbital mass regressed completely but he was left with thinning of the inferior sclera (fig 2B). He was last seen 2 years after presentation with vision of 6/60 right eye but no evidence of active ocular involvement from his CLL. He refused cataract surgery.
Regression of choroidal metastases from breast carcinoma using aromatase inhibitors

Breast cancer has become a leading health concern in the United States, accounting for 30% of all cancers among women. Oestrogen is an important hormone involved in the development and growth of breast tumours. It has been found that 60–70% of breast cancers have oestrogen receptors. Following tumour resection, receptor positive patients are commonly treated with hormone therapy such as tamoxifen. Tamoxifen is a competitive antagonist of oestrogen at its receptor site. It is most often used for postmenopausal patients with oestrogen receptor positive breast cancers. However, tamoxifen also has a partial oestrogen agonist effect which could be detrimental, because it can lead to increased risk for uterine cancer, thromboembolism, and treatment failure.

The third generation aromatase inhibitors, including anastrozole, letrozole, and vorozole, have emerged as a new treatment for postmenopausal women with oestrogen receptor positive breast cancer. Their mechanism differs from that of tamoxifen as they minimise peripheral conversion of circulating androgen to oestrogen. We report one patient with choroidal metastasis from oestrogen receptor positive breast cancer who showed an excellent response to oral aromatase inhibitors.

Case report

A 66 year old woman presented in January 2003 with a 5 month history of flashing lights in the right eye. Her medical history revealed breast cancer, oestrogen receptor positive, treated with modified radical mastectomy and tamoxifen. In 1989, tamoxifen was stopped per the standard 5 year protocol. In October 2002, she developed metastases to the supraventricular lymph nodes bone and was started on anastrozole.

On examination, visual acuity was 20/60 RE and 20/20 LE. Fundus examination revealed subretinal fluid overlying a solitary amelanotic choroidal metastasis measuring 12 mm in base and 3 mm in thickness (fig 1). The patient was continued on anastrozole. In September 2003, the choroidal metastasis completely regressed with resolution of subretinal fluid (fig 2). Her visual acuity remained 20/40 RE and 20/20 LE.

Comment

Uveal metastases are the most common intraocular malignancy. They typically affect the posterior choroids. The most common primary sites of cancer are from breast (47%), lung (21%), and gastrointestinal tract (4%). Classically, choroidal metastases are yellow, plateau shaped, with secondary subretinal fluid. The treatment of choroidal metastases
depends on many factors including location, multiplicity, and activity of each tumour. Additionally, the projected visual outcome and underlying systemic control is important.

In some cases, therapy is limited to the eye, especially if systemic metastases are absent or in remission. In these instances, external beam radiotherapy or plaque radiotherapy are employed. In most instances, however, the patient has systemically active metastatic disease so therapy is directed towards treatment of both the ocular and systemic disease using chemotherapy or hormone therapy.

The most commonly employed hormonal treatment for metastatic breast cancer is tamoxifen. It is usually employed for postmenopausal patients with breast cancer who display oestrogen receptors. The effect of tamoxifen is due to its anti-oestrogenic activity, by competitive inhibition of oestrogen binding to oestrogen receptors. Tamoxifen inhibits the expression of oestrogen regulated genes including growth factors and angiogenic factors secreted by the tumour. Tamoxifen can also induce programmed cell death. Tamoxifen additionally has partial agonist effects, which could be beneficial because it prevents bone demineralisation in postmenopausal women. However, these oestrogenic effects are also associated with increased risks of uterine cancer, thromboembolism, and treatment failure.

Tamoxifen is well tolerated by most patients with breast cancer and only 5% of patients note related menopausal symptoms, such as hot flashes and vaginal discharge. Retinopathy has been reported in women with high doses of tamoxifen, but not with conventional doses.

In postmenopausal women the main source of oestrogen is from peripheral conversion of androgen. New third generation aromatase inhibitors, including anastrozole (Arimidex, Zeneca) and letrozole (Femara, Novartis), act by preventing this conversion, thus lowering circulating oestrogen levels. Studies have shown that they are equal or superior to tamoxifen in clinically efficacy for metastatic breast carcinoma. They are well tolerated and have been shown to have important benefits over tamoxifen. Comparative trials indicate that anastrozole has similar adverse effects compared to tamoxifen. Our patient responded dramatically to aromatase inhibitors after failing to respond to tamoxifen. Based on this case and three other cases with a favourable response we anticipate that aromatase inhibitors could be a promising alternative for patients with choroidal metastases from oestrogen receptor positive breast carcinoma.

References

“Fingertip” cryoprobe assisted orbital tumour extraction

Cryoprobes are used to grasp, provide traction, and facilitate orbital tumour removal. Standard ophthalmic cryoprobe tips are typically rounded and offer small surface areas for cryo-adhesion. I describe a new spatulated cryotherapy probe with a large oval and uniform surface area for adhesion

Figure 1 Top, the 25.2 mm² surface area large “Fingertip” cryotherapy probe set to show its spatulated active surface. Bottom, computed tomography shows a well defined, 1.8 cm lobular tumour in the superonasal orbit.

and subsequent traction. This report uses photography to document the use of this probe and describes its manufacture and effectiveness during orbital surgery.

Methods
Three spatulated probes were manufactured (Mira, Inc, “Finger-tip probe,” Uxbridge, MA, USA) under Good Manufacturing Practice (GMP), International Standards Organization (ISO), and Food and Drug Administration (FDA) guidelines (Fig 1).

The medium sized probe has an active surface of 25.2 mm². Its design allows for preferential cooling of the active surface of the applicator. Mira tested this probe to cool to up to –85°C on nitrous oxide (as governed by the Joule-Thompson principle).

Results
A 77 year old patient was found to have a superonasal orbital tumour (by clinical examination and radiographic imaging). The tumour was 18 mm in largest diameter and found to be contiguous with both the orbital

Figure 2 Top left, the tumour (arrow) can be seen deep within the superonasal orbit. Top right, the cryoprobe is introduced such that it is placed flush with the tumour and not touching adjacent orbital tissues. Bottom left, the tumour is delivered from the orbit utilising the cryo-adhesion. Bottom right, the tumour is visualised outside the orbit. Note the freeze within the tissue with minimal ice formation on the shaft of the probe.

M E Manquez, C L Shields, E C Karatza, J A Shields

Oncology Service, Wills Eye Hospital, Thomas Jefferson University, Philadelphia, PA, USA

Correspondence to: Dr Maria Manquez, Oncology Service, Wills Eye Hospital, 840 Walnut Street, Philadelphia, PA 19107, USA; memanquez@hotmail.com

doi: 10.1136/bjo.2004.061127

Accepted for publication 31 October 2004

Supported in part by the Pan American Ophthalmology Foundation and Retina Research Foundation (Dr ME Manquez), the Eye Tumor Research Foundation, Philadelphia, PA (Dr CL Shields) the Macula Foundation, New York, NY (Dr CL Shields), the Rosenhal Award of the Macula Society 2003-14 (C L Shields), the Paul Kayser International Award of Merit in Retina Research, Houston, TX (Dr JA Shields).
portion of the frontal bone and optic nerve. Ultrasonography revealed intrinsic tumour vascularity (low flow). Cavernoas haemangioma was suspected and an anterior orbitotomy performed. A combination of sharp and blunt dissection was required to expose the tumour. Then, a medium sized “Finger-tip” cryoprobe was used to create an adhesion to the tumour’s surface (fig 2). This relatively large cryo-adhesion allowed for easier handling of the tumour and improved traction (fig 2). The tumour remained adherent to the cryoprobe for 60 seconds after the nitrous oxide was discontinued. Freezing induced no change in the appearance of the tumour on gross examination. Histopathology revealed cavernous haemangioma. No clinical side effects (related to cryo-extraction) were noted.

Comment
Cryo-extraction works best with tumours and cysts that contain fluids (for example, blood, tears), as opposed to solid tumours and those containing lipid or keratin (for example, dermoid). Thus, cavernous haemangiomas are suspected good candidates because freezing occurs on both the tumour’s surface (capsule) and within the tumour stroma. With a well formed fibrous capsule, the outer and inner ice balls provide a strong attachment to the probe. The finger-tip cryoprobes differ from previously available applicators in that they offer relatively large, spatulated tips. This allows for more homogeneous cryo-adhesion over a larger surface area. The larger surface area of application also increases tissue penetration, resulting in a stronger adhesion.

This study examines a new type of cryoprobe used to assist orbital surgery during tumour extraction. It was found capable of adhering to the tumour. Held by the surgeon, tumour traction could be induced with one hand, while the other hand wielded instruments used to sever residual tumour attachments.5 Finger-tip cryoprobes offer an alternative to current devices used for cryo-extraction of orbital tumours.

References

Figure 1 Enlarged optic nerve head scleral opening with radial exit of retinal blood vessels. Note staphylomatous appearance of peripapillary area.


Finger PT

Congenital third nerve palsy, moyamoya disease and optic nerve head staphylopa

The association of congenital optic nerve head anomalies, especially of the morning glory disc variety, with moyamoya disease is well recognised and has been described in a number of patients.1–5 To the best of our knowledge, the occurrence of a congenital third nerve palsy with moyamoya disease and a congenital optic nerve head anomaly has not been reported. We describe a patient who demonstrated the ipsilateral occurrence of these three neural abnormalities, strengthening the association of congenital optic nerve and carotid abnormalities and suggesting a common underlying aetiology.

Case report
A 3 year old boy was examined because of left sided exotropia and blepharoahptosis. His birth, developmental, and medical histories were unremarkable. Visual acuity was 20/25 right eye and 20/200 left eye. There was a near total ptosis of the upper eyelid. There was a large exotropia and a small hypotropia of the left eye that he was unable to elevate, elevate, or infraduct. His right pupil reacted briskly to light, but the left pupil was dilated and sluggishly reactive to light. A left relative afferent pupillary defect was present. Fundus examination disclosed an anomalous left optic disc and peripapillary area, with what appeared to be an enlarged scleral opening and a staphylomatous defect around the optic papilla (fig 1). The rest of the retina was normal. The right fundus was normal. A magnetic resonance imaging scan and magnetic resonance angiogram of the brain revealed an absence of the left intracranial carotid artery and its bifurcation into middle and anterior cerebral arteries. The lenticulostriate arteries were increased in size, consistent with moyamoya vessels (fig 2).

Comment
This patient has an optic nerve head malformation that appears to be most compatible with a peripapillary staphylopa or a variant of a morning glory disc anomaly (MGDA). MGDA is one of the cavitary optic disc malformations comprising a congenital, funnel-shaped excavation of the posterior peripapillary sclera that incorporates the optic disc. In addition to the anomalous retinal vasculature that distinguishes the MGDA from other excrated optic disc anomalies such as optic disc coloboma, the association of morning glory disc with carotid circulation anomalies, especially moyamoya disease has been reported.1–5 Moyamoya disease is a rare cerebrovascular disorder characterised by stenosis or occlusion of the distal internal carotid arteries. Progressive brain ischaemia triggers formation of a collateral vascular network in the basal ganglia region referred to as moyamoya (Japanese word for “cloud of smoke”) vessels. The most common clinical features are transient ischaemic attacks and stroke in children, and intracranial haemorrhage in adults. Our patient appears to have an extreme form of this condition with total absence of the left internal carotid artery and collateral vessel formation typical of moyamoya disease.

Congenital third nerve palsy was once thought not to be associated with other neurological abnormalities. More recent studies have however revealed a high incidence of associated neurological deficits such as hemiparesis, seizures, hemianopia, and hydrocephalus.1 An association of congenital third nerve palsy with MGDA or peripapillary staphylopa has not been reported to the best of our knowledge. The third nerve palsy in the present case may be due to an ischaemic brainstem event or a developmental defect affecting the left third nerve nucleus.

The constellation of abnormalities in our patient confirms the association of moyamoya vessels with optic nerve head malformations such as MGDA or peripapillary staphylopa and the possible neurological complications of this malformation complex, as evidenced by the third nerve palsy in this case. It is possible that an intracranial vascular dysgenesis may underlie some cases of the morning glory disc anomaly. We strongly recommend magnetic resonance angiography in conjunction with magnetic resonance imaging to identify carotid vascular anomalies in patients with MGDA or peripapillary staphylopa, especially in the presence of other neurological signs such as a congenital third nerve palsy.

K Sabit, B A Hajji
Al-Bahar Eye Center and the Department of Ophthalmology, University of Kuwait, Kuwait City, Kuwait
J-M Hwang
Department of Ophthalmology, Seoul Municipal Boramae Hospital, College of Medicine Seoul National University, Seoul, Korea

www.bjophthalmol.com
Radial optic neurotomy for the treatment of acute functional impairment associated with optic nerve drusen

Radial optic neurotomy was recently introduced as a treatment option in patients with central retinal vein occlusion. As described by Opremcak et al., central retinal vein occlusion might be related to increased pressure on the central retinal artery and vein as well as on optic nerve fibres in the confined space provided by the scleral ring. It was therefore suggested that a relaxation of the scleral outlet by a radial optic neurotomy might be an effective surgical treatment option. In the light of this information we hypothesised that radial optic neurotomy may also be applicable in patients with visual field defects and deterioration of visual acuity associated with optic nerve drusen, where compression induced damage to optic nerve fibres is the underlying pathogenetic principle.

Case report

A 27 year old female patient presented with extensive bilateral optic nerve drusen (fig 1A). While visual acuity was light perception on the right eye over 4 years, she had experienced an acute and rapid deterioration of visual acuity from 20/32 to 20/500 and a progressive visual field loss within the past 6 weeks before she was seen in our institution (fig 1B). The progressive visual field defect had been documented carefully by the referring ophthalmologist. Besides the optic nerve drusen, there was no other ophthalmologic pathology, no history of glaucoma, or any other relevant disease. With respect to the rapid functional deterioration we discussed radial optic neurotomy as a potential treatment option. Surgery was performed, after written informed consent, by one of the authors (AK) and consisted of standard three port pars plana vitrectomy and radial optic neurotomy. The incision was performed at the nasal edge of the optic disc in a radial fashion avoiding major retinal vessels. There were no intraoperative complications except a small haemorrhage at the incision site. The patient was then carefully followed post-operatively at 3 week intervals. Already at the first follow up visit a regression of the visual field defect and slight improvement of visual acuity was noted (fig 2A). At last presentation 10 weeks after surgery, the visual field defect was limited to the inferior nasal quadrant and visual acuity had improved to 20/32 (fig 2B). Funduscopy revealed a scar at the incision site, but no other pathologies (fig 2C).

Comment

Drusen of the optic nerve are the result of axonal degeneration of retinal ganglion cells and are composed of acellular concentric calcified lamellae. While most cases are idiopathic, drusen have been described in association with several acquired conditions such as hypertensive retinopathy, vascular occlusion, optic atrophy, or chronic papilloedema. If drusen are located deep in the optic nerve, progressive enlargement may result in pressure induced atrophy of adjacent nerve fibres producing visual field constriction and anterior ischaemic optic neuropathy. Drusen have also been reported to occur predominantly in eyes with normally small optic discs. It had been previously hypothesised, that a radial incision at the nasal edge of the optic disc might result in a decompression of the scleral outlet and the associated neurovascular compression in patients with central retinal vein occlusion. Transferring this hypothesis to our patient, radial optic neurotomy seemed a reasonable therapeutic approach to us, as a relaxation or decompression of the scleral outlet might counteract the relevant pathogenetic principles of progressive visual field defect in optic nerve drusen. To our knowledge, radial optic neurotomy has not been used for the treatment of progressive visual field defects in association with optic nerve drusen before. We were very aware of the experimental character of this surgical intervention and carefully informed the patient before the operation. However, with respect to the rapid deterioration of visual acuity and progression of visual field constriction, there seemed to be no other treatment option available and the surgical intervention appeared justified.

The validity of the “scleral outlet compartment syndrome” concept in central retinal vein occlusion, as well as the effect of the radial neurotomy, has been questioned by Hayreh and is currently under discussion. However, the excellent functional outcome in this case may suggest that radial optic neurotomy potentially provides a relaxation and decompression of the optic nerve, allowing a recovery in conditions associated with pressure induced nerve fibre damage as in the case presented. In retinal vein occlusion, other additional mechanisms of action, such as the formation of chorioretinal shunts as a result of radial optic neurotomy, were described to contribute to visual recovery.

In summary, this case report indicates that radial optic neurotomy might be considered in patients presenting with sudden visual loss and constriction of visual field in association with optic nerve drusen. We considered the surgical approach in this single case, as there was no other treatment option we could offer the patient that might restore vision.
Figure 2  There was a regression of the visual field defect noted 3 weeks after radial optic neurotomy (A). Ten weeks postoperatively the visual field defect was predominantly limited to the lower nasal quadrant (B). Funduscopy revealed a scar at the incision site at the nasal rim of the optic disc (C).

C Haritoglou, S G Prieglinger, M Grueterich, A Kampik
Department of Ophthalmology, Ludwig-Maximilians-University, Mathildenstrasse 8, 80336 Munich, Germany
G K Kriegelstein
Department of Ophthalmology, University of Cologne, Joseph-Stelzmann-Strasse 9, 50931 Cologne, Germany
Correspondence to: Christos Haritoglou, MD, Department of Ophthalmology, Ludwig-Maximilians-University, Mathildenstrasse 8, 80336 Munich, Germany; Christos.Haritoglou@med.uni-muenchen.de
doi: 10.1136/bjo.2004.060335
Accepted for publication 2 November 2004
Financial interest: none.

References

Early choriotreital anastomosis in non-ischaemic CRVO: a randomised trial
In non-ischaemic central retinal vein occlusion (niCRVO), the two principal determinants of final visual acuity are visual acuity and the presence of macular oedema at initial presentation. Data from the Central Vein Occlusion Study Group suggested that of patients with CRVO with an initial acuity better than 6/15, 65% maintain this, whereas patients with presenting acuities between 6/15 and 6/60, 81% remain the same or get worse (19% improve to 6/12 or better). 44% remain between 6/15, and 6/60 and 37% are worse than 6/60. Up to 34% of niCRVO may progress to the ischaemic variant with its attendant complications within 3 years. 5 However, in some studies 83% of indeterminate cases progress to ischaemic CRVO. The creation of a choriotreital venous anastomosis (CRVA) improved visual acuity in some patients, decreased macular oedema, and reduced the incidence of progression to ischaemic CRVO. These important observations provide the basis for the study we carried out.

During the study period 11 patients (table 1) were enrolled according to the trial protocol (see appendix). All anastomoses were patent (on fluorescein angiography and if not repeated, see appendix). Mean patient age and mean pretreatment (T0) visual acuities, retinal thickness (by optical coherence tomography, OCT), and cyst height (OCT) did not differ between the two groups (table 1, fig 1). Factorial analysis of variance (ANOVA, Genstat) found that all three measures (acuity, retinal thickness, and cyst height, fig 1) decreases significantly between T0 and 6 months, but only in the case of cyst height was there a significant difference between the laser treated and control groups (F(1,9) = 5.85, p<0.05). The changes in retinal thickness and visual acuity were also greater in the treatment group but did not achieve significance (F(1,9) = 2.51 and 1.15, respectively, both p>0.1). Larger group sizes may have shown a significant effect.

The principal limitation of this trial is the small number of patients, because of the limited numbers of suitable patients within the study period. However, patients were randomised and well matched. The trial showed a trend towards better vision over 6 months in the laser treated group, although this failed to reach statistical significance.
It remains possible that a larger group of randomised patients would have produced statistically significant numbers. A multicentre trial would be required to achieve this. Another question arises regarding the longer term outcome in these patients. This should probably be considered in further studies. Cyst height might predict later visual acuity outcome measures. It is therefore possible that longer follow up may have found a significant improvement in acuity. Retinal thickness predicts and precedes changes in visual acuity in diabetic retinopathy.

If the size and duration of this trial had been increased, it is conceivable that results may have proved more informative. The fact that there was a significant effect on cyst height on OCT is, nevertheless, important and suggests that laser CRVA may reduce macular oedema in CRVO. The finding that improvements in visual acuity are recorded later than reduction in macular oedema in other studies implies that a significant effect on visual acuity might have been expected in these patients at a later time. We therefore recommend that this be taken into account in future studies.

**Acknowledgements**

We gratefully acknowledge the help of Professor Stephen Drumett (Cardiff University) with statistical analysis of the data.

**References**


**Table 1** Comparison of randomised groups for early laser chorioretinal venous anastomosis versus observation in non-ischaemic CRVO (patient data are illustrated, visual acuities are given as ETDRS measures)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Control</th>
<th>Laser</th>
<th>t test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>5</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Female patients</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Left eyes</td>
<td>5</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Mean age</td>
<td>76.4</td>
<td>68.8</td>
<td>1.278</td>
</tr>
<tr>
<td>Mean pretreatment acuity</td>
<td>0.872</td>
<td>0.827</td>
<td>0.216</td>
</tr>
<tr>
<td>Mean 6 month acuity</td>
<td>0.664</td>
<td>0.41</td>
<td>1.388</td>
</tr>
<tr>
<td>Mean change in acuity over 6 months</td>
<td>0.208</td>
<td>0.417</td>
<td>-1.074</td>
</tr>
<tr>
<td>Mean change in retinal thickness on OCT over 6 months</td>
<td>172.8</td>
<td>459.3</td>
<td>1.583</td>
</tr>
<tr>
<td>Mean change in cyst height on OCT over 6 months</td>
<td>87.6</td>
<td>302.6</td>
<td>-2.418, p=0.019</td>
</tr>
</tbody>
</table>

OCT, optical coherence tomography.
Informed consent and medical devices: the case of the contact lens

It is estimated that 1.65 million people in the United Kingdom wear contact lenses, 97% of whom do so for refractive and cosmetic reasons. Contact lens wearers are at risk of sight threatening adverse events such as corneal ulceration, which may lead to scarring and visual loss. The risk of corneal ulceration is approximately 1 in 3000, 1 in 2000, and 1 in 500 patients per year for hard, soft daily wear, and soft continuous wear lenses, respectively.

Informing individuals of the risks associated with contact lens wear is important both for the wearer and person prescribing the contact lens. For consent to be legally valid it must be informed. This means that patients need information about the nature of an intervention, possible alternatives and, specifically, its benefits and risks. There is no reason why the principle of informed consent should not apply to the prescribing of a medical device such as a contact lens. We sought to determine the degree to which contact lens wearers have been informed of the risks associated with contact lens wear.

Methods

Following permission from the respective medical school deans, students at UK medical schools were contacted through electronic mail by their respective university faculties and asked if they wore or had worn contact lenses in the past year, to follow a link to a questionnaire (fig 1) sited on the world wide web.

Results

In all, 360 replies were received (table 1); 21% of students had received some verbal information regarding the risk of corneal ulceration and 1% had received this in written form. Only 2% had been told of all of the stated risks; 12–14% of respondents were aware of the risk of corneal ulceration associated with soft daily, continuous, and hard contact lens wear. Of those who knew of this risk 41%, 37%, and 58% underestimated the respective morbidity. Only 23% of those who think that they had been given sufficient advice knew of the risk of corneal ulceration. Thirteen per cent of students reported the development of one or more complications associated with their contact lens wear. Eight per cent of students stated that they had been aware of the risks stated in the questionnaire they would not have chosen to wear contact lenses. 87% of students would still have chosen to wear a contact lens after reading the associated risks.

Comment

Contact lenses are worn by millions of people worldwide. Although the risk of a complication is small, it constitutes a significant public health problem when applied to a large population. Individually it is necessary to balance this risk against the benefits offered by contact lens wear. This can only be achieved with the provision of appropriate information.

Although there are limitations with this type of survey, it would appear that the majority of contact lens wearers, approximately 80% (98% for all four of the stated risks) of students surveyed, were unaware of the risks to which they were exposed.

It is important that potential contact lens wearers are fully informed to allow the best choice of refractive correction for them. Consumer comparison between the potential adverse effects of various contact lens types and wear patterns is important in this decision. This is emphasised here as 8% of those involved in the study would not have chosen to wear contact lenses had they known of the associated risks.

Although there is no legal stipulation regarding the provision of information when prescribing a contact lens, providing information and obtaining informed consent forms part of good clinical practice. Although written consent is not evidence that informed discussion has taken place, written agreements can be used to provide a basis for the process.

We would recommend that informed consent be obtained when prescribing contact lenses and that this should be done with the aid of written information. Concern over the associated risks should not deter people from the benefits of contact lens wear but they are an important consideration and consumers have a right to be informed.

Figure 1

Questionnaire.

<table>
<thead>
<tr>
<th>Q1</th>
<th>For how long have you been wearing contact lenses?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5 years</td>
<td>1/2000</td>
</tr>
<tr>
<td>5-10 years</td>
<td>1/500</td>
</tr>
<tr>
<td>&gt;10 years</td>
<td>1/3000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q2</th>
<th>Has your contact lens practitioner ever told you of the following risks which are associated with contact lens wear?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes/No</td>
<td>Corneal ulcers with loss of vision</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Blood vessel formation on the cornea</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Corneal scarring with loss of vision</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Dropping of the upper eye lid (ptosis)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q3</th>
<th>Has your contact lens practitioner ever given you written information on the following risks which are associated with contact lens wear?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes/No</td>
<td>Corneal ulcers with loss of vision</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Blood vessel formation on the cornea</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Corneal scarring with loss of vision</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Dropping of the upper eye lid (ptosis)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q4</th>
<th>Were you offered a choice of contact lens type by your contact lens practitioner?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes/No</td>
<td>Corneal ulcers</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Blood vessel formation on the cornea</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Corneal scarring</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Dropping of the upper eye lid (ptosis)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q5</th>
<th>Do you receive your contact lenses from hospital (Yes/No) or high street (Yes/No) contact lens practitioner?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes/No</td>
<td>Corneal ulcers</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Blood vessel formation on the cornea</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Corneal scarring</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Dropping of the upper eye lid (ptosis)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q6</th>
<th>Do you feel that the information given to you by your contact lens practitioner was sufficient?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes/No</td>
<td>Corneal ulcers</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Blood vessel formation on the cornea</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Corneal scarring</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Dropping of the upper eye lid (ptosis)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q7</th>
<th>On a scale from one to five, with one being very well and five being not at all, how well do you think you understood the information you were given by your contact lens practitioner?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>Corneal ulcers</td>
</tr>
<tr>
<td>1-5</td>
<td>Blood vessel formation on the cornea</td>
</tr>
<tr>
<td>1-5</td>
<td>Corneal scarring</td>
</tr>
<tr>
<td>1-5</td>
<td>Dropping of the upper eye lid (ptosis)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q8</th>
<th>Have you ever developed any of the following problems?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes/No</td>
<td>Corneal ulcers</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Blood vessel formation on the cornea</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Corneal scarring</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Dropping of the upper eye lid (ptosis)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q9</th>
<th>The estimated risk of corneal ulceration associated with contact lens wear is stated below. Please indicate if you were aware of these given risks. If the answer is yes please select whether you thought the risk was greater than, less than, or the same as stated.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corneal ulcers</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Blood vessel formation on the cornea</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Corneal scarring</td>
<td>Yes/No</td>
</tr>
<tr>
<td>Dropping of the upper eye lid (ptosis)</td>
<td>Yes/No</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Q10</th>
<th>If you were not aware of these risks, would you still have worn contact lenses had you been given the above information?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes/No</td>
<td>Corneal ulcers</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Blood vessel formation on the cornea</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Corneal scarring</td>
</tr>
<tr>
<td>Yes/No</td>
<td>Dropping of the upper eye lid (ptosis)</td>
</tr>
</tbody>
</table>

A Roberts, A E Kaye, R A Kaye, K Tu, S B Kaye

St Paul’s Eye Unit, 82 Link, Royal Liverpool University Hospital, Prescot Street, Liverpool L7 8XP, UK

Correspondence to: Stephen B Kaye, St Paul’s Eye Unit, 82 Link, Royal Liverpool University Hospital, Prescot Street, Liverpool L7 8XP, UK, stephen.kaye@rlbht.nhs.uk
doi: 10.1136/bjo.2004.051342

References

2 MacRae S, Herman C, Stulting RD. Corneal ulcer and adverse reaction rates in premarket contact lens studies. Am J Ophthalmol 1991;111:457-65
Multiple use of single use solutions: a dangerous practice

I am writing to raise an issue for routine ophthalmic and optometry practice that contravenes the principles of clinical governance and generates an avoidable infection risk to patients.

My concern relates to single use preservative-free ophthalmic solutions, particularly those used for diagnostic purposes in hospital eye clinics and optometry practices. The regulatory guidelines1 and the updated guidance note from the Royal Pharmaceutical Society (www.rpsgb.org.uk/pdfs/ophprepguid.pdf) specify that products designed and licensed for single use must be discarded immediately after use.

In practice, however, a recent study2 has documented the routine misuse of single use solutions (Minims), generating an unnecessary risk of infection transferal between patients. Single use solutions used multiple times were shown to have a significantly higher rate of contamination than those that were used once then discarded (45% versus 4%). An associated audit (Qureshi MA, personal communication, 2004) of hospitals were used once then discarded (45% versus 4%). An associated audit (Qureshi MA, personal communication, 2004) of hospitals

<table>
<thead>
<tr>
<th>Table 1 Survey of 560 medical students who are contact lens wearers. All results are in percentages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provision of information versus reported complications (%)</td>
</tr>
<tr>
<td>Risk</td>
</tr>
<tr>
<td>------</td>
</tr>
<tr>
<td>Ulcer</td>
</tr>
<tr>
<td>BV</td>
</tr>
<tr>
<td>Scar</td>
</tr>
<tr>
<td>Praxis</td>
</tr>
<tr>
<td>Reported awareness of risk of corneal ulceration</td>
</tr>
<tr>
<td>SDL</td>
</tr>
<tr>
<td>Greater</td>
</tr>
<tr>
<td>Same</td>
</tr>
<tr>
<td>Less</td>
</tr>
<tr>
<td>SCL</td>
</tr>
<tr>
<td>Greater</td>
</tr>
<tr>
<td>Same</td>
</tr>
<tr>
<td>Less</td>
</tr>
<tr>
<td>HGP</td>
</tr>
<tr>
<td>Greater</td>
</tr>
<tr>
<td>Same</td>
</tr>
<tr>
<td>Less</td>
</tr>
<tr>
<td>Knowledge of risk of corneal ulcer versus adequacy of advice</td>
</tr>
<tr>
<td>All</td>
</tr>
<tr>
<td>SDL</td>
</tr>
<tr>
<td>SCL</td>
</tr>
<tr>
<td>RGP</td>
</tr>
<tr>
<td>Percentage (%) who would wear contact lens with knowledge of risks</td>
</tr>
<tr>
<td>Yes</td>
</tr>
<tr>
<td>No</td>
</tr>
</tbody>
</table>

*Actual complications reported by students. Blood vessel formation on the cornea (BV). Soft disposable (SDL), soft contact lens (SCL), rigid gas permeable (RGP), or hard contact lens (HGP).

the efficacy of the medication can be compromised in the event of contamination.

My own experience of ophthalmologists and hospital pharmacists indicates that in some cases the interpretation of the term “immediately” has been stretched beyond the simple instruction to “use once and discard.” For example, some published papers (Marchese et al4) refer to a, now outdated, EMEA instruction to use such products within three hours of opening. The EMEA has since replaced this with an updated guideline1 indicating that the usage time after opening is dependent on the nature of the product, and yet this still encourages the user to retain the product for multiple use after first opening.

Clinical governance requires that risks and hazards to patients be reduced to as low a level as possible. Single use products are available for this purpose and should be used as intended and as licensed for one patient only. Repeated use in the same patient over a limited period up to 24 hours after first opening the product may be possible, depending on the product, and at the discretion of the clinician who must ensure that the product is not used on any other patient. I urge your readers to take action as necessary to ensure compliance.

References


Drug induced autoenucleation with resultant chiasmal damage

I read with interest the report of Tuwir et al4 of a case of autoenucleation with chiasmal damage. They note the rarity of this dramatic self mutilating event, and state that there have been only two other reports of contralateral field defect from chiasmal injury in instances of autoenucleation.

There have, however, been a number of other reports of temporal field defect in the remaining eye following either self enucleation or traumatic enucleation by an assailant. The consequences are the same regardless of who removes the eye. One of the two reports Tuwir et al cite, Parmar et al2 was of a young man whose eye was digitally enucleated by an assailant.

In their 1984 review article on autoenucleation, Krauss et al3 reported a 29 year old woman who had enucleated her right globe causing a complete temporal hemianopia in her remaining eye. They also reviewed the medical literature and found 19 cases of bilateral self enucleation (or of self mutilation so severe as to require bilateral enucleation), and 31 cases of unilateral self enucleation. Of the 18 eyes where the length of the attached optic nerve was noted, six occurred at or near the chiasm. They also found seven cases of traumatic avulsion of one eye resulting in a temporal hemianopia in the remaining eye.

In 1996, Arkin et al5 reported a 25 year old man with a temporal defect in his right eye after his left eye was pulled out by an assailant. A magnetic resonance image confirmed damage to the chiasm. And in 2002, Dilly and Imes1 reported a 54 year old schizophrenic man who removed his blind left eye causing a complete temporal hemianopia in his remaining right eye. His MRI showed avulsion of the lateral portion of his chiasm.

It appears that even though acts of traumatic enucleation are rare, associated chiasmal injury is common.

Correspondence to: Richard K Imes, CPNMC, USA; rimes56418@aol.com
doi: 10.1136/bjo.2005.068502
Accepted for publication 8 February 2005

References

P-glycoprotein expression in retinoblastoma

We have read with interest the paper by Krishnakumar et al.1 We have studied 18 children with retinoblastoma using immunohistochemical detection of P-glycoprotein by the mouse monoclonal antibody HYB-241 in frozen section tumour samples. Like Krishnakumar et al., we found limited expression of P-glycoprotein in retinoblastoma cells since only four of the 18 samples were positive. However, six of 18 samples had P-glycoprotein positivity in tumour associated endothelial cells. Contrary to Krishnakumar et al., we had the opportunity of evaluating children who received previous therapy with drugs that can be affected by P-glycoprotein and no obvious difference in its expression was evident. Only one of the three tumour samples coming from patients who had been exposed to P-glycoprotein mediated chemotherapeutic agents (vincristine and/or etoposide) was positive in retinoblastoma cells. In addition, of the six cases in which P-glycoprotein was detected in tumour associated endothelial cells, only one of them came from a Patient who had been exposed to P-glycoprotein mediated chemotherapeutic agents (etoposide). Also, one patient whose tumour associated endothelium was negative had endothelial cells in the optic nerve that were positive. The patient had not been exposed to P-glycoprotein mediated chemotherapy.

There is little information regarding its expression in normal eye blood vessels, but P-glycoprotein expression has been detected in the normal human retinal pigment epithelium and post-laminar optic nerve,2 and it is absent in the permeable microvessels of the choroid and the ciliary process.3 P-glycoprotein expression in endothelial cells of newly formed capillaries induced by tumours has also been described.4 Its prognostic relevance in retinoblastoma is unknown, and it cannot be determined from our data, since all of these eyes were already enucleated and no patient had an extracocular relapse.

The potential role of P-glycoprotein in tumour associated endothelium creating a blood-tumour barrier is uncertain. Our results suggest that if cyclosporine is indeed improving the efficacy of chemotherapy, it may be acting by improving its delivery through P-glycoprotein expressing tumour associated endothelial cells or through altering pharmacokinetics of chemotherapeutic drugs, rather than exclusively acting to reverse drug resistance at the level of the tumour cell.

Our data do not support the hypothesis that cyclosporine will be a useful adjunct to chemotherapy for the treatment of retinoblastoma via competitive inhibition of P-glycoprotein in tumour cells.

References


Who is the author?

We read with great interest Schwab’s answer to “Who is Ivan Schwab?”1 We thank him for his gracious response to our original letter,2 which suggested that readers would benefit if the BJO consistently published authors’ qualifications. Although Schwab and the editors understood this to be a question of credentials to write about a subject, we maintain that this issue has more to do with giving the reader perspective. An excellent example of the need to understand the authors’ perspective comes from Schwab’s reply itself.

Schwab made the presumption that we were both ophthalmologists, which is, in fact, not correct. One of us (DP) is a medical graduate and currently a postgraduate research student. Given that the BJO does not publish authors’ qualifications, it is clear how this occurred. We propose that it is common for readers to make inferences about the authors, as Schwab did. It is reasonable and logical to consider not only the information that is available as well. When authors’ qualifications are not explicitly stated, as in the BJO, readers can easily make erroneous presumptions about the source. Does the BJO expect its readers to make no presumptions about the backgrounds of the authors? This would seem a difficult task for the inquisitive mind. Does it matter that readers may make erroneous presumptions about the authors? We will leave this question to the reader.

It is interesting to note that, on occasion, the BJO does take care to give the reader more background on an author. For example, in an article on informed consent,3 the authors are given the descriptive phrase “solicitor” and “ophthalmologist,” respectively. Similarly, the author of an article on professional regulation,4 is given the designation “Chairman of the Committee on Professional Performance, General Medical Council, Portex Professor of Anaesthesia, Institute of Child Health, London.” This supports our view that it is important for the reader to understand the perspective of the author. Thus, the BJO’s approach does not appear consistent.

In answer to Schwab: indeed, we are “reading his essays, asking questions” and will “stay tuned.” In fact, we hope that in due course, the BJO will publish his series as a collection. We understand that the need to conserve space limits references. However, rather than for verification, readers who have been stimulated by his writing would benefit from more references—perhaps online—to further their understanding. For example, in August 2003, Schwab referred to Land and Nilsson’s book Animal Eyes (Oxford: Oxford University Press, 2002). This is an excellent resource to improve the reader’s understanding and appreciation of his particularly those describing invertebrate eyes.

Finally, we note that other BJO readers have not commented on the subject of authors’ qualifications. Perhaps, ironically, other readers think that they do not have the credentials to comment.

D Papalkar, I Francis
Department of Ophthalmology, Prince of Wales Hospital, Randwick, NSW, Australia and the University of NSW, Sydney, NSW, Australia

References

1 Schwab IR. In answer to “Who is Ivan Schwab?” Br J Ophthalmol 2005; 89:249.


Vitrectomy with and without scleral buckle for inferior retinal detachment

In the article presented by Wickham and associates,5 the authors compared vitrectomy and gas for treating inferior break retinal detachments with vitreectomy, gas and scleral buckle. The study showed no significant difference in the final outcome between the two groups. While vitrectomy and gas for inferior break retinal detachments appears promising, there are several issues that we would like to raise.

Firstly, the surgery was performed by a registrar, fellow, or consultant. These surgeons may have varying degrees of experience and the inconsistency may affect the rate of successful surgical outcome. Secondly, additional tears were treated with cryotherapy or laser. As shown by Bonnet et al.,6 the proliferative vitreoretinopathy (PVR) rate could be as high as 25.8% in patients treated with cryotherapy compared to 2.2% in the laser group. It is unclear what the relative distribution of patients who underwent cryotherapy in the two groups was and this may have been a confounding factor in the study. Thirdly, patients underwent an air/gas exchange with either SF6 or C3F8. A sC3F8 had a much longer duration of tamponade than SF6, the use of one agent over another may have led to a difference in the success rate.

The study excluded patients with PVR grade C. However, for those with grade A or B, a scleral buckle was planned before the operation. This could lead to a selection bias where potentially more difficult cases were...
synchronized to the scleral buckle group. This may be a contributing factor for a higher rate of postoperative PVR (20%) and epiretinal membrane formation in this group, compared to a rate of 5–10% reported previously. The underlying vitreoretinal pathology rather than the placement of the scleral buckle may have been a major reason behind the high PVR rate noted in this group.

The authors stated that the main reasons for performing vitrectomy and gas without scleral buckle was to avoid the possible complications of scleral buckle—namely, longer operating time, exposure, refractive change, diplopia, and anterior segment ischaemia. Perhaps, in the interest of readers, the authors can provide us with the information if any of these complications developed during the study.

The high rate of final reattachment reported in the study is encouraging. We believe that vitrectomy and gas alone is an effective method to treat selected cases of retinal detachments with inferior retinal breaks. A controlled, randomised, prospective study, comparing the outcome in properly matched groups and with meticulous attention to surgical methods will help address some of these issues and help elucidate further if the procedure without the use of scleral buckle will benefit patients with inferior break retinal detachment.

We would like to commend the authors for conducting a very nice study on an important topic that may provide a better alternative treatment. We wish that the issues that we raise will help broaden the discussion on the topic.

Charles Bonnet syndrome in patients with glaucoma and good acuity

We read with interest the paper by Tan et al on Charles Bonnet syndrome (CBS) in Asian patients. Their findings of a lower CBS prevalence than European or North American surveys demands further investigation, although this may reflect the stringent criteria of hallucination complexity they used in making the diagnosis (thus excluding the commonest CBS hallucinations of coloured blobs and grid-like “tesselloptic” patterns) and, as pointed out in the accompanying editorial comment, the relatively low prevalence of CBS might be more prevalent in their cohort. However, it is not this aspect of the report we found most intriguing—it was the observation that CBS occurred with good acuity. In fact, three of the four CBS patients described had a degree of impairment which placed them at risk for CBS (best eye acuity 0.3 or worse). It is the remaining patient (patient three, a 72 year old man) who is of particular importance as his relative preservation of acuity bilaterally (20/90 RE, 20/40 LE) challenges the view that significant acuity loss is a prerequisite for “ophthalmological” visual hallucinations. This case mirrors four patients we have recently studied with CBS secondary to glaucoma and bilaterally good acuity. We describe the cases below and offer a pathophysiological mechanism for the association.

In one sense, the finding that CBS occurs with preserved acuity is hardly novel. As cited by Tan et al, several previous reports have found such an association. However, all is not as it seems, the term CBS being used in different ways by different authors. Some use the term to describe visual hallucinations with insight, irrespective of the presence of eye disease, age or clinical context. Others use the term to describe the association of visual hallucinations with age and intact cognition, without reference to eye disease or hallucination phenomenology. Under these definitions it is hardly surprising that a patient with “CBS” has preserved acuity, the patients in these studies having a diverse range of conditions—conditions associated with Parkinson’s disease and beyond. In contrast, ophthalmologists and neurologists have used CBS to emphasise eye or visual pathway dysfunction, with the phenomenology of the hallucinations and age being of secondary importance. Although each definition of CBS has its merits, the ophthalmological definition reminds us best of Bonnet’s original term for CBS and it has been assumed that deafferentation of sufficient severity to precipitate CBS implies a consequent loss of acuity, our cases and that of Tan et al suggest otherwise. Patients with advanced glaucoma can have a significant degree of ganglion cell loss and consequent physiological deafferentation without a loss of acuity, placing them at risk for CBS. This contrasts with age related macular disease, where the loss of central retinal ganglion cells leads, indirectly, to an association of CBS with acuity loss. We conclude that reduced acuity is not a necessary prerequisite for ophthalmologically defined CBS and that ophthalmologists should be aware that patients with preserved acuity but significant deafferenting ocular disease are at risk of the syndrome.

References


Charles Bonnet syndrome in patients with glaucoma and good acuity

We read with interest the paper by Tan et al on Charles Bonnet syndrome (CBS) in Asian patients. Their findings of a lower CBS prevalence than European or North American surveys demands further investigation, although this may reflect the stringent criteria of hallucination complexity they used in making the diagnosis (thus excluding the commonest CBS hallucinations of coloured blobs and grid-like “tesselloptic” patterns) and, as pointed out in the accompanying editorial comment, the relatively low prevalence of CBS might be more prevalent in their cohort. However, it is not this aspect of the report we found most intriguing—it was the observation that CBS occurred with good acuity. In fact, three of the four CBS patients described had a degree of impairment which placed them at risk for CBS (best eye acuity 0.3 or worse). It is the remaining patient (patient three, a 72 year old man) who is of particular importance as his relative preservation of acuity bilaterally (20/90 RE, 20/40 LE) challenges the view that significant acuity loss is a prerequisite for “ophthalmological” visual hallucinations. This case mirrors four patients we have recently studied with CBS secondary to glaucoma and bilaterally good acuity. We describe the cases below and offer a pathophysiological mechanism for the association.

In one sense, the finding that CBS occurs with preserved acuity is hardly novel. As cited by Tan et al, several previous reports have found such an association. However, all is not as it seems, the term CBS being used in different ways by different authors. Some use the term to describe visual hallucinations with insight, irrespective of the presence of eye disease, age or clinical context. Others use the term to describe the association of visual hallucinations with age and intact cognition, without reference to eye disease or hallucination phenomenology. Under these definitions it is hardly surprising that a patient with “CBS” has preserved acuity, the patients in these studies having a diverse range of conditions—conditions associated with Parkinson’s disease and beyond. In contrast, ophthalmologists and neurologists have used CBS to emphasise eye or visual pathway dysfunction, with the phenomenology of the hallucinations and age being of secondary importance. Although each definition of CBS has its merits, the ophthalmological definition reminds us best of Bonnet’s original term for CBS and it has been assumed that deafferentation of sufficient severity to precipitate CBS implies a consequent loss of acuity, our cases and that of Tan et al suggest otherwise. Patients with advanced glaucoma can have a significant degree of ganglion cell loss and consequent physiological deafferentation without a loss of acuity, placing them at risk for CBS. This contrasts with age related macular disease, where the loss of central retinal ganglion cells leads, indirectly, to an association of CBS with acuity loss. We conclude that reduced acuity is not a necessary prerequisite for ophthalmologically defined CBS and that ophthalmologists should be aware that patients with preserved acuity but significant deafferenting ocular disease are at risk of the syndrome.

Current aetiological theories of CBS emphasise the importance of deafferentation (both “physiological” through ganglion cell loss and “functional,” for example, related to blindfolding or cataract), the loss of visual input resulting in a change in cortical excitability. Although it has been assumed that deafferentation of sufficient severity to precipitate CBS implies a consequent loss of acuity, our cases and that of Tan et al suggest otherwise. Patients with advanced glaucoma can have a significant degree of ganglion cell loss and consequent physiological deafferentation without a loss of acuity, placing them at risk for CBS. This contrasts with age related macular disease, where the loss of central retinal ganglion cells leads, indirectly, to an association of CBS with acuity loss. We conclude that reduced acuity is not a necessary prerequisite for ophthalmologically defined CBS and that ophthalmologists should be aware that patients with preserved acuity but significant deafferenting ocular disease are at risk of the syndrome.

S A Madill, D H Fytyche
Eye Department, King’s College Hospital, Denmark Hill, London SE5 9RS, UK

Correspondence to: Mr Stephen Madill, Eye Department, King’s College Hospital, Denmark Hill, London SE5 9RS, UK; samadill@hotmail.com
doi: 10.1136/bjo.2005.066027
Studies may be a true reflection of a lower used in that study are very similar to ours, the since the methodology and diagnostic criteria compared to 0.4% in our study population.

Gold K et al. 1992;149:1701–6.


Tight necktie, intraocular pressure, and intracranial pressure

I would like to congratulate Theelen et al. for their recent article on impact factors on intraocular pressure measurements in healthy subjects, and I would like to add a thought. As Theelen and colleagues point out with reference to the literature, it increased pressure in the jugular vein leads to increased brain pressure, and by an increase in the epidural venous pressure, to an elevation of intraocular pressure. Correspondingly, in a previous study by Teng and associates, it was demonstrated that a tight necktie may increase intraocular pressure by an increased jugular vein pressure and could affect the diagnosis and management of glaucoma. It may be taken into account, however, that the brain pressure and pressure in the cerebrospinal fluid space surrounding the retrobulbar part of the optic nerve are the counter-pressure against the intraocular pressure across the lamina cribrosa. If the cerebrospinal fluid space pressure in elevated (as a result of increased jugular vein pressure), the intraocular pressure may also be allowed to be elevated so that the trans-lamina cribrosa pressure difference may remain constant. Independently of the question of whether a tight necktie may or may not increase intraocular pressure, one may assume that if the intraocular pressure gets higher because of an increased jugular vein pressure, it may, at least partially, be balanced by an increase in brain pressure, without increasing the risk for glaucoma.

References


Authors’ reply

We thank Dr Jonas for his interest in our work and his important supplements about pathophysiological aspects regarding neck circulation and intraocular pressure. As the optic nerve head is in close contact with both intraocular and subarachnoidal space, one may imagine a disc protecting balance in intraocular and subarachnoidal space in highly myopic eyes. Invest Ophthalmol Vis Sci 2004;45:2660–5.

NOTICES

Worldwide clinical trials for new technique for early detection of eye disease

A unique new non-invasive technique for high resolution optical imaging of the eye is receiving global acclaim. By combining two high-resolution imaging technologies, the new technique provides doctors with 3-D images of the retina, macula and the optic nerve.

For more information, contact the Media Office on 01227 823581/83100 or email MediaOffice@kent.ac.uk. News releases can also be found at: http://www.kent.ac.uk/news

Trachoma control

The latest issue of Community Eye Health (No 52) discusses new developments in the control of trachoma. For further information please contact: Journal of Community Eye Health, International Resource Centre, International Centre for Eye Health, Department of Infectious and Tropical Diseases, London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, UK (tel: +44 (0)20 7612 7964; email: Anita.Shah@lshtm.ac.uk; online edition: www.jceh.co.uk). Annual subscription (4 issues) UK £28/US$45. Free to developing country applicants.

EVER 2005 meeting

This will take place on 5–8 October 2005 in Vilamoura, Portugal. For further details please contact: Christy Lacroix, EVER Secretary, Kapucijnenover 33, B-3000 Leuven, Belgium (tel: +32 (0)16 233 849; fax +32 (0)16 234 097; email: ever@skynet.be).

CORRECTION

In the paper titled Prevalence and causes of blindness and low vision in leprosy villages of north eastern Nigeria (Br J Ophthalmol 2005;89:417–9) the author has notified us of an error. The second-last sentence in the second column on page 417 should read, ‘Definitions of blindness and visual impairment were: VA > 6/18, normal; 6/60 ≤ VA < 6/18, visual impairment; 3/60 ≤ VA < 6/60, severe visual impairment...’.