Intravitreal injection of triamcinolone acetonide as treatment for chronic uveitis

Chronic intraocular inflammation such as chronic uveitis can lead to cystoid macular oedema, papilloedema, and vitreous opacities temporarily or permanently reducing visual acuity. Chronic uveitis has usually been treated by topical or systemic application of steroids. Topical treatment, however, often has not been sufficiently effective to suppress intraocular inflammation and to reduce cystoid macular oedema. Systemic treatment with steroids inevitably leads to secondary side effects such as systemic suppression of the whole immune system and Cushing's syndrome. Taking into account that the eye comprises only 0.01% of the whole body volume, and considering that for achieving high concentrations of a drug at its site of action it is best to apply it directly into the region of required action, we describe the clinical outcome in a patient receiving an intravitreal injection of a crystalline cortisone.

Case report
A 17 year old woman suffering from chronic idiopathic uveitis in both eyes for 5 years had been treated topically, peribularly, and systemically with corticosteroids. As a steroid responder, she had developed secondary ocular hypertension. Steroid induced cataract in her right eye was operated on by phacoaspiration, transpupillary anterior vitrectomy, and posterior chamber lens implantation. To reduce the systemic side effects of steroid treatment, systemic cyclosporin A had been added to the treatment scheme since January 1998. In February 2000, she presented again with a severe uveitis with papilloedema and cystoid macular oedema. Despite intensive topical treatment with steroids given hourly, and systemic acetazolamide, visual acuity remained reduced to the normal range with topical antiglaucomatous medication. Four months after the injection, the steroid crystals were reduced to a maximum of 38 mm Hg, and was measured to be 20/20 in both eyes, and visual fields were unremarkable, except for an enlarged blind spot. Both optic discs showed a prominence of 0.5 mm (right eye) and 0.6 mm (left eye), measured by confocal laser scanning tomography. Intraocular pressure measured 18 mm Hg. With topical anaesthesia, a Goldmann contact lens fitted with a pressure sensor mounted into its holding ring was put onto the cornea (Fig 1). Pressure was asserted onto the globe by slightly pressing the contact lens, and the pressure value at the time when the central retinal vein started pulsating was noted. The measurements of this new technique of ophthalmodynamometry were repeated nine times in both eyes.

The central retinal vein collapse pressure as the sum of the ophthalmodynamometric value plus the intraocular pressure, measured 103 relative units right eye and 98 relative units left eye. These values were significantly higher than normal values (6.1 (SD 8.4) relative units) determined previously in normal subjects (own data). Direct measurement of cerebrospinal fluid pressure by lumbar puncture performed about 5 hours later revealed a value of 107 cm water column (equivalent to 82.3 mm Hg). In combination with other clinical findings, the diagnosis of pseudotumour cerebri was made.

Comment
The central retinal vein is the only structure whose appearance depends on its inner pressure, and which runs through the cerebrospinal fluid space and which is accessible from outside the body without any invasive procedure being performed. After exiting the eye through the optic disc, the central retinal vein goes through the retrobulbar part of the optic nerve before it traverses the subarachnoidal and subdural spaces of the optic nerve and plexus of the optic nerve meninges. The pressure in the central retinal vein is thus at least as high as the cerebrospinal fluid pressure. The central retinal vein collapse pressure may be measurable by ophthalmodynamometry since the vein will start to pulsate, if the sum intracerebral pressure which was confirmed by eventual direct measurement.

Case report
A 12 year old female patient presented with acute vomiting, massive headache, and bilateral abducens nerve palsy. Visual acuity was 20/20 in both eyes, and visual fields were unremarkable, except for an enlarged blind spot. Both optic discs showed a prominence of 0.5 mm (right eye) and 0.6 mm (left eye), measured by confocal laser scanning tomography. Intraocular pressure measured 18 mm Hg. With topical anaesthesia, a Goldmann contact lens fitted with a pressure sensor mounted into its holding ring was put onto the cornea (Fig 1). Pressure was asserted onto the globe by slightly pressing the contact lens, and the pressure value at the time when the central retinal vein started pulsating was noted. The measurements of this new technique of ophthalmodynamometry were repeated nine times in both eyes.

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Ophthalmodynamometric estimation of cerebrospinal fluid pressure in pseudotumour cerebri
Measurement of the cerebrospinal fluid pressure usually requires a lumbar puncture or craniotomy to get direct access to the cerebrospinal fluid space. These techniques, however, are invasive and so carry the risk of complications such as infections and damage to the neural structures. Furthermore, owing to the leakage of cerebrospinal fluid during the puncture, the cerebrospinal fluid pressure will be altered in the moment the measurement is performed. It would thus be desirable to have a non-invasive method allowing the estimation of the intracerebral pressure without requiring a direct access to the brain or spinal cord. We describe a patient in whom ophthalmodynamometry strongly suggested an increased intracerebral pressure which was confirmed by eventual direct measurement.
of intraocular pressure plus an external pressure exerted onto the eye equal the diastolic pressure of the central retinal vein.14 The intraocular pressure can be determined by anplanation tonometry, and the additional pressure exerted onto the globe can be measured by the ophthalmodynamometer. In the ophthalmodynamometers used in the 1960s and 1970s, determinations of the central retinal vein pressure were often difficult or almost impossible so that the central retinal vein pressure has usually not been measured.15 The new ophthalmodynamometer used in the present study (Fig 1) may overcome some of the problems associated with the old ophthalmodynamometers. In a previous study on the reproducibility of the new technique, the variation of the central retinal vein collapse pressure was 15.9% (SD 11.9%). The present study suggests that, in patients with markedly increased intraocular pressure, the new, Goldmann lens associated, ophthalmodynamometer may provide information about the intracerebral pressure by estimating the central retinal vein collapse pressure. It may be helpful for the neuro-ophthalmological diagnosis of diseases associated with increased intraocular pressure.

Proprietary interest: none.

J B Jonas, B Harder
Department of Ophthalmology, Faculty of Clinical Medicine Mannheim, University of Heidelberg, 68167 Mannheim, Germany

Correspondence to: Dr J Jonas, Universitäts-Augenklinik, Theodor-Kutzer-Ufer 1-3, 68167 Mannheim, Germany; Jost.Jonas@augen.ma.uni-heidelberg.de

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References

Treatment of atopic blepharitis by controlling eyelid skin water retention ability with ceramide gel application

Atopic blepharitis is one of the major ocular complications of atopic dermatitis (AD).16 It has been pointed out that atopic patients have dry skin accompanied by barrier disruption and water deficiency. Previously, we assessed the water retention ability of eyelid skin by measuring the water content and water evaporation rate from the eyelid in patients with atopic blepharitis.17 The water content positively correlated and water evaporation from the eyelid negatively correlated with the severity of blepharitis.17 Ceramide comprises about 30% of stratum corneum lipids, which have an important role in both the water retention and barrier function of the skin.18 Ceramide abnormalities in several skin disorders, such as AD, have been reported.19 Decreased levels of ceramides may be attributable to the insufficient water retention of the skin in AD. Apytt Gel (Zenyaku Kogyo, Tokyo, Japan) is a product containing galactosyl ceramides extracted from horses as a major moisturising ingredient. In this study, we assessed the efficacy and safety of this gel product in patients with mild atopic blepharitis by measuring the water retention ability of the eyelid skin before and after prescription.

Methods and results

Sixteen lids of eight patients (five males and three females, 7–35 years old, average age 16.0 (SEM 8.4) years) diagnosed as having AD by dermatologists, according to Hanifin and Rajka’s criteria, were examined. Because ceramide gel has no anti-inflammatory effect, cases with severe inflammation were excluded from this investigation. After informed consent was obtained, patients were instructed to place Apytt Gel on their eyelids two to five times a day after washing their faces. Assessment of clinical findings using measurement of water retention ability were performed as previously described18 before and 4 weeks after the beginning of application. Statistical analysis was carried out by non-parametric tests (Wilcoxon test). A p value of 0.05 or less was considered statistically significant.

Water content of eyelid skin was significantly increased after treatment (30.6% (6.0%) before treatment, 41.2% (8.5%) after treatment; p<0.025) (Fig 1). Water evaporation values were significantly decreased after treatment (4.5 (1.4) × 10−6 g/cm²/s before treatment, 3.5 (0.9) × 10−6 g/cm²/s after treatment; p<0.05) (Fig 2). No slit lamp findings indicating toxicity were observed during the course of the study.

Comment

As the eyelid is a borderline lesion between dermatology and ophthalmology with influences on ocular homeostasis, dermatologists often hesitate in prescribing sufficient medication to the eyelid. The assessment and treatment of atopic blepharitis is therefore an important aspect of ophthalmological examination in atopic patients. Ceramide gel treatment for 4 weeks significantly improved the water retention ability of eyelid skin of patients with mild atopic blepharitis. Among various moisturising products, the application of the ceramide gel is reasonable, because ceramide deficiency has been reported in the skin of atopic patients. Ceramide gel alleviates dryness without stickiness, and patients experience little discomfort. Comfort during application is thought to be one of the important factors for the compliance of patients. Some patients interrupt application of ointments, such as petrolatum (Vaseline), to the eyelid because of stickiness or because the shiny appearance around the eyes is cosmetically conspicuous. Although strong anti-inflammatory drugs are necessary in acute exacerbations of atopic blepharitis, moisturising of the skin using ceramide gel application represents a useful supplementary therapy during periods of relatively light inflammation.

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N Asano-Kato, K Fukagawa, Y Takano, T Kawakita, K Tsutoba, H Fujishima
Department of Ophthalmology, Tokyo Dental College, Japan

S Takahashi
Department of Dermatology

Correspondence to: Naoko Asano-Kato, MD, Department of Ophthalmology, Tokyo Dental College, Chiba, Japan, S11-13 Sugano, Ichikawa-shi, Chiba 272-8513, Japan; naokakato@bc.isu4.or.jp

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References
An unusual tumour of the lacrimal gland

Lacrimal gland swelling is usually due to an inflammatory or neoplastic process. We report an oncocytoma as the cause of lacrimal gland swelling and review the literature. Oncocytoma of the lacrimal gland is extremely rare and has been described only three times before.

Case report

A 72 year old man experienced periodic swelling of his right eyelid over a period of 9 months. For 2 months he complained of vertical diplopia. He had a past medical history of chronic obstructive airways disease and a past oculcular history of early cataract, asteroid hyalosis of the vitreous body, and primary open angle glaucoma.

On examination visual acuity of both eyes was 0.50. External examination showed a right hypotropia. There was a 3 mm of proptosis of the right eye. Eye movements in that eye were restricted in all directions. Slt lamp examination showed bilateral mild cata-
ract. Intraocular pressures were normal (12 and 10 mm Hg respectively). Funduscopic examination yielded cup/disk ratios of 0.8. Computed tomography (CT) of orbit (Fig 1) showed an extraocularly solid space occupying mass in the lacrimal fossa. The tumour displaced the right eye inferomedially. The tumour was thought to arise from the lacrimal gland. A fine needle aspiration cytology demonstrated proliferation of oncocytic cells. The tumour was removed in toto via a lateral orbitotomy. The operation and the histological macroscopic description yielded a spherically shaped, partially encapsu-
tated tissue (measuring 2.8 × 1.9 cm). After preparation it had a homogenous brownish tuberiform aspect. Microscopic examination (Fig 2) showed fibrous tissue with focally pre-existing remnants of lacrimal gland tissue. There was a sharply demarcated tumour composed of tubular structures lined by large cells. These transformed epithelial cells consisted of eosinophilic, granular cytoplasm with round to oval shaped relative small nuclei and nucleoli. No evidence of angioinvasive growth was seen. A diagnosis of a radically removed oncocytoma was made.

Postoperative visual acuity of the right eye was reduced because of poor tear secretion confirmed on Schirmer testing and slit lamp examination showed filamentary keratopathy. Lubricating eye drops were prescribed and collagen punctual plugs were inserted in the superior and inferior puncta. Diplopia and the motility disturbance diminished. Follow up to date is 1½ years and no regrowth has been assessed.

Comment

Oncocytomas (synonyms: oxyphilic adenoma or oncocytic adenomas) are benign, epithelial tumours arising in the ducal cell lining of apocrine glandular structures. In an oncocytoma the oncocyes can form nests, cords, and tubules. Oncocytes can be found among the epithelial cells of various normal organs. Oncocytes occur frequently and have been described in salivary, thyroid, parathyroid, buccal mucosa, breast, kidney, pharynx, and larynx. If they occur near the eye, they are usually located in caruncle, lacrimal sac, accessory lacrimal glands of the conjunctiva and rarely in the lacrimal gland. For unknown reasons oncocytic lesions begin to appear in early adulthood and proliferate with age.

Most lacrimal gland masses represent infl-

flammatory disease, either responding to antibiotics or anti-inflammatory medication. Various malignant tumours of the lacrimal gland have been described varying from lymphoproliferative disorders to epithelial neoplasms. Approximately 50% of epithelial tumours are benign mixed tumours (pleomorphic adenomas) and about 50% are carcinomas. In rare cases a lacrimal gland mass is found to be an oncocytoma, as described in our case and in three other cases described in the literature.5,6

Beskid and Zarzcka' described a 39 year old woman with an oncocytoma of the lacrimal gland. Riedel et al8 reported a 1.5 year old Afri-
can girl with an oncocytoma of the lacrimal gland. This is the only case in the literature that reported on an oncocytoma in childhood. Riedel et al8 also reported a 76 year old woman with an oncocytoma of her lacrimal gland, that presented with a 2 month period of swelling of her lacrimal fossa without proptosis. After excision there was no regrowth dur-

References


Morning glory disc anomaly: an atypical case

When optic disc elevation is encountered on funduscopy examination, the first concern is whether it represents true disc oedema. We present a patient who was urgently referred to us by a retinal specialist because of unilateral “disc swelling.” Further evaluation suggested that the patient had a congenital optic disc anomaly that was atypical in appearance, but most likely a variant of the morning glory disc anomaly (MGDA).

Case report

A 40 year old African-American woman with no visual complaints went to her local optomet-

rist for a routine eye examination. At the optometrist’s office she was told that “in the back of her right eye she had a dark spot with a ring around it” and was referred to a retinal specialist. The retinal specialist found a mildly decreased visual acuity and a “swollen disc” in the right eye and the patient was referred for neuro-ophthalmic consultation. To her knowledge, she previously had never had a dilated funduscopy examination.

Best corrected visual acuity was 20/30 distance and J1 near in the right eye and 20/20 distance and J1+ near in the left eye. There was a 0.9 log unit right relative afferent pupillary defect. Her colour vision, external

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Fluorescein angiography of the patient’s right eye. An elevated annulus of apparent fibrogial tissue surrounds most of the disc, although it appears to spare part of the papillomacular bundle. An excavation of retina and retinal pigment epithelium surrounding the optic disc can be appreciated from about 12 o’clock to 7 o’clock.

Examination, slit lamp biomicroscopy, intraocular pressures, and motility were all normal in both eyes. Funduscopic examination was normal in the left eye with an optic nerve cup to disc ratio of 0.4. The appearance of her right optic nerve (Fig 1) was that of an elevated ring around the centre of the disc, interrupted from about 7 o’clock to 9 o’clock by an area of pigmentation. The vasculature was mildly obscured as it crossed the elevation. There was no venous engorgement, haemorrhage, cotton wool spots, or exudate. Funduscopic examination gave the appearance of a peripapillary excavation of retina and retinal pigment epithelium surrounding the elevated ring from about 12 o’clock to 7 o’clock. The macula and periphery were normal. Automated perimetry showed an enlarged blind spot and a relative superior altitudinal defect on the right and a full field on the left.

Fluorescein angiography showed staining of optic nerve tissue but no leakage of fluorescein outside the disc margin, confirming the absence of true disc swelling (Fig 2). Magnetic resonance imaging of the brain and orbits with gadolinium showed no pathology. B-scan ultrasonography excluded optic disc drusen. Optical coherence tomography (OCT) of the patient’s right optic nerve showed the elevated annulus of apparent pigment epithelium lining an excavation surrounding the optic nerve, characteristic of morning glory syndrome. Optical coherence tomography (OCT) of the patient’s right optic nerve. Representative OCT shows retinal pigment epithelium lining an excavation surrounding the optic nerve, characteristic of morning glory syndrome.

Another atypical feature of our patient is the small amount of peripapillary pigment seen in the affected eye. The only area of pigmentation is between 7 and 9 o’clock. The remaining clock hours have elevated fibrogial tissue but no visible pigment. The finding is not unexpected, as the visible peripapillary pigment in MGDA dissipated over time. This decrease in peripapillary pigment over time is believed to be secondary to a metaplasia of hamartomatous RPE into thin tissue and hyperplasia of the fibrogial tissue. Our patient was 40 years old at diagnosis of MGDA and it is possible that she had more peripapillary pigment when younger. It is also possible that the peripapillary excavation of this patient was larger when she was younger, as the glial hyperplasia tends to progressively elevate the disc over time. There is controversy regarding the aetiology of MGDA. Some believe it is a form of optic disc coloboma. This theory is supported by evidence that MGDA is seen along a continuum of other optic disc anomalies including coloboma in the renal coloboma syndrome. Based on the findings of a scleral defect, vascular anomalies, central glial tuft, and adipose and smooth muscle tissue in histopathological specimens, it has been hypothesised that MGDA may be a primary mesenchymal disorder or an abnormality in the relative growth between the mesoderm and endoderm. Another theory proposes that an abnormal enlargement of the distal optic stalk during eye development allows the inner layer of the optic cup to enter, causing an excavation at the entry site. One problem with determining the aetiology has been the lack of clinical confirmation (primarily a lack of fundus photography) in previous histopathological reports. In this report, we present OCT data that confirm these pathological findings in MGDA. Common to all of the histopathological reports is a layer of RPE that lines the peripapillary excavation. This histological feature is confirmed in the present case with OCT, which shows RPE extending posteriorly within the peripapillary scleral excavation as it approaches the optic nerve (Fig 3). We are currently evaluating more patients with MGDA using OCT and comparing these findings with the OCT appearances of other optic nerve anomalies, including optic disc coloboma.

MGDA is sometimes associated with a basal encephalocele and up to a third of patients with MGDA will develop a retinal detachment. Hence, the first step in the management of MGDA is recognising these associated conditions. Our patient did not have the characteristic facial features (flattened nasal bridge or cleft lip) nor did she have any neurological, endocrine, or respiratory symptoms to suggest she had a basal encephalocele and an magnetic resonance imaging confirmed its absence. Funduscopic examination showed no evidence of retinal detachment, and she will be followed carefully for this potential complication. Although this is an atypical case, with no central fibrous tuft and little peripapillary pigment, this patient demonstrates the peripapillary excavation characteristic of MGDA. To our knowledge this is the first report of OCT of an eye with MGDA and confirms previous histopathological reports of MGDA showing RPE lining the central peripapillary excavation. Ongoing studies at our institution are using OCT to quantify the changes that occur with MGDA over time and to compare the features of MGDA with those of other optic nerve anomalies, including optic disc coloboma.
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Department of Ophthalmology, Emory University School of Medicine, Atlanta, GA, USA

N J Newman

Neuro-ophthalmology Unit, Emory Eye Center, 1365 Clifton Road, NE, Atlanta, GA 30322, USA; ophtnjn@emory.edu

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**References**


**Idiopathic anterior hyaloid vessels**

Anterior hyaloid fibrovascular proliferation (AHFP), the growth of vessels across the anterior hyaloid face from an origin in anterior retina, was first described in phakic eyes after diabetic vitrectomy surgery, but also reported following cataract surgery in diabetics. Complications include cataracts, vitreous haemorrhage, tractional retinal detachment, ciliary body detachment, and phthisis bulbi. We present the first report of this entity occurring in a non-diabetic patient without previous ophthalmic surgery.

**Case report**

A 20 year old Asian man presented with acute right sided visual loss. There was no history of ocular trauma or family history of note. He was systemically well. Visual acuity was 6/12 right eye, 6/5 left. Vessels were visible on the right posterior lens capsule, associated with localised cataract and anterior vitreous opacity (Fig 1A). Clinical examination revealed no other ocular abnormality, but the temporal periphery of the right retina was obscure. Anterior segment fluorescein angiography confirmed perfusion of the vessels (Fig 1B). Posterior segment fluorescein angiography was of poor quality in the right eye and revealed no fundus or peripheral abnormality in the left eye. Fluorescein angiography of the patient’s only surviving parent was normal. Fasting blood glucose, 

**Comment**

In most instances of retinal neovascularisation, an angiogenic stimulus, such as capillary non-perfusion or inflammation, can be identified. In this case, no evidence was found of capillary non-perfusion, or any, other than postoperative, inflammation. A number of specific diagnoses were considered. No temporal traction on vascular arcades or optic disc was seen in the affected eye, and peripheral retinal vasculature was normal, where seen in the affected eye, and in the fellow eye. There was no history of low birth weight or prematurity as in retinopathy of prematurity. There was no family history, and the retinal peripheries of the parent were normal, which makes dominant exudative vitreoretinopathy unlikely. No inflammation, other than post-surgical, was identified in anterior or posterior segment, and visible pars plana appeared normal. Toxocara and Toxoplasma serology was negative. There was no visible peripheral retinal vasculitis or systemic evidence of sarcoidosis or multiple sclerosis. No evidence of ocular trauma was found, and no foreign body was identified radiographically. The patient is not diabetic, screening for haemoglobinopathy was negative, and there were no ophthalmoscopic or angiographic signs of retinal vascular occlusion. No evidence of a hyperviscosity syndrome was found.

The patient’s age, sex, and race are typical of patients suffering from idiopathic peripheral vaso-occlusive retinopathy (Eales’ disease), but the absence of retinal vasculitis, vitreous and retinal haemorrhage, and the unilateral nature of disease, are less characteristic. No sign of tumour was apparent on ultrasonography, and no evidence of arteriovenous malformation was found in the eye or body. He had...
no features of incontinentia pigmenii or facial-cranial-bulbar muscular dystrophy. The diagnosis therefore remains uncertain.

Treatment was mandated on the basis of visual loss. Vitreoretinal opinion preferred phacoemulsification surgery to pars plana vitrectomy because of the absence of definable vitreous or peripheral retinal disease. The vessels were closed with laser before capsulotomy to avoid haemorrhage, as has been described after capsulotomy in diabetic patients with AHFP.

J G F Dowler, J S Mehta, A M Londers, A M P Hamilton
Medical Retinal Service, Moorfields Eye Hospital, City Road, London EC1V 2PD, UK
Correspondence to: Mr J S Mehta; jdmehatta@hotmail.com

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References

Iris pigment epithelial cyst induced by topical administration of latanoprost

Latanoprost is an ester produg analogue of prostaglandin F$_2$alpha that enhances uveoscleral outflow and reduces intracocular pressure. Several adverse side effects associated with topical administration of latanoprost have been described. Iris cyst can be primary or secondary; the secondary iris cysts are usually caused by trauma, intraocular surgery, inflammation, and prolonged use of strong miotic agents, etc. We report one female patient, with advanced chronic angle closure glaucoma, who developed an iris cyst in her left eye 9 months after topical administration of latanoprost in both her eyes.

Case report

A 67 year old female patient initially presented with advanced chronic angle closure glaucoma in 1994. Laser iridotomy was performed on both her eyes in April 1994. After then, her eyes were treated with 2% pilocarpine and 8% blocker to maintain her intraocular pressures in the low teens. Because she preferred to use monotherapy, latanoprost had been used once a day at bedtime since July 2000. The intraocular pressures were maintained between 12 and 15 mm Hg with latanoprost monotherapy. No abnormal responses except mild hyperaeemia of the conjunctiva were noticed during follow up examinations. Unfortunately, in May 2001 (about 9 months after latanoprost monotherapy), it was noticed that the iris of her left eye bulged forward between 7 o’clock and 8 o’clock. The lesion was gradually increasing its size, and in September 2001 an iris pigment epithelial cyst was found at the posterior iris surface through a mid-dilated pupil (Fig 1). Latanoprost was then discontinued and her antiglaucoma medication was changed to dorzolamide and β blocker twice a day in both eyes. The iris cyst gradually decreased in size and completely disappeared from the pupil margin in February 2002 (Fig 2). During the follow up period of 4 months, there have been no visual complications or signs of recurring cyst.

Comment

Our report demonstrates another case of rare adverse side effects of latanoprost involving the iris. Although no ultrasonic biomicroscopy was used to follow up this case, the slit lamp biomicroscopy strongly suggested that the patient had a secondary pigment epithelial cyst arising from the posterior surface of the iris. The iris cyst developed in her left eye about 9 months after topical administration of latanoprost in her both eyes, and it progressively decreased in size and completely disappeared 5 months after topical latanoprost dis continued. The iris cyst in our case took more time to develop and a longer time to disappear than previously reported. We propose that if it took more time to develop an iris cyst after topical administration of latanoprost, it would need more time for the iris cyst to regress.

The topical latanoprost was administered to her both eyes, but only her left eye developed the iris cyst. We propose that both her eyes might have different sensitivity to the development of an iris cyst when exposed to topical latanoprost. (if her right eye was exposed to latanoprost for a longer time, an iris cyst might occur later.) Although cysts of uveal tissue might occur after uveitis, no definite symptoms and signs of uveitis were noticed in our patient during the follow up period. The most likely cause of this adverse side effect may be the increasing uveoscleral outflow on topical use of latanoprost; increasing uveoscleral outflow leads to an enhanced aqueous flow through the ciliary muscle and the intraepithelial space of the posterior iris. The iris cyst can occur at anytime during topical administration of latanoprost. Ophthalmologists should be aware of this possible rare side effect of topical administration of latanoprost.

I C Lai, M T Kuo, I M C Teng
Department of Ophthalmology, Chang Gung Memorial Hospital, Kaohsiung, 123 Tai-Pei Road, Niao-Sung Hsiang, Kaohsiung Asian, Taiwan
Correspondence to: Ing-Chou Lai; e12014@adm.cgmh.org.tw

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nerve root canal. Histology revealed a malignant round cell tumour consistent with a peripheral primitive neuroectodermal tumour (PPNET, Fig 2). Immunohistochemical studies demonstrated positivity for focal vimentin, cytokeratins, synaptophysin, and MIC-2, but were negative for GFAP (gliarial fibrillary acidic protein). S100, desmin, and the lymphoid markers LCA, CD3, and CD20. Staging investigations showed no evidence of metastatic disease and therefore the diagnosis of localised PPNET was made.

The patient received chemotherapy as primary treatment followed by radiotherapy and has been in remission since. A year later she was referred to our unit for correction of her left ptosis, and underwent left anterior levator resection with a satisfactory result. Four years following her initial diagnosis she remains free of recurrent disease.

Comment
Horner’s syndrome is caused by an oculosympathetic deficit to the pupillodilator and superior cervical ganglion and central neurologically. Together with the left facial sympathetic deficit to the pupillodilator and superior cervical ganglion and central neurologically, Horner’s syndrome is caused by an oculosympathetic deficit to the pupillodilator and superior cervical ganglion and central neurologically. In our patient, together with the left facial sympathetic deficit to the pupillodilator and superior cervical ganglion and central neurologically, Horner’s syndrome is caused by an oculosympathetic deficit to the pupillodilator and superior cervical ganglion and central neurologically. It highlights the importance of comprehensively investigating any patient with Horner’s syndrome, especially when associated with cervical radiculopathy.

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We thank Dr Maria Thom, MRCPath, Division of Pathology, Institute of Neurology, London, for her assistance and permission in the preparation of pathological figures.

Association of keratoconus and Avellino corneal dystrophy
Keratoconus is an idiopathic, progressive, non-inflammatory ectasia of the axial cornea. Its association with other systemic disorders or ocular disease have been reported, but its specific origin remains unknown. Recently, Muñier and associates detected that four types of autosomal dominant corneal dystrophy result from mutation in the human transforming growth factor β induced gene (BIGH3), the product of which has shown to be the protein keratocystin (R555W for granular corneal dystrophy, R535Q mutation for Reis-Bückler’s corneal dystrophy, R1246 mutation for central corneal dystrophy type I, and R124H mutation for Avellino corneal dystrophy). Molecular genetic analysis of various corneal dystrophies which had previously presented an insuperable challenge to clinical diagnosis, now clearly demonstrate the distinct phenotypes. We report a rare case of bilateral keratoconus in association with Avellino corneal dystrophy diagnosed by molecular genetic analysis.

Case report
A 35 year old man had complained blurred vision in both eyes for several years. His general health was good and there was no history of atopic disease, connective tissue disease, or ocular trauma. His familial history was unknown.

Hi’s best corrected visual acuity was RE 20/30 and LE 20/100. Slit lamp examination revealed bilateral non-inflammatory corneal thinning with protrusion of the central thinning areas. Fleischer ring was found in both corneas. Central corneal thickness was 428 µm on the right and 421 µm on the left measured by ultrasonic pachymetry. There was also clinical evidence of granular corneal dystrophy in both eyes. Discrete grey-white opacities and star-shaped spicular opacities
Results of direct sequencing

Figure 2

genetic report of a bilateral association of extracted genomic DNA. Using appropriate selected venous blood from the patient and unremarkable.

Corrected to 20/20 right and 20/25 left. The keratoconus (Fig 1, bottom). With rigid gas prior steeping consistent with the diagnosis of keratoconus. Computed corneal topography showed inferior steepening resulting in the diagnosis of keratoconus. There is only one case report in the literature regarding a patient with keratoconus associated with Avellino corneal dystrophy. Sassani and associates reported the bilateral association of keratoconus and Avellino dystrophy. There have been no previous reports of keratoconus associated with granular corneal dystrophy. Heterozygous G→A transition at the second position of codon 124 (arrow).

Figure 1 Slit lamp photographs RE (top left) and LE (top right) show discrete grey-white opacities and star-shaped spicular opacities in anterior stroma. (Bottom left and right) Computed corneal topography shows inferior steepening resulting in the diagnosis of keratoconus.

The involvement of genetic factors has been reported in keratoconus, but its hereditary pattern was not identified. A gene for at least one form of hereditary keratoconus has been mapped to human chromosome 21. In our case, it is unclear whether a genetic factor had a role in the simultaneous development of keratoconus and Avellino dystrophy. There may be some linkage between the genes responsible for these two abnormalities. In our case, molecular genetic analysis clearly demonstrated the presence of distinct phenotype, which had not previously presented clinically.

The authors have no proprietary interest in any aspects of this work.

S Igarashi
Department of Ophthalmology, Asahikawa Medical College, Asahikawa, Japan

Y Makita
Department of Public Health, Asahikawa Medical College, Asahikawa, Japan

References


Presence of vitronectin in neovascularised cornea of patient with gelatinous drop-like dystrophy

Gelatinous drop-like corneal dystrophy (GDLD) is a rare autosomal recessive disorder that is most often seen in Japan. This bilateral dystrophy usually presents in the first decade of life and is associated with a decrease of visual acuity. Typically, a mulberry-like opacity is present with protruberant subepithelial mounds that grow with age. Corneal neovascularisation (NV) also accompanies advanced cases. Corneal transplantation is the major therapeutic option for GDLD, but because NV can significantly increase the risk of graft rejection, a better understanding of the mechanism(s) for the corneal NV would be valuable.

Case report

A 39 year old Japanese man with GDLD was studied. His right eye had band-shaped corneal opacities in the interpalpebral area with a number of gelatinous prominences, and vascular invasions from the superior limbus into the clear cornea (Fig 1A). Because the visual acuity of the right eye had decreased to 20/800, penetrating keratoplasty was performed, and the diagnosis of GDLD was confirmed by characteristic histopathological findings of amyloid deposits beneath the corneal epithelium and mutation of the M151 gene.
It was recently reported that vitronectin, a multifunctional extracellular matrix adhesion molecule, is often a component of the abnormal extracellular deposits in various age-related human diseases such as age-related macular degeneration and amyloidosis. This suggested that similar pathways may be involved in the pathologies of other age-related diseases. Because the disease state of GDLD deteriorates with age, we hypothesised that similar vitronectin related pathways may also be associated with GDLD, and examined whether vitronectin was expressed in the GDLD cornea by immunohistochemistry.

An antibody directed against vitronectin (Santa Cruz Biotechnology, Santa Cruz, CA, USA) exhibited intense reactivity with the infiltrating leucocytes and basal epithelial cell layer. Diffuse staining for vitronectin is also found in the deposits. Anti-vitronectin also appears to stain the superficial layer of corneal epithelial cells, although we cannot totally rule out the possibility that this might represent an edge artefact (haematoxylin counterstain, original magnification ×200).

Factor XII deficiency and recurrent sixth nerve palsy

Factor XII deficiency is associated with thrombosis.2,3 Severe deficiency increases an individual’s prothrombotic tendency but with much reduction in levels there is less certainty.4 We present a case of recurrent sixth cranial nerve palsy due to severe factor XII deficiency. To our knowledge, this is the first reported case of a recurrent cranial nerve palsy associated with factor XII deficiency.

Case report

A 58 year old white male presented with an acquired constant incomitant horizontal diplopia. He had had a previous episode of horizontal diplopia of 3 weeks’ duration 6 months previously with spontaneous resolution and a further similar episode 18 years before that had been otherwise well. He was not hypertensive or diabetic, of normal weight but had been otherwise well. He was not a smoker, and without any cardiovascular disease. There was no family or personal history of venous or arterial thrombosis. On examination he was found to have bilateral sixth nerve palsies without any associated headache or papilloedema. Detailed magnetic resonance imaging with contrast and lumbar puncture opening pressure and investigation was normal.

Owing to the recurrent nature of the nerve palsies and the initial young age of presentation, a further prothrombotic examination was undertaken. Laboratory investigations showed a normal full blood count, plasma viscosity, liver function tests, glucose, homocysteine, prothrombin time, and fibrinogen assay. There was a significantly prolonged activated partial thromboplastin time of 74.7 seconds (normal range 24–32), which was still abnormal on repeat testing (90 seconds). Further laboratory studies demonstrated severe factor XII deficiency which was consistent on repeated testing (<1% of normal levels) but otherwise normal levels of protein S, protein C, antithrombin III, antithrombin V Leiden mutation or prothrombin G20210A allelic were not found.
He was fitted with Fresnel prisms to relieve his diplopia and was followed up 3 weeks later. By that time his diplopia had completely resolved and he had full abduction in both eyes.

Comment

With this recurrent and resolving pattern of cranial nerve palsy in a patient with no other risk factors for arteriosclerosis and a normal magnetic resonance image and lumbar puncture, the most likely predisposing factor in this case is his prothrombin state associated with severe factor XII deficiency.

Severe factor XII deficiency is a genetic determinant for thrombosis. It is not associated with any other clinical manifestations and prolonged activated thromboplastin time is a consistent finding in any level of factor XII deficiency. The only previously reported ophthalmic complications of factor XII deficiency are two cases of central retinal vein occlusion in patients without any vasculopathic risk factors.1 Assay for factor XII is not routinely done on thrombophilia screening protocols. It has been suggested that the frequency of factor XII deficiency (1.5–3%) is high enough to warrant the inclusion of factor XII assays in routine thrombophilia screening.2 Detailed thrombophilia screening of healthy populations may produce an identifiable abnormality in 10% but clearly 10% of the population are not clinically affected in their lifetime. Therefore the need for additional management should be assessed according to the presence of concurrent risk factors in an algorithmic fashion.3 Since his cranial nerve palsy resolved quickly and there was no family history of vasculopathic thrombosis he was treated empirically without anticoagulation although there is no evidence to support its benefit in this condition.

A Kipioti, O C Backhouse, P M Jacobs, M R Howard

Department of Ophthalmology, York District Hospital
NHS Trust, York, UK

Correspondence to: A Kipioti, Eye Department, Clarendon Wing, Leeds General Infirmary, LS2 9NS, UK, akpakioti@doctors.org.uk

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Unilateral proptosis: the role of medical history

The most common cause of bilateral and unilateral exophthalmos among adults is Graves’ disease. Unilateral exophthalmos, although frequently seen in connection with thyroid diseases, has a much larger differential diagnosis than bilateral exophthalmos. With unilateral presentation one should think of orbital pseudotumours, orbital cellulitis, cavernous sinus thrombosis, or intraorbital neoplasms.1

Graves’ ophthalmopathy (GO) usually is associated with Graves’ hyperthyroidism (GH) although the temporal relation to thyroid disease is not consistent. It has been estimated that 77% of GO patients are hyperthyroid, 21% euthyroid, and 2% hypothyroid.2

The following cases of Graves’ ophthalmopathy are described because of their unusual presentation; a long interval between thyroid disease and the development of predominantly unilateral Graves’ ophthalmopathy. Both cases were seen at the department of ophthalmology of the University Hospital Groningen, Netherlands.

Case 1

A female patient born in 1922 became hyperthyroid with minimal eye signs with possibly some lid retraction in 1948. She was treated by thyroidectomy and became clinically euthyroid. In 1988 she was seen by her family doctor after a 40-year interval between GH and GO is 3.3 years in men and 3.6 years in women. Two thirds of patients present with orbital symptoms within 18 months of diagnosis of thyroid disease.

In January 1983 she presented with complaints of sharp pains in both eyes, a feeling of pressure, and an exophthalmus of her right eye. On ocular examination there were no abnormalities except for exophthalmus of the right eye. Hertel exophthalmometer values were 24 mm right eye and 19 mm left eye. In December 1983 signs and symptoms worsened. Examination showed that there was an obvious retraction of the upper eyelid of the right eye. The exophthalmus was stable. There was diplopia caused by a right hypotropia in primary position of 1.5 degrees with restriction of elevation. A computed tomograph (CT) scan showed enlargement of all external eye muscles of the right eye without involvement of the tendons. During this exacerbation laboratory testing showed thyroid hormone levels within normal ranges and thyroperoxidase (TPO) colloid and antiparotid cell antibodies (APCA) were negative.

In April 2001 a bilateral medial recession and a recession of the inferior rectus of the right eye were performed to treat the strabismus convergens. Binovalic single vision was achieved in the primary position with some diplopia at extremes of gaze.

Comment

Unilateral proptosis as a result of Graves’ disease cannot be rejected as a diagnosis, even 20 or 30 years after the onset of thyroid disease. Only one retrospective study has mentioned intervals up to 25 years without giving exact numbers and underlying thyroid disease.3 For hypothyroidism and GO one study suggests intervals exceeding 15 years.4

Thyroid hormone testing should be performed to rule out abnormalities in thyroid hormone levels although thyroid status does not seem important as the active phase of ophthalmopathy can occur during hyperthyroidism, hypothyroidism, and euthyroidism.5 Thyroid antibody testing may be supportive for the diagnosis. A CT scan can be essential in further analysis showing enlargement of extraocular muscles with sparing of the tendons.6 It is also known that a CT scan can demonstrate contralateral eye muscle involvement in 50–90% of patients with clinically unilateral muscle involvement.7

Our two patients illustrate that the medical history is important in evaluating proptosis. One should always think of Graves’ disease as a possible cause of unilateral exophthalmos even though a patient may have had thyroid disease more than 20 years earlier.

In August 2000 he presented with unilateral proptosis and progressive loss of vision. Ocular examination showed chemosis and oedema of the eyelids in both eyes. Visual acuity was 20/60 right eye and 20/30 left eye. Pupillary reflexes were normal and symmetrically dilated and biochemically he presented as euthyroid. A CT scan showed bilateral enlargement of the eye muscles, more marked on the right side. He was treated with 60 mg prednisone daily.

One month later visual acuity of the right eye dropped further and he was referred to our hospital. Ocular examination showed marked soft tissue signs, worse in the right eye, bilateral chemosis, and unilateral exophthalmus of 26 mm in the right eye. Visual acuity was time and another CT scan was performed which showed enlargement of all recti muscles of right eye and in lesser extent of the left eye with signs of compression of the right optic nerve. An orbital decompression through a Caldwell-Luc approach was performed on the right side. Postoperatively, visual acuity of the right eye improved to 20/30 and proptosis in the right eye was reduced by 8 mm. A strabismus convergens of the right eye was the main side effect.

In April 2001 a bilateral medial recession and a recession of the inferior rectus of the right eye were performed to treat the strabismus convergens. Binovalic single vision was achieved in the primary position with some diplopia at extremes of gaze.

Comment

Unilateral proptosis as a result of Graves’ disease cannot be rejected as a diagnosis, even 20 or 30 years after the onset of thyroid disease. Only one retrospective study has mentioned intervals up to 25 years without giving exact numbers and underlying thyroid disease.3 For hypothyroidism and GO one study suggests intervals exceeding 15 years.4

Thyroid hormone testing should be performed to rule out abnormalities in thyroid hormone levels although thyroid status does not seem important as the active phase of ophthalmopathy can occur during hyperthyroidism, hypothyroidism, and euthyroidism.5 Thyroid antibody testing may be supportive for the diagnosis. A CT scan can be essential in further analysis showing enlargement of extraocular muscles with sparing of the tendons.6 It is also known that a CT scan can demonstrate contralateral eye muscle involvement in 50–90% of patients with clinically unilateral muscle involvement.7

Our two patients illustrate that the medical history is important in evaluating proptosis. One should always think of Graves’ disease as a possible cause of unilateral exophthalmos even though a patient may have had thyroid disease more than 20 years earlier.
Unusual presentation of cat scratch disease in HIV+ patient

Intraocular cat scratch disease may present with different clinical features including neuroretinitis, retinitis, retinal infiltrates, arterial and vein occlusions. Most of the cases show spontaneous recovery without therapy.1

There are only few reports of intraocular cat scratch disease in HIV+ patients. We report an unusual case of cat scratch disease presenting as helioid unifocal choroiditis in an HIV+ patient that showed good response to systemic therapy.

Case report

A 30 year old homosexual HIV+ man was referred to the uveitis department complaining of blurred vision in the left eye. He was taking zidovudine, lamivudine, ritonavir, and saquinavir. His last CD4+ count was 128 cells x 10^3/μL and viral load 1 300 000.

His visual acuities were 6/6 in the right eye and counting fingers in the left. There was no inflammation in the anterior chambers or in the vitreous. Ophthalmoscopy revealed a yellowish choroidal lesion surrounded by fluid and haemorrhages in the macula of the left eye (Fig 1). Fluorescein angiography showed an angiomatous lesion corresponding to those seen clinically. Blood tests were ordered including VDRL, toxoplasmosis serology, Lyme disease serology, ELISA for toxocariasis and were all negative. Computed tomography (CT) scan and serum studies were unremarkable. Blood sample was sent to CDC Atlanta for Bartonella serology. Since clinical diagnosis was cat scratch disease and most patients show good recovery without treatment we decided not to treat before results of blood tests. We kept examining the patient every week with ophthalmoscopy and fluorescein angiography (Fig 2A, B). The lesion progressively increased in size but he did not show visual acuity deterioration.

A month after presentation the lesion had increased and four small lesions appeared in the right eye. His visual acuity dropped to hand movements. Although we did not have the results of Bartonella serology, we decided to give him ciprofloxacin. Bartonella henseae serology was positive for IgG, 1:256, and IgM negative.

Fifteen days after treatment was started the lesions in the right eye disappeared and the macular lesion in the left eye resolved completely.

Comment

There is a well established association between neuroretinitis and cat scratch disease although many different clinical presentations have been described.2 Ormerod et al3 described two patients with small areas of retinitis and arteriolar occlusions. Pollock and Kristinsson4 described one patient with cat scratch disease and helioid unifocal choroiditis. Hong et al5 first described this syndrome when they reported six young patients with a solitary round yellow chorioretinal lesion associated with subtretinal fluid. There was no association with inflammatory or infectious diseases. Fish et al6 reported a case of peripapillary angiomatosis associated with neuroretinitis. Our patient presented with clinical features of helioid unifocal choroiditis but after angiogram we could see an angiomatous-like lesion.

The treatment of ocular cat scratch disease remains controversial. Pollock and Kristinsson7 reported a case that improve in visual acuity from 6/12 to 6/6 occurred after 3 weeks without treatment. One of the cases described by Ormerod showed some benefit after treatment although his recovery was very slow. The second patient showed improvement without treatment. Warren et al8 reported an HIV+ patient with cat scratch disease whose lesion enlarged without treatment. Once the diagnosis of Bartonella was confirmed by polymerase chain reaction of the retina sample, the patient was started on systemic antibiotics with good results. Considering that spontaneous recovery could occur we decided not to treat until our patient showed deterioration in the left eye and involvement in the fellow eye.

Ophthalmologists should be aware of this unusual presentation of cat scratch disease with helioid unifocal choroiditis and angiomatous-like lesions. Although larger series and control studies are needed, HIV+ patients with intraocular manifestations of cat scratch disease may benefit from systemic treatment with antibiotics.

A L L Curi, W R Campos, L Barbosa, M A Lana-Peixoto, F Oréfice

Federal Fluminense University/Federal University of Minas Gerais, Brazil

Correspondence to: Dr Andre Luiz Land Curi, R Francisco Dutra, 163/701 Ieario Niteroi, RJ, 24220-150, Brazil; curiall@yahoo.com

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In many eyes with choroidal neovascularisation, the macula can easily be separated from the subjacent fibrovascular tissue. In some eyes with long standing choroidal neovascularisation, however, the outer portion of neurosensory retina may adhere firmly to the subjacent tissue. In such cases, an inner portion of fibrovascular tissue may be torn off and translocated with overlying neurosensory retina during macular translocation. The underlying healthy retinal pigment epithelium covered with the translocated abnormal tissue may not be able to fulfil its physiological roles on the overlying neurosensory retina, and good functional recovery of the translocated macula is unlikely to be achieved. As documented here, simultaneous translocation of the underlying abnormal retinal pigment epithelium associated with long standing choroidal neovascularisation can occur during limited macular translocation and result in an unsatisfactory visual outcome. When patients are deciding whether to consent to surgical intervention with limited macular translocation in such cases, they should be informed of the benefits and risks of the treatment, with due consideration of this complication.

M Ichibe, K Imar, M Ohji, Y Oyo, T Yoshizawa, H Abe
Department of Ophthalmology, Niigata University School of Medicine, Niigata, Japan

Correspondence to: Dr Ichibe, Department of Ophthalmology, Niigata University School of Medicine, 1-7-57 Asahimachi, Niigata 951-8510, Japan; ichibe@med.niigata-u.ac.jp
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Fungal and bacterial chronic endophthalmitis following cataract surgery

Endophthalmitis, although rare, is one of the most vision threatening complication of cataract surgery. The majority of these infections...
Case report

A 73 year old woman was referred for pain and redness in the left eye. Her past history was remarkable for an extracapsular cataract extraction in the left eye with a posterior chamber intraocular lens implant that had been performed in Turkey in 1998. The patient had recurrent episodes of decreased vision and ocular pain in the postoperative course and was treated with periocular injections of corticosteroids over 2 years. On presentation, visual acuity was hand movements in the left eye. Slit lamp examination of the left eye showed a white corneal infiltrates involving the superior and nasal quadrant (Fig 1). There was a moderate anterior chamber reaction and 1 mm hypopyon. The implant was in good position and no residual cortical mate-

Figure 1 Anterior segment photograph of the left eye showing an hypopyon and a crystalline keratopathy.

Comment

Species of candida, other than Candida albicans, are normal flora of cutaneous and mucocutaneous surfaces and are only rarely incriminated as agents of clinical disease in immunocompetent hosts. Candida parapsilosis is in fact one of the most common fungi cultured from the normal human external eye. However, it can cause infectious crystalline keratopathy or, more typically, suppurrative stromal keratitis. Candida parapsilosis has also been reported as a cause of small epidemics of postoperative endophthalmitis. In the present case, Candida parapsilosis could be considered as a true pathogenic organism because of its localisation, in the capsular bag, and also because antifungal therapy was effective.

On the other hand, Staphylococcus and Corynebacterium species are frequently identified in postoperative endophthalmitis.

This case is, to our knowledge, the first documented report of bacterial and fungal endophthalmitis following cataract surgery. The use of broad spectrum antibiotics, the administration of steroids, and the increased number of patients with local or systemic immunosuppression could explain the development of such infections which are frequent in post-traumatic endophthalmitis but extremely rare after cataract surgery. However, cross contamination by hospital personnel may also account for increase in yeast infections in certain environments. A recent survey of hospital personnel revealed that 70% of nurses and non-nursing hospital personnel carried yeasts on their hands, particularly subungual spaces, with Candida parapsilosis being those most frequently recovered. This case demonstrates the atypical presentation and the poor prognosis of polymicrobial endophthalmitis. Identification of all the organisms is essential before the onset of therapy, emphasising the need for complete microbiological evaluation of any postoperative endophthalmitis.

Figure 2 Higher magnification showing crystalline keratopathy.

Surgical performance for specialties undertaking temporal artery biopsies: who should perform them?

We read with interest the paper by Galloway and colleagues which suggests that ophthalmologists are best suited to perform temporal artery biopsies. We recently completed a retrospective study of all the temporal artery biopsies performed at four teaching hospitals (Hammersmith Hospital, Charing Cross Hospital, St Mary’s Hospital and The Western Eye Hospital) in north London between January 1998 and January 2002. Ninety one patients underwent 92 biopsies. Of these, 13 were positive for temporal arteritis implying a 16% positive biopsy rate which is compatible with Galloway et al’s results. Ophthalmologists performed 54 biopsies (59%) while general and vascular surgeons (GVS) performed 38 biopsies (31%). Both groups had similar positive biopsy rates—ophthalmologists 10/54 (19%) and GVS 5/28 (13%). In an analysis of the ability to perform biopsies, the ophthalmologists had two failed biopsies (one specimen—no artery identified and one specimen—crushed artery) while the GVS group had one failed biopsy (no artery identified). The average artery length was 13.0 mm (range 5–21 mm) for the ophthalmologists and 14.0 mm (range 7–22 mm) for the GVS group.

We disagree with Galloway and colleagues’ assertions that ophthalmologists are best suited to performing temporal artery biopsies as our study found that both groups of
surgeons obtained similar lengths of artery and had similar positive biopsy rates. We note that in their study, while the vascular surgeons only performed two of the 41 biopsies, the average length of specimen obtained was 22.5 mm, thus suggesting that the vascular surgeons may well be the best suited to perform these biopsies. In Charing Cross Hospital, the vascular surgeons routinely use a Doppler ultrasound probe to help detect and demarcate the superficial temporal artery before biopsy and this practice has been advocated by other studies to help improve the yield of the biopsy.11 In our study, all the biopsies performed by ophthalmologists were double as extra cases in theatre and seven cases had to be performed outside normal working hours as emergencies because of lack of theatre time. The fact that ophthalmologists performed 59% of biopsies may be due to the fact that all four hospitals had large neurological and rheumatological units attached to them. We feel that both ophthalmologists and general and vascular surgeons are equally capable of performing temporal artery biopsies and that guidelines should be designed locally to decide who should perform the biopsies. More importantly, the follow up of these patients should be clearly stated and be ideally under the care of the rheumatologists.

K Fong, V Ferguson
The Western Eye Hospital, Marylebone Road, London NW1 3YE

References

Major complications of endoscopic sinus surgery: a comment

We were pleased to read the informative article by Rene et al. The authors refer to “Onodi cells” as, “aerated posterior ethmoid air cells along the optic canal.” Could it be that they meant to refer to the cells as “Onodi cells?” Onodi described a number of variations of posterior ethmoid anatomy.1 Endoscopic sinus surgeons refer to the pattern of extramural pneumatization of the ethmoid lateral or supreraleral to the sphenoid, where the posterior ethmoid is indented by the optic canal, as an Onodi cell.2 More recently it has been suggested that this cell is better characterised as a “sphenonethmoidal” cell.3 The main significance of the Onodi or sphenonethmoid cell is that while sinus surgeons expect to find the optic nerve in the sphenoid sinus, they are not routinely looking for it in the posterior ethmoid. Consequently, the chance of iatrogenic injury is likely to be higher in patients with Onodi cells and even higher in patients with extensive pneumatized Onodi cells.4 The exact incidence of Onodi cells is unclear. Endoscopic dissection studies suggest an incidence as high as 39% or 42%.5 CT imaging studies suggest a lower incidence of 7%.6 Driben et al. feel that the likelihood of a sphenonethmoid cell increases with increasing obliquity of the anterior sphenoid wall. Racial factors may also have a role as Onodi cells appear to be more common in Asian patients.7

Every effort should be made to identify sphenonethmoid cells preoperatively and to be aware of intraoperative clues such as anterior sphenoid wall alignment, which may point to the presence of an Onodi cell. Attention to these important details will increase the likelihood of uncomplicated endoscopic sinus surgery at the sphenonethmoid junction.

S M Graham
Department of Otolaryngology-Head and Neck Surgery

K D Carter
Oculoplastic and Orbital Service, Department of Ophthalmology and Visual Sciences, University of Iowa, Iowa City, IA, USA.

Correspondence to: Dr Kenneth Fong; fongck@uiowa.co.uk

References

We are also concerned that the use of intraoperative antimitabolites in the trabeculotomy group added a major confounding variable in this study. This is particularly perplexing as the authors’ viscoanalostomy technique primarily relied on subconjunctival filtration, as evidenced by their sutureless flap design and looser suturing technique in which only three 10/0 nylon sutures were used. Furthermore, their excellent early success rate of viscoanalostomy (95% in 6 months), the presence of filtering blebs in their successful viscoanalostomy procedures, the lack of one in their failures, and the need for postoperative bleb needling and 5-fluorouracil injection all conspire to suggest that the use of mitomycin-C and 5-fluorouracil improves the success rate of glaucoma filtering surgery by reducing episcleral fibrosis, and probably explains the difference in success rates in this study. We wonder what the results would have been had the use of intraoperative antimitabolites been used in all groups, or if none was used at all.

In contrast with the authors’ technical approach, we employ Stegmann’s approach to viscoanalostomy in using a parabolic superficial flap secured tightly with five sutures in a relatively watertight fashion.8 Although filtering blebs may develop, most patients achieve IOP lowering through multiple alternate pathways including uveoscleral, through Schlemm’s canal, and subconjunctival.9 Certainly in higher risk cases, we would not hesitate to use antimitabolites for endoscopic surgery. We are confident that our technique of viscoanalostomy will be capable of dealing with higher risk cases to obtain optimal IOP control.

It should be mentioned that quite often we do rely on subconjunctival filtration in nonpenetrating procedures (that is, Deep sclerectomy) but advocate the use of a collagen wick10 or hyaluronic acid11 implant with an intraoperative antimitabolite and higher risk cases to obtain optimal IOP control.

Fibrosis and loss of permeability of the trabeculo-Decemet’s window (TDW) is a well described cause of postoperative elevation in IOP after non-penetrating glaucoma surgery. Postoperative Nd:YAG gonipuncture of the TDW in these cases is a relatively easy adjunctive procedure and may be needed in up to 41% of non-penetrating procedures.12 It has been reported to successfully lower postoperative IOP in over 80% of cases.13 Yet, we are dismayed that the authors decided not to attempt laser gonipuncture in those viscoanalostomy cases with postoperative IOP elevations because “such interventions clearly convert a ‘non-penetrating’ technique into a penetrating, full thickness procedure.” We vehemently disagree with this line of reasoning as we feel gonipuncture is an extremely useful adjunctive procedure and converting to a penetrating (‘full thickness’) procedure in the safety of the controlled postoperative period is completely reasonable. This is akin to the practice of trabeculoplasty. Many authors feel that performing suture lysis constitutes conversion of a guarded trabeculotomy into a full thickness unguarded trabeculotomy and thus cannot be fairly compared to aguarded trabeculotomy. Although performed in only three eyes at 18 months, we wonder what results would have been obtained if this was done in all cases with uncontrolled IOPs at any point in the postoperative period. Although we are critical of this study, we applaud O’Brart and colleagues for attempting to investigate this evolving area of trabeculotomy surgery. Although they may have shown that trabeculotomy with the use of an antimitabolite is superior to a modified form
of viscocanalostomy dependent on subconjunctival filtration without the use of an antimetabolite, this study unfortunately does not fairly compare the efficacy of Stegmann's viscocanalostomy technique versus trabeculectomy. Non-penetrating glaucoma surgery is an improved surgical profile and surely as future well designed controlled studies become available, the efficacy of these procedures compared to trabeculectomy will become clearer.

I K Ahmed, C Kranemann
University of Toronto, Toronto, Ontario, Canada
Correspondence to: I K Ahmed, 43 Bywood Drive, Toronto, Ontario M9A 1M1; ike.ahmed@utoronto.ca

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Argon laser and trichiasis
We were interested to read the approach taken by Sahni and Clark to facilitate the effective argon laser treatment of trichiasis. They have ably reviewed the complications of trichiasis, the different forms of management of trichiasis, the advantages of argon laser treatment in the management of trichiasis, the technique of argon laser trichiasis therapy, and the limitations of lash laser therapy.

We take issue with the authors in two areas. Firstly, the almost certain consequence of using a duration of laser treatment of 0.1 second is that if the laser “takes,” the lash will disappear within the space of a few laser shots, effectively precluding the destruction of that particular lash follicle. We have particularly made it a point that when teaching trainees the technique of lash laser, we ensure that the energy burst lasts long enough to commence visible lash destruction as well as destruction of the subcutaneous lash, as the burn is directed towards the lash follicle. Thus we always use a duration of several seconds, or even continuous energy, and aim to achieve immediate effects. Further shots above the lid level after the first shot, or certainly within three shots. Thus, 1–3 second duration bursts may be required, depending on the individual lash. Just a few more shots will effectively and completely destroy the subcutaneous lash and its follicle.

Secondly, the article by Bartley and Lowry quoted by the authors, describes using a “drop of ink from a fountain pen” to facilitate lash laser therapy. Presumably in the interests of sterility, Sahni and Clark have used the ink from a “blue skin marker pen” to allow improved absorption of argon laser energy. While use of a fresh marker pen for each patient may be relatively efficient, it could not be regarded as cost effective. By contrast, in a procedure described by us in 1994, we found that transferring a tiny drop of the patient’s own blood, whether still liquid or already coagulated, to the lash base on the lid margin is a simple, rapid, cheap, safe, and highly effective method of getting the laser reaction started when the lashes are pale. We have found that the required amount of blood is invariably present on the patient’s own lid skin at the site of local anaesthetic infiltration. We usually transfer it by picking it up with a sterile drawing up needle. This is achieved remarkably easily on the laser slit lamp, which allows adequate magnification for the accurate siting of the transferred blood.

G A Wilcsek, I C Francis
The Ocular Plastics Unit, Prince of Wales Hospital, and the University of New South Wales, Randwick, Sydney, Australia
Correspondence to: Ian C Francis, iif@student.unsw.edu.au

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Management of age related macular degeneration: still room for improvement
The aim of Mitchell et al’s study in collaboration with the Macular Disease Society (MDS) was to assess the perceived quality of health care of people with macular disease in the United Kingdom. A qualitative study was performed in 1999 and took the form of a retrospective audit by postal survey of 2000 members of the MDS. I performed a similar but smaller study in collaboration with the MDS 7 years earlier. This also took the form of a retrospective audit by postal survey of 2000 members of the MDS. The aim was to assess the clinical management of patients with age related macular degeneration (ARMD) in the United Kingdom from the patients’ perspective. The final response rate was 79% (similar to 77% of Mitchell et al) and patients had attended over 150000 units throughout the United Kingdom. Mitchell et al omitted this earlier study specifically asked whether patients wanted information on ARMD and the fact that patients want information on ARMD and the fact that there are readily available resources (for example, free information booklets on ARMD from the Royal College of Ophthalmologists or Royal National Institute for the Blind), ophthalmic units throughout the United Kingdom are still failing routinely to provide such information to their patients.

L J Howe
 Moorfields Eye Hospital, City Road, London E1C 2PD, UK; lucy.robson@btpenworld.com

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Standardised clinical photography in ophthalmic plastic surgery
We read with keen interest the path breaking article by Calista et al regarding the successful treatment of an eyelid squamous cell carcinoma with intralesional citodofor. The dramatic response of this highly malignant lesion to such a non-invasive form of therapy is remarkable and certainly worth further clinical evaluation. However, ARMD is likely to raise a few crucial issues pertaining to the documentation of this case.

The authors have presented an extreme close up of the affected eye with photography which highlights the pretreatment appearance of the lesion quite adequately. However, the pretreatment photograph (Fig 2) is almost half the magnification of Figure 1. Therefore, although there is an indisputable reduction in the size of the tumour, the two clinical photographs are not strictly comparable since a decrease in magnification results in visual clues that lead to the lesion being perceived as smaller in size.
Secondly, the pretreatment view (Fig 1) has been taken in primary gaze and reveals a right lower lid retraction as well as the semblance of a mild lid notch. In contrast, the post-treatment view (Fig 2) has been photographed on the left and slight downgaze and does not reflect either of the above findings. Now, it is difficult to discern whether there is an actual disappearance of these pretreatment findings or is due to the inherent lack of comparability of these pictures because of their being in totally different positions of gaze, which is compounded by the magnification factor mentioned earlier. It would be of immense benefit to the readers if the authors could kindly clarify these points of discrepancy, which have arisen due to dissimilar photographs.

It is imperative that extremely high standards of clinical photography be maintained in plastic surgery/oncology and photographs be taken with similar parameters to ensure valid pretreatment and post-treatment comparisons that accurately reflect the results.1,2 The standards and recommendations for clinical photography have been widely documented and should be universally practised.3 These include using the same camera lens, settings, lighting, film, magnification, and patient position to ensure reproducibility and comparability.4 Even small variations in the same lens and its magnification and focus may cause drastic changes in the clinical and research value of photography and, unless stringent criteria are met, the photographs may lose their relevance and overall impact.

M S Bajaj, N Pushker, A Mahindrakar, R Bafusabramanyam
Correspondence to: Mandeep S Bajaj, RP Centre, All India Institute of Medical Sciences, Ansari Nagar, New Delhi 110029, India; mbajaj32@hotmail.com

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Entonox as an analgesic agent
We read with great interest the paper on Entonox as an analgesic agent by Cook et al. We congratulate the authors for their work. However, we would like to clarify certain aspects of the study.

We recently performed a randomised, placebo controlled, double blind study with 100 patients on the analgesic effect of Entonox for pain relief during local anaesthetic injections in minor eyelid procedures (accepted for publication). We administered Entonox for 30 seconds in our study and found no statistically significant difference in the pain scores between the Entonox and the study groups. No side effects were reported but in our pilot study, where the patients were given Entonox for 60 seconds, all the Entonox group patients reported light headedness and required prolonged observation before being discharged.

We attributed our results of lack of statistically significant pain relief with Entonox to less than 50 seconds’ administration of Entonox. Waud et al. have shown that optimal administration of Entonox should cover 50 seconds, based on theoretical calculations for effective pain relief. Based on the above experience, we would like to know if the authors administered Entonox throughout the laser treatment and, if so, did it interfere with the laser delivery since the inhalation process is likely to be associated with head movements? If the Entonox was given for a shorter duration, we need to know the duration of administration since that would be of practical importance to the readers.

The authors have concluded that Entonox is useful in young patients, those undergoing re-treatments, and in patients who have previously not been able to tolerate the full treatment. We would like to know how the authors came to this conclusion, as there is no mention of the type of patients selected for their study.

S Sandramouli, M Kurli
Wolverhampton and Midland Counties Eye Infirmary, Compton Road, Wolverhampton WV3 9QG, UK
Correspondence to: Mr S Sandramouli; smouli@yahoo.co.in

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Mechanism of ophthalmic artery occlusion following pars plana vitrectomy
Saito et al present a patient with Terson’s syndrome and dense vitreous haemorrhage who underwent pars plana vitrectomy and was noted postoperatively to have developed an ophthalmic artery occlusion. They propose that the ophthalmic artery was occluded by the spontaneous release of an embolus from an atheromatous plaque in the internal carotid artery. This seems unlikely in a 39 year old man without a previous history of symptomatic atherosclerotic disease. Although the authors identified plaques in the patient’s carotid artery by ultrasound, these can be seen in 11% of asymptomatic males under age 40 and may therefore be an incidental finding in this case.1

An alternate explanation for the patient’s ocular findings is trauma from the retrobulbar injection. Intravitreal injection into the ophthalmic artery has been reported as a complication of retrobulbar anaesthesia.1 It is possible that either an intravitreal injection or simply needle tip trauma resulted in thrombus formation with obstruction of flow in the ophthalmic artery. It should also be noted that although acute ophthalmic artery occlusion is the presumed diagnosis, the same findings could result from simultaneous obstruction of the retinal and choroidal circulations. These include trauma, torsion of an anomalous posterior ciliary artery, and retinal vein occlusion. The possibility that the patient’s choriotrealal disturbance could have been iatrogenic highlights the importance of a thorough preoperative review of patients about the risks and benefits of different methods of delivering anaesthesia for ophthalmic surgery.

J M Stewart
Ophthalmology, University of California, San Francisco, CA, USA; nes2@yahoo.com

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Dynamics of corneal endothelial cell death in organ culture
We read with interest the remarks of Crowston et al on our article.1 We showed that the TUNEL technique revealed a far higher percentage of endothelial cells (ECs) irreversibly engaged in a cell death process than that obtained by trypan blue staining.

The two techniques were performed sequentially: after observation of trypan blue staining, corneas were immediately fixed in formaldehyde for TUNEL. Crowston et al suggest that the trypan blue itself and/or the time spent outside the organ culture medium before fixing in formaldehyde caused an artefactual increase in the percentage of TUNEL positive ECs. Two arguments counter this remark.

(1) The trypan blue staining procedure is identical to that used, during endothelial examination(s) of grafts, in all European cornea banks that use organ culture during endothelial examination(s) of grafts. Neither the low concentration of trypan blue (0.9% NaCl) nor the short exposure time (about 1 minute) nor the short incubation in the presence of 0.9% NaCl has ever been incriminated in the over-mortality of ECs in routine practice. Moreover, the innocuity of injections of trypan blue into the anterior chamber, a common feature during cataract surgery, has been well demonstrated.2

(2) The time spent outside the organ culture medium before fixing in formaldehyde, a period required for vital staining and microscopic examination of the endothelium, lasts only a few minutes. The cornea remains under the microscoop for about 1 minute only, the time needed for image acquisition. Such rapidity is possible by using a prototype automatic analyser of the endothelium, which we developed and have recently published.3 This is very probably insufficient time for DNA fragmentation to occur at the level we observed. Moreover, the fixing of the endothelial layer in 10% formaldehyde is immediate, and prevents any continuation of fragmenta-

动员 phenomena. On balance, it is highly unlikely that the succession of markings is responsible for the discrepancy between the positivity percentages of the two techniques.

Furthermore, we chose to perform the two techniques simultaneously on paired corneas or on the halves of one cornea because we wanted to superimpose the two stains on the same cornea and thus obtain a double cell staining.

Sandra Meek, Kevin Jemec, Michael Trench, Martin Morgan, Seth Ross, Lincoln Crowston
Correspondence to: Mr S Sandramouli; smouli@yahoo.co.in

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The second remark by Crowston et al is particularly interesting. We too were surprised by the high percentage of TUNEL positive ECs (mean 12.7%, SD 16.4). This may imply that the cells with fragmented DNA. However, the DNA fragmentation may be at different stages, and the cells very likely spread according to a Gaussian distribution. Therefore the cells, which are TUNEL positive at a given moment, will not all die instantaneously and simultaneously. Only the cells furthest to the right on the curve will die in the very short term and it is probably there that they are liable to be recorded as being blue. If it were possible to perform TUNEL on two consecutive days, the percentage of positive cells revealed would probably be very similar, but a large majority of the positive cells recorded on the second day would have already been counted on day one. It is, however, undeniable that the cells that are TUNEL positive at a given moment will all die eventually. In other words, we believe that, at the end of storage, corneas contain a number of ECs engaged in an irreversable cell death process far more extensive than the highly unreliable trypan blue staining technique suggests.

G Thuret, C Chiquet, L Campos, P Gain
Cell Death and Neoplasia Laboratory EA 3063,
University Hospital, St Etienne, France

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