Intravitreal injection of triamcinolone acetonide as treatment for chronic uveitis

Chronic intraocular inflammation such as chronic idiopathic 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. Local or 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, peribulbarly, and systematically 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 considering that for achieving high concentrations of steroids in the eye, we injected 20 mg crystalline cortisone as adjunctive treatment of diabetic macular edema, 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 retrolubar part of the optic nerve before it traverses the subarachnoidal and subdural spaces of the optic nerve and pia mater 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 intraocular pressure becomes higher than normal values.

References


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 is therefore 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.

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) as 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.

Figure 1

Photograph showing the Goldmann contact lens with a pressure sensor mounted into the holding ring of the contact lens and connected to a display.
of intraocular pressure plus an external pressure exerted onto the eye equals the diastolic pressure of the central retinal vein.\(^4\) The intraocular pressure can be determined by application tonometry, and the additional pressure exerted onto the globe can be measured by ophthalmodynamometry. 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.\(^5\) 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 intracerebral 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-ophthamological diagnosis of diseases associated with increased intracerebral pressure.

Proprietary interest: none.

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).\(^6\) 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.\(^6\) The water content positively correlated and water evaporation from the eyelid negatively correlated with the severity of blepharitis.\(^6\)

Ceramide comprises about 30% of stratum corneum lipids, which have an important role in both the water retention and barrier function of the skin.\(^7\) Ceramide abnormalities in several skin disorders, such as AD, have been reported.\(^7\) 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,\(^8\) 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 described\(^9\) 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\(^{-7}\) g/cm\(^2\)/s before treatment, 3.5 (0.9) × 10\(^{-7}\) g/cm\(^2\)/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 eyelids 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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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 ocular 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 0.9 log unit right relative afferent pupillary defect. Her colour vision, external examination showed filamentary keratopathy confirmed on Schirmer testing and slit lamp examination showed filamentary keratopathy. Lubricating eye drops were prescribed and collagen punctal 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

Oncocytoma (synonyms: oxyphilic adenomas or oncocytic adenomas) are benign, epithelial tumours arising in the ductal 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. Oncocytomas 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 oncocyotic lesions begin to appear in early adulthood and proliferate with age.

Most lacrimal gland masses represent inflammatory 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 the lacrimal gland mass is found to be an oncocytoma, as described in our case and in three other cases in the literature, or as an oncocytic carcinoma.

Beskid and Zarzcka described a 39 year old woman with an oncocytoma of the lacrimal gland. A patient with an oncocytoma of her lacrimal gland was also reported by Biggs et al.

References


Morning glory disc anomaly: an atypical case

When optic disc elevation is encountered on funduscopic 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 optometrist 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 funduscopic 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

Figure 1  CT scan showing tumour in the right orbit (arrow). Axial slice shows proptosis of the right eye.

Figure 2  Microscopic image showing oncocytes in the lacrimal gland.
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 optic nerve can be appreciated from about 12 o’clock to 7 o’clock.

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 optic nerve showed the elevated annulus of tissue seen on fundus examination and also a peripapillary excavation of the retinal pigment epithelium (RPE) adjacent to the optic nerve (Fig 3). This was thought to be most consistent with MGDA.

Comment
Morning glory disc anomaly is a congenital anomaly of the optic disc that is typically unilateral (for review see Brodsky’s). The majority of patients have a visual acuity between 20/200 and counting fingers in the affected eye, although cases with 20/20 vision and no light perception have been reported. It is more common in females than males and is less common in African-Americans than white people. This condition is not typically an inherited condition or part of a multisystem genetic disorder, although it has been reported as part of the renal-cololectomy syndrome and trisomy 4q.

The term “morning glory syndrome” was coined for its ophthalmoscopic resemblance to the morning glory flower. In MGDA the optic nerve lies centrally within an excavation of the posterior globe. The size of the excavation varies from being relatively small, as in this particular case, to cases in which the excavation encompasses the macula, termed macular capture. In most cases there is a central fibrous tuft that obscures the central part of the disc and a variable amount of peripapillary pigment.

While MGDA is usually diagnosed by funduscopic examination alone, our case was atypical and not diagnosed immediately for several reasons: the patient had good visual acuity in the affected eye; she was African-American; there was no central fibrous tuft; and there was only a mild amount of peripapillary pigmentation. It is likely that our patient’s visual acuity was spared because of relative sparing of the papillomacular bundle (Fig 1). Indeed, the peripapillary annulus of tissue surrounding the optic nerve spared a small area temporally from about 7 to 9 o’clock. In this region there was some pigment disturbance, but little if any apparent fibrosis, compared to the rest of the optic nerve. While a previous study of eight patients’ suggested there was “no correlation between optic disc configuration and visual acuity” there was no patient in that study with a documented visual acuity better than 20/100.

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 fibrovascular tissue but no visible pigment. This finding is not unexpected, as the visible peripapillary pigment in MGDA dissipates over time. This decrease in peripapillary pigment over time is believed to be secondary to a metaplasia of choroidal hamartomatous RPE into fibrovascular tissue and hyperplasia of the fibroglial tissue. Our patient was 40 years old at diagnosis of MGDA and it is possible that she had more peripapillary pigment 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 ectoderm. Another theory suggests 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 other 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 (flat nasal bridge or cleft lip) nor did she have any neurological, endocrine, or respiratory symptoms to suggest she had a low posterior 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 in our laboratory 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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Idiopathic anterior hyaloid vessels

Idiopathic 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 is 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, 6/9 left. Vessels were visible on the right posterior lens capsule, associated with localized cataract and anterior vitreous opacities (Fig 1A). Clinical examination revealed no other ocular abnormality, but the temporal periphery of the right retina was obscured. 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, Toxocara/Toxoplasma serology, haemoglobin electrophoresis, and skull/chest radiographs were normal. Doppler studies indicated a probable feeder vessel derived from anterior retina but no evidence of tumour or other pathology (Fig 2).

Progressive cataract reduced visual acuity to 6/24 within 2 weeks of presentation. Phacoemulsification surgery was performed, followed by closure of the abnormal vessels with krypton laser (568 nm). Nd:YAG capsulotomy was performed 6 weeks after surgery. Two weeks later, fibrous anterior uveitis and vitritis developed which resolved with topical steroid medication. A year later, vessels persisted in the rolled capsular edge, and opacification of the anterior hyaloid necessitated Nd:YAG laser discission. Two and a half years after presentation, he is asymptomatic with 6/9 visual acuity in the right eye.

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 radiographi- cally. 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 vascular 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

Figure 1 Right eye. (A) Abnormal vessels on temporal aspect of posterior capsule associated with localised cataract and anterior vitreous opacity. (B) Anterior segment fluorescein angiography confirming perfusion of vessels.

Figure 2 B-scan ultrasonography with Doppler showing a feeder vessel.
no features of incontinentia pigmenti or facio-carpal-humeral 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 AHPF.

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Iris pigment epithelial cyst induced by topical administration of latanoprost

Latanoprost is an ester prodrug analogue of prostaglandin E1 that enhances uveoscleral outflow and reduces intraocular pressure. Several adverse side effects associated with topical administration of latanoprost have been described.1 Iris cysts are primarily secondary; the secondary iris cysts are usually caused by trauma, intraocular surgery, inflammation, and prolonged use of strong miotic agents, etc.2 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, both eyes were treated with 2% pilocarpine and β 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 hyperaemia 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 in 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 antiglaucomatous 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 was discontinued. The iris cyst in our case took more time to develop and a longer time to disappear than previously reported.3 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.

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Paravertebral primitive neuroectodermal tumour presenting with Horner’s syndrome

We describe a peripheral primitive neuroectodermal tumour (PPNET) arising from the cervical paravertebral region of a 34 year old woman, who presented with Horner’s syndrome and a cervical radiculopathy. PPNETs are rare malignant small round cell tumours. This appears to be the first documented case of localised PPNET with Horner’s syndrome at initial presentation.

Case report

A 34 year old woman presented with acute left scalpula pain, numbness of her left forearm, a left upper lid ptosis, and left hemifacial anhydrosis. Her symptoms disappeared spontaneously within a fortnight, but returned 2 months later with greater intensity. Examination then revealed wasting of the small muscles of her left hand with reduced power in the distribution of C8 and T1; there was loss of light touch and pinprick in the C8 dermatome. The presence of left 1 mm upper lid ptosis, miosis, hemifacial anhydrosis, and 1 mm lower lid (“upside down”) ptosis was highly suggestive of a preganglionic left Horner’s syndrome (Fig 1A). Magnetic resonance imaging (MRI) of the neck showed a large mass arising from the T1, T2 intervertebral foramen extending to the root of the left side of the neck and the region of the apex of the left lung (Fig 1B).

A diagnostic biopsy was performed through a posterolateral approach, excising the extradural component of the tumour within the
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 (glial fibrillary acidic protein), S100, desmin, and the lymphoid markers LCA, CD1, 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
Horners syndrome is caused by an oculosymphathetic deficit to the pupilloidator and superior and inferior tarsal retractor muscles.1,2 It is manifest by upper lid ptosis, ipsilateral miosis, apparent enophthalmos due to lower lid (“upside down”) ptosis, and often facial anhidrosis.1,3 The presence of all these features in our patient, together with the left facial opacities and star-shaped spicular opacities, was indicative of a preganglionic lesion, since the sympathetic facial sweat fibres branch distal to the superior cervical sympathetic ganglion and central neurological tract signs were absent.1,2 Preganglionic Horners syndrome is frequently associated with neoplasms of the pulmonary apex, mediastinum, or neck, as illustrated by the location of the PPNET seen in our patient (Fig 1B).

PPNET is a rare malignant small round cell tumour that can affect any age group but is thought to peak in adolescence, with no sex predilection. The most common location is the thoracopulmonary region, followed by the head and neck. Extraosseous Ewings sarcoma is now considered a form of PPNET, through immunohistochemical, ultrastructural, and histogenetical similarities. Both tumours express elevated levels of glycoprotein p30–32, a product of the MIC-2 gene, in a unique and highly selected fashion, as well as specific translocations involving a gene on chromosome 22q12. Indeed, the tumour cells of our patient exhibited immunohistochemical reactivity for MIC-2, consistent with a PPNET.

The association of Horner’s syndrome with PPNET was made.

Figure 1  [A] Left Horner’s syndrome with left upper lid ptosis, miosis, and “upside down” lower lid ptosis. [B] Magnetic resonance imaging of neck (coronal section), showing a mass arising from between the first and second thoracic intervertebral foramen, extending into the root of the left side of the neck and the left pulmonary apical region (arrow).

Figure 2  Histology of excised cervicothoracic extradural mass taken January 1998 showing (A) round tumour cells with numerous frequent mitoses infiltrating fibrovascular stroma (haematoxylin and eosin ×140); (B) immunohistochemical reactivity of tumour cell cytoplasm with vimentin stain (Dako Ltd, UK; 1:40); (C) focal cytoplasmic dot-like staining with synaptophysin immunohistochemistry (arrowheads) (Dako Ltd, UK; 1:100).

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, Münier and associates detected that four types of autosomal dominant corneal dystrophy result from mutation in the human transforming growth factor β induced gene (Btg3), the product of which has shown to be the protein keratoepithelin (R535W for granular corneal dystrophy, R535Q mutation for Reis-Bücklers corneal dystrophy, R1246C mutation for lattice corneal dystrophy type I, and R124H mutation for Avellino corneal dystrophy).1 Molecular genetic analysis of various corneal dystrophies which had previously presented an insuperable challenge to clinical diagnosis, now clearly demonstrates the distinct phenotypes.2 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.

His 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 stippled opacities
Results of direct sequencing
genetic report of a bilateral association of
To our knowledge, this is the first molecular
Comment
extracted genomic DNA. Using appropriate
lected venous blood from the patient and
remainder of the ocular examination was
corrected to 20/20 right and 20/25 left. The
keratoconus (Fig 1, bottom). With rigid gas
terior steeping consistent with the diagnosis of
Computed corneal topography showed infe-
were seen in anterior stroma (Fig 1, top).
Computed corneal topography showed inferi-
our case, it is unclear whether a genetic factor had
before. In our case, molecular genetic analysis clearly
demonstrated the presence of distinct pheno-
type, which had not previously been presented
cally, not histopathologically or
genetically.

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 protuberant subepithelial
mounds that grow with age. Corneal neovas-
cularisation (NV) also accompanies advanced
keratoconus and Avellino dystrophy. There
is only one case report in the literature
of a patient with keratoconus associated with
Avellino corneal dystrophy. Sassani and asso-
ciates reported the bilateral association of
keratoconus and Avellino corneal dystrophy,
which was diagnosed histopathologically.1 On
the other hand, there are five reports with
keratoconus associated with granular corneal
dystrophy.1,2 However, those cases were diag-
nosed clinically, not histopathologically or
genetically.3,4 A clinical diagnosis of the
different types of corneal stromal dystrophy is
difficult, especially for granular corneal
dystrophy and Avellino corneal dystrophy.5 Some
cases previously reported as granular corneal
dystrophy might be actually cases of Avellino
corneal dystrophy.

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 21.6 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 pheno-
type, which had not previously been presented
clinically.

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

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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.

Figure 2 Results of direct sequencing
analysis of the exon 4 of BIGH3 gene.
Heterozygous G→A transition is seen at the
second position of codon 124 (arrow).
Vitronectin in the GDLD cornea may also have diseases involved in the aetiologies of other age-related molecule, is often a component of the abnormal extracellular matrix adhesion deposits. Anti-vitronectin also appears to support cell proliferations that are necessary for vascular neogenesis by vitronectin. The results indicate that vitronectin may have a role in corneal neovascularization associated with factor XII deficiency. To our knowledge, this is the first reported case of a recurrent cranial nerve palsy associated with factor XII deficiency.

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**Factor XII deficiency and recurrent sixth nerve palsy**

Factor XII deficiency is associated with thrombosis. Severe deficiency increases an individual's prothrombotic tendency but with no reduction in levels there is less certainty. We present a case of recurrent sixth cranial nerve palsy due to severe factor XII deficiency. 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 palsy 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, and factor VIII, von Willebrand factor, and the factor V Leiden mutation or prothrombin G20210A allele 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 prothrombotic 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 ophthalmologic 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 vascular thorosis he was treated empirically and there was no family history of vasculo-thrombotic state associated with severe factor XII deficiency.4 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.

References


Unilateral proptosis: the role of medical history

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

Graves’ ophthalmopathy (GO) usually is associated with 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 mean absolute 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.3

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 patients were referred to 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 thyroideectomy and became clinically euthyroid in 1949. In 1983 thyroid hormone levels although thyroid status does not seem important as the active phase of ophthalmopathy can occur during hyperthyroidism, hypothyroidism, and euthyroidism.4 Thyroid antibody testing may be supportive of diagnosis. A CT scan can demonstrate contralateral eye muscle involvement in 50–90% of patients with clinically unilateral eye involvement.5

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. Bilocular 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 that reviewed 110 patients mentioned intervals up to 25 years without giving exact numbers and underlying thyroid disease.6 For hypothyroidism and GO one study suggests intervals exceeding 15 years.7

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.4 Thyroid antibody testing may be supportive for the diagnosis. A CT scan can be in essential in further analysis showing enlargement of extraocular muscles with sparing of the tendons.7 It is also known that a CT scan can demonstrate contralateral eye muscle involvement in 50–90% of patients with clinically unilateral eye involvement.5

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.
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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. 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 ×10^9/l 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 angiomatosus 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 henselae 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. Ormerod et al. described two patients with small areas of retinitis and arterial occlusions. Pollock and Kristinsson1 described one patient with cat scratch disease and helioid unifocal choroiditis. Hong et al. first described this syndrome when they reported six young patients with a solitary round yellow chorioretinal lesion associated with subretinal fluid. There was no association with inflammatory or infectious diseases. Fish et al. 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 Kristinsson1 reported a case that improved 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 al. 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.

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Simultaneous translocation of the macula and underlying retinal pigment epithelium during macular translocation surgery in a patient with long standing myopic neovascular maculopathy

Limited macular translocation has been reported to be a promising treatment for some patients with choroidal neovascularisation. Although this technique has the advantage of being less invasive, there is documentation of...
various complications that have been experienced with its use. In this report, we describe an unusual complication associated with limited macular translocation in a patient with long-standing choroidal neovascularisation.

Case report
A 35-year-old woman was referred to our department because of a gradual decrease in visual acuity in her right eye. At the first visit, her best-corrected visual acuity was right eye, 20/40, with a refractive error of −17.5 dioptres in the spherical equivalent. Clinical and angiographic examinations showed a juxtapfoveal choroidal neovascularisation. During the subsequent follow-up period, choroidal neovascularisation and surrounding retinal pigment epithelium atrophy gradually expanded and involved the subfoveal region (Fig 1A). We gave the patient detailed information on the available therapeutic options, including macular translocation, but she chose conservative follow-up rather than surgical intervention. Three years after her first visit, the patient's visual acuity has not improved. Despite sufficient foveal displacement, the patient's visual acuity has not improved. During a follow-up period of 15 months, it has remained at the same level as her preoperative vision.

Postoperatively, fluorescein angiography showed an extrafoveal neovascular membrane with a foveal shift of 0.7 disc diameter (Fig 1B). Sharply demarcated hypofluorescence in the macular area was also demonstrated. Biomicroscopic examination revealed a slightly hyperpigmented lesion underneath the translocated macula, which corresponded to the area of hypofluorescence. A horizontal optical coherence tomography image (Humphrey Systems, San Leandro, CA, USA) section taken through the translocated macula displayed highly reflective double layers (Fig 2A). These findings indicate that the abnormal subfoveal retinal pigment epithelium, which adhered tightly to the overlying neurosensory retina, probably because of the long history of neovascular maculopathy, was translocated with the macula during surgery. Two reflective bands observed on an optical coherence tomography image may have corresponded to the native retinal pigment epithelium and abnormal retinal pigment epithelium translocated with the macula. Indocyanine green angiography findings supported this speculation (Fig 2B).

Despite sufficient foveal displacement, the patient's visual acuity has not improved. During a follow-up period of 15 months, it has remained at the same level as her preoperative vision.
underwent removal of the implant and capsular bag. The patient subsequently received intravitreal injections of vancomycin, gentamicin, and ciprofloxacin, piperillin, and topical fortified amphotericin B (7 mg/ml) drops every 2 hours, and oral fluconazole (400 mg a day) were then added to the patient’s regimen. A decrease in intraocular pressure was noted after 1 month of treatment that was stopped by the patient. Six months later, visual acuity of the right eye was normal except for a moderate anterior chamber reaction involving the superior and nasal quadrant (Fig 1). There was no residual cortical material. On presentation, visual acuity was hand movements in the left eye and was treated with peribulbar injections of corticosteroids over 2 years. On presentation, vision of the left eye was normal except for a crystalline keratopathy.

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 a 1 mm hypopyon. The implant was in good position and no residual cortical material was seen. The vitreous showed 2+ cells. Intraocular pressure was normal. Examination of the right eye was normal except for a mild nuclear cataract. The diagnosis of chronic infectious endophthalmitis was suspected.

The aqueous cultures were sterile for bacteria and fungi. Intravitreal injections of vancomycin and amikacin were performed. Postoperatively, the patient was given intravenous ciprofloxacin, piperillin, and topical fortified tetracillin, gentamicin, and vancomycin drops. The eye showed no improvement during the next 3 weeks and the patient subsequently underwent removal of the implant and capsular bag which grew Candida parapsilosis, Corynebacterium striatum, and Staphylococcus epidermidis.

Intravitreal injection of amphotericin B (5 µg, weekly), topical amphotericin B (7 mg/ml eye drops every 2 hours), and oral fluconazole (400 mg a day) were then added to the patient’s regimen. A decrease in intraocular inflammation and corneal infiltrates was noted after 1 month of treatment that was stopped by the patient. Six months later, visual acuity of the left eye was no light perception and biomicroscopic examination showed panophthalmitis. The patient refused medical treatment and enucleation was performed.

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

Figure 2 Higher magnification showing 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, suppurative 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 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.

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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 resource 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.\(^5\) In our study, all the biopsies performed by ophthalmologists were done in 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 neuro- logical 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 devised 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.

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References

Major complications of endoscopic sinus surgery: a comment

We were pleased to read the informative article by René et al. The authors refer to “Onodi cells” as “aerated posterior ethmoid 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. Endoscopic sinus surgeons refer to the pattern of extramural pneumatization of the ethmoid lateral or superolateral to the sphenoid, where the posterior ethmoid is indented by the optic canal, as an Onodi cell. More recently it has been suggested that this cell is better characterized as a “sphenoethmoidal” cell.\(^7\)

The main significance of the Onodi or sphenoid sinus 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 an extensive pneumatized Onodi cell.\(^8\) The exact incidence of Onodi cells is unclear. Endoscopic dissection studies suggest an incidence as high as 58% or 42%. CT imaging studies suggest a lower incidence of 7%. Driben et al.\(^7\) feel that the likelihood of a sphenoidethmoid 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.\(^9\)

Every effort should be made to identify sphenoethmoidal 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 sphenoethmoidal junction.

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We are also concerned that the use of intraoperative antimitabolites in the trabeculectomy group added a major confounding variable in this study. This is particularly perplexing as the authors’ viscosonalonolostomy technique primarily relied on subconjunctival filtration, as evidenced by their scleral flap design and loosert suturing technique in which only three 10/0 nylon sutures were used. Furthermore, their excellent early success rates (85% at 6 months), the presence of filtering blebs in their successful viscosonalonolostomy procedures, the lack of one in their failures, and the use for postoperative bleb needling and 5-fluorouracil injections all suggest 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’ technique, we employ Stengham’s approach to viscosonalonolostomy in using a parabical superficial flap secured tightly with five sutures in a relatively watertight fashion.\(^3\) Although these blebs may develop, most patients achieve IOP lowering through multiple alternate pathways including uveoscleral, through Schlemm’s canal, and subconjunctival.\(^4\) Certainly in higher risk cases, we believe antimitabolites may be useful adjunctive procedures for antimitabolates in non-penetrating surgery, and have found it to be safer when used with trabeculectomy. It should be mentioned that quite often we do rely on subconjunctival filtration in non-penetrating procedures (that is, deep sclerectomy) but advocate the use of a collagen wick or hyaluronic acid implant with an intraoperative antimitabolite in higher risk cases to obtain optimal IOP control.

Fibrosis and loss of permeability of the trabeculo-Decemet’s window (TDW) in these cases is a relatively easy adjunctive procedure and may be needed in up to 41% of non-penetrating procedures.\(^5\) It has been reported to successfully lower IOP in 61% of non-penetrating procedures in over 80 cases.\(^6\) Yet, we are dismayed that the authors decided not to attempt laser goniopuncture in those viscosonalonolostomy 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 goniopuncture is an extremely useful adjunctive procedure and converting to a penetrating (not “full thickness”) procedure in the safety of the controlled postoperative period is completely reasonable. This is akin to suturing a lysis in trabeculectomy. Although goniopuncture authors feel that performing suture lysis constitutes conversion of a guarded trabeculectomy into a full thickness unguarded trabeculectomy and thus cannot be fairly compared? Although goniopuncture is performed only in 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 glaucoma surgery. Although they may have shown that trabeculectomy with the use of an antimitabolite is superior to a modified form

Trabeculectomy augmented with antimitabolites with a viscosonalonolostomy technique for the management of open angle glaucoma

In a small randomised, prospective study, O’Brart and co-workers’ attempted to prove that trabeculectomy (n=25) provided better intraocular pressure (IOP) control than viscosonalonolostomy (n=25). However, we have serious concerns about the methodology of this study that need to be addressed.

Viscosonalonolostomy is characterised by the injection of viscoelastic into Schlemm’s canal.\(^7\) However, this was not performed in half of the patients randomised to this group. This would be as inappropriate as using an antimitabolite in only half the patients in the trabeculectomy group, and then comparing this entire group to the viscosonalonolostomy group. Although the authors do state that the subgroup of patients with intracanalicular viscoelastic injection was inferior to trabeculectomy, this cohort consisted only of 12 patients and it is not known how many had completed follow up after 18 months. Surely, these small numbers are insufficient to draw such conclusions.

References
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 safety profile and surely as future well designed controlled studies become available, the efficacy of these procedures compared to trabeculectomy will become clearer.

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References

Argon laser and trichiasis

We were interested to read the article taken by Sahni and Clark1 to facilitate the effective argon laser treatment of trichiasis. They have 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 laser and trichiasis therapy.

We take issue with the authors in two areas. Firstly, they miss the point that the treatment of a single lash follicle. We have particularly made it a point that when teaching trainees the technique of laser lash, 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 incisions of the lash follicle above the lid level after the first shot, or certainly within three shots. Thus, 1–2 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. Presumably in the interests of sterility, Sahni and Clark have used the ink from a blue skin marker pen to allow absorption of the 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 1994,1 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.

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References

Management of age related macular degeneration: still room for improvement

The aims 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. The 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.4 This took the form of a retrospective audit by postal survey of 200 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 105 ophthalmic units throughout the United Kingdom. Mitchell et al omitted this earlier study from their discussion but comparison of the two studies raises some noteworthy points.

The prevention and treatment of ARMD remains far from ideal both for the majority of patients and their ophthalmologists. Members of the MDS are likely to be a highly motivated study group and it is not clear how their views will reflect the views of patients as a whole. With ARMD laser treatment, both studies highlighted the fact that lack of information and advice on ARMD is a significant cause of dissatisfaction for these patients. Mitchell et al asked if the diagnostic consultation with the eye specialist was satisfactory: 59% responded “yes” and 41% “no.” The two most common reasons given for a negative answer were the attitude of the specialist and lack of information and advice (43.5% and 43.4% respectively of those answering this question). The earlier study specifically asked whether patients were given written information on ARMD, were informed about support groups or informed about relevant radio programmes by the eye department.5 Only 6% received written information, 14% were given details of support groups, and 3% details of relevant programmes. By definition 100% of the study group would have liked to have been informed of the existence of the Macular Disease Society by the eye unit. However, nine different sources were cited for discovering the MDS, over 80% from radio and magazines with only 12% from the ophthalmic unit.

Unfortunately, despite that fact that the two studies are separated by 7 years, any temporal comparison has to be undertaken with caution. The protocol of both surveys included questionnaires being sent to members of the MDS chosen at random from the MDS mailing list. It is therefore conceivable that a proportion of the original study group also formed part of the second, less well designed. What is clear though is that despite the fact that patients want information on ARMD and the fact that there are readily available sources (for example, free information booklets on ARMD from the Royal National Institute for the Blind), ophthalmic units throughout the United Kingdom are still failing routinely to provide such information to their patients.

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References

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 intralrisional cidofovir. The dramatic response of this highly malignant lesion to such an non-invasive form of therapy is remarkable and certainly worth further clinical evaluation. However, we would like to raise a few crucial issues pertaining to the documentation of this case.

The authors have presented an extremely close up of the affected eye. This photograph 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 indescribable 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.

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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 show either of the above findings. Now, it is difficult to discern whether there is an actual disappearance of these pretreatment findings or it 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 photography 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.5

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References

Entonox as an analgesic agent
We read with great interest the paper on Entonox as an analgesic agent by Cook et al.1 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 placebo 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 headness 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.2 have shown that optimal administration of Entonox should cover 50 seconds, based on theoretical calculations for effective analgesia. Based on the above experience, we would like to know if the authors administered Entonox throughout the laser treatment and, if so, did it not 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.

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References

Mechanism of ophthalmalic artery occlusion following pars plana vitrectomy
Saito et al.1 present a patient with Terson’s syndrome and dense vitreous haemorrhage who underwent pars plana vitrectomy and was noted postoperatively to have developed an ophthalmalic artery occlusion.2 They propose that the ophthalmalic 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.3

An alternate explanation for the patient’s ocular findings is trauma from the retrobulbar injection. Intravascular injection into the ophthalmalic artery has been reported as a complication of retrobulbar anaesthesia.4 It is possible that either an intravascular injection or simply needle tip trauma resulted in thrombus formation with obstruction of flow in the ophthalmalic artery. It should also be noted that although acute ophthalmalic artery occlusion is the presumed diagnosis, the same findings could result from simultaneous obstruction of the retinal and choroidal circulaion,5 also producing evidence of errant retrobulbar injection. The possibility that the patient’s choroidal retinal disturbance could have been iatrogenic highlights the importance of a thorough preoperative discussion with patients about the risks and benefits of different methods of delivering anaesthesia for ophthalmalic surgery.

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References

Dynamics of corneal endothelial cell death in organ culture
We read with interest the remarks of Crowston et al.4 on our article. We showed that the TUNEL technique revealed a far higher percentage of endothelial cells 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 fixation 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 (0.4%) 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.5

(2) The time spent outside the organ culture medium before fixation in formaldehyde, a period required for vital staining and microscopic examination of the endothelium, lasts only a few minutes. The cornea remains under the microscope 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.6 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 fragmentation 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.

In addition, 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.
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 all the cells died within 8 days, which was evidently not the case. We believe this apparent contradiction can be explained by the following theory. The TUNEL staining is positive during a relatively long window (24–48 hours). The TUNEL index, measured at a given moment, provides a global view of all 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 these that are liable to be counted as positive using trypan 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 will all die eventually. In other words, we

**International Centre for Eye Health**

The International Centre for Eye Health has published a new edition of the *Standard List of Medicines, Equipment, Instruments and Optical Supplies* (2001) for eye care services in developing countries. It is compiled by the Task Force of the International Agency for the Prevention of Blindness. Further details: Sue Stevens, International Centre for Eye Health, 11–43 Bath Street, London EC1V 9EL, UK (tel: +44 (0)20 7608 6910; fax: +44 (0)20 7230 3207; email: eyesresource@ucl.ac.uk; web site: www.jchc.co.uk). Annual subscription (4 issues) UK£25/US$40. Free to workers in developing countries.

**Second Sight**

Second Sight, a UK based charity whose aims are to eliminate the backlog of cataract blind in India by the year 2020 and to establish strong links between Indian and British ophthalmologists, is regularly sending volunteer surgeons to India. Details can be found at the charity web site (www.secondsight.org.uk) or by contacting Dr Lucy Mathen (lucymathen@yahoo.com).

**Specific Eye Condition(S) (SPECS)**

Specific Eye Condition(S) (SPECS) is a not for profit organisation which acts as an umbrella organisation for support groups of any conditions or syndrome with an integral eye disorder. SPECS represents over fifty different organisations related to eye disorders ranging from conditions that are relatively common to very rare syndromes. We also include groups who offer support of a more general nature to visually impaired and blind people. Support groups meet regularly in the Boardroom at Moorfields Eye Hospital to offer support to each other, share experiences and explore new ways of working together. The web site www.eyeconditions.org.uk acts as a portal giving direct access to support groups own sites. The SPECS web page is a valuable resource for professionals and may also be of interest to people with a visual impairment or who are blind. For further details about SPECS contact: Kay Parkinson, SPECS Development Officer (tel: +44 (0)1803 524238; email: k@eyeconditions.org.uk; web site: www.eyeconditions.org.uk).

**16th Annual Meeting of German Ophthalmic Surgeons**

The 16th Annual Meeting of German Ophthalmic Surgeons will be held 8–11 May 2003 in Nürnberg, Germany, Messezentrum. Organised by the Professional Association of German Ophthalmologists Ophthalmic Surgery Group the conference will cover cataract surgery, refractive surgery, glaucoma surgery, vitreoretinal surgery, corneal surgery, eye surgery in developing countries, and orbita, lacrimal and lid surgery. Further details; MCG Medizinische Congress organisation Nürnberg AG, Zerzabelfshofstr 29, 90478 Nürnberg, Germany (tel: +49 911 3931621; fax: +49 911 3931620; email: doc@mcnag.info; web site: www.doc-muenberg.de).

**3rd British Oculoplastic Surgery Society Meeting**

The 3rd British Oculoplastic Surgery Society Meeting will be held 18–19 May 2003 in Birmingham, UK. For further details please contact the Secretary of the British Oculoplastic Surgery Society Jane Oakley (tel: +44 (0)121 424 5464; fax: +44 (0)121 424 4646; email: MartiDi@heartsol.wmids.nhs.uk; web site: www.bopss.org).

**13th Meeting of the EASD Eye Complication Study Group**

The 13th Meeting of the EASD Eye Complication Study Group will be held on the 23–25 May 2003, in Prague, Czech Republic. The scientific programme includes keynote lectures from Professor John H Fuller (UK) on The epidemiology of diabetic retinopathy; Dr P Martin van Hagen (The Netherlands) on Growth factors and diabetic retinopathy; Professor Teresje Pelikanova (Czech Republic) on Pathophysiology of diabetic microvascular complications; Dr Tomas Sosna (Czech Republic) on Risk and protective factors of diabetic retinopathy.

Three travel grants of £1000 each, sponsored by GlaxoSmithKline for young scientists (under 35 years at the time of the meeting). Applications should be made with the submission of abstracts. The deadline for abstracts is 14 February 2003.

Further details: Ortopedie Centrum, s.r.o., Strekovske nabrezie 51, 400 03 Usti nad Labem, Czech Republic (tel: +420 47 521 6588; fax: +420 47 533 40 77; email: ortcentrum-ul@volny.cz; web site: www.ortopedie-centrum.cz).

**Detachment Course with international faculty on: Retinal and Vitreous Surgery with Case Presentations preceding the Annual Meeting of Iranian Society of Ophthalmology**

The detachment course with international faculty on: Retinal and Vitreous Surgery with Case Presentations preceding Annual Meeting of Iranian Society of Ophthalmology will be held on 29–30 November 2003 and 1–4 December 2003 respectively, at the Razi Conference Center, Hemmat Byw, Tehran, Iran. Further details: Scientific programme: Prof Ingrid Kreissig, University ofTuebingen, Schleichstr. 12, Breuningerbau, 72076 Tuebingen, Germany (tel: +49 7071 293209; email: ingrid.kreissig@med.uni-tuebingen.de). Local organisation: Dr Arman Masheyehki, Dr Siham Moradian, Dept of Ophthalmology, Labbafinejad Medical Center, Pasadaran Ave, Boosan 9, Tehran, 16666, Iran (fax: +98 21 254 9039; email: labbafi@hotmail.com).
Major complications of endoscopic sinus surgery: a comment

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