Retinal arteriolar calcification in a patient with chronic renal failure

Extraskelatal calcification is a common complication of chronic renal failure. Numerous locations for metastatic calcification have been described. We present an unusual case of calcium deposition in the eye.

Case report

A 33 year old woman developed chronic renal failure at the age of 15 as a result of medullary cystic kidneys. She underwent a renal transplant at the age of 17, which failed 6 years later and so she was maintained on continuous ambulatory peritoneal dialysis.

The patient subsequently developed refractory secondary hyperparathyroidism with ectopic calcification and reduced bone density. Her serum biochemistry between 1992 and 1997 showed a persistently high calcium phosphophate product ranging between 3.6 and 8.9 mmol/l (normal range 1.6–3.4 mmol/l) with hypercalcemia (2.36–2.71 mmol/l (normal range 2.0–2.4 mmol/l)) and hyperphosphatemia (2.36–3.42 mmol/l (normal range 0.8–1.4 mmol/l)). Systemic complications of her disease included hypertension, avascular necrosis of both hips, and reduced left ventricular function. Total parathyroidectomy was performed in 1997 with the aim of controlling her biochemical abnormalities. As a result, her calcium phosphophate product had improved to 4.4–4.8 mmol/l and a year later, her bone density had returned to normal.

She initially presented to the eye clinic in 1994 with ocular complications of hypercalcaemia. She had recurrent episodes of conjunctivitis, band keratopathy requiring multiple excimer laser therapy, and central posterior subcapsular lens opacities. Fundus examination revealed calcified and attenuated arterioles bilaterally with ischaemic changes (Fig 1). She developed secondary neovascularisation with subsequent bilateral vitreous haemorrhages, with vision of counting fingers in the right eye and hand movements in the left eye. Pars plana vitrectomy and cataract extractions were performed in each eye, followed by a YAG capsulotomy on her left eye.

4 months postoperatively. Her most recent corrected visual acuity was 6/12 in each eye.

Comment

Metastatic calcification occurs as a result of biochemical abnormalities of calcium and phosphate. It is distinguished from dystrophic calcification, which occurs in previously damaged tissue.

Causes of metastatic calcification include abnormal dietary intake of calcium or vitamin D, extensive bone destruction as in osteomyelitis, or metastatic tumours. In patients with chronic renal failure, it is usually a consequence of secondary hyperparathyroidism. This is the physiological hypertrophy of the parathyroid glands, which occurs in response to hypercalcemia. The resulting increase in parathyroid hormone levels causes increased bone resorption and hence a rise in serum calcium and phosphate levels.

An important factor affecting the incidence of soft tissue calcification is a high serum calcium phosphate product. If the concentration of calcium and phosphorus rise beyond a critical level, their solubility product is exceeded and precipitation occurs in tissues. Visceral deposits are an amorphous or microcrystalline compound composed of calcium, phosphate, or magnesium whereas arterial deposits consist of calcium hydroxyapatite crystals. In arteries, calcium is principally deposited in the tunica media and internal elastic lamina.

Common ocular sites of calcium deposition include the conjunctiva (a cause of red eyes in renal patients), and Bowman’s membrane (band keratopathy). These deposits tend to increase in extent in patients treated with regular dialysis and regress in patients receiving transplanted kidneys. Posterior segment calcification is less common and tends to affect the sclera and choroid. Metastatic sclerochoroidal calcifications typically occur as bilateral, multifocal, yellow fundus lesions and are usually located superotemporally. Massive deposition of calcium hydroxyapatite in the previtreal space in a patient with chronic renal failure has also been reported.

The present case exhibits a unique form of metastatic calcification. In the skin, a consequence of small vessel calcification is ischaemia, which occurs as a result of endovascular fibrosis, thrombosis, or calcific obliteration. Theoretically, our patient’s ischaemic fundal changes may be attributed to both hypertensive retinopathy and the extensive deposition of calcium in the retinal arterioles.

This case demonstrates a dramatic and, to our knowledge, previously unreported ocular manifestation of metastatic calcification.
attached bilaterally. The results of other routine laboratory examinations were within normal limits.

Pars plana vitrectomy was performed on the right eye on 30 October after retrobulbar anaesthesia, and the vitreous haemorrhage and epimacular membrane were removed successfully. The retina, retinal vessels, and optic disc appeared normal intraoperatively.

On postoperative day 1, the patient complained of ocular pain in the right eye and the intraocular pressure was 1 mm Hg in the right eye. Slit lamp examination showed marked corneal endothelial folds and fibrinous material filling the anterior chamber. Leakage from the surgical wounds was not observed. Because the hypotony and inflammation did not improve and the right fundus could not be observed, we performed pars plana vitrectomy on 2 November.

The fibrinous material in the anterior chamber and the anterior vitreous were removed. The optic disc appeared pale and swollen. A retinal detachment and a cherry red spot at the macula were not observed; however, the retina appeared pale with multiple blot haemorrhages. The arteries were severely narrowed and the veins were markedly engorged (Fig 1).

Fluorescein angiography (FA) demonstrated a delayed entry of fluorescein into the choroid and central retinal artery. The hypotony did not improve after the second surgery, and the pupil was finally occluded in the right eye. The right visual acuity decreased to no light perception.

Colour Doppler sonography, performed 4 months later, revealed that the blood flow velocity was slower in the right (15 cm/s) than in the left ophthalmic artery (25 cm/s). The calibre of the right internal carotid artery was not significantly narrowed, but mixed plaques were attached to the inner wall. Digital subtraction angiography (DSA) of the images obtained immediately after the subarachnoid haemorrhage and 3 weeks after the second surgery, showed good filling of the right ophthalmic artery, indicating that the blood flow into the right eye had been well maintained before the first surgery. From these findings, the patient was diagnosed with an acute ophthalmic artery occlusion following the first vitrectomy.

Comment
There are several causes for the ophthalmic artery occlusion, and atrial fibrillation and atrial myxoma were excluded in our case, because of normal electrocardiograms and chest x-rays. The patient did not have any history of ocular trauma and did not show any symptoms suggesting orbital lesions.

Vasospasms following the subarachnoid haemorrhage can cause ophthalmic artery occlusion; however, such vasospasms usually normalise within 4 weeks after the subarachnoid haemorrhage. In our case, the occlusion occurred 3 months after the stroke and immediately after the pars plana vitrectomy, and the DSA findings showed good filling in the right ophthalmic artery, eliminating atherosclerotic changes in the ophthalmic artery as the cause of the occlusion. Thus, it is most likely that the ophthalmic artery was occluded by an embolus from the atheromatous lesions in the internal carotid artery.

Visual prognosis in Terson’s syndrome is usually good; if other retinal disorders are not present. However, patients with this disease usually suffer from other systemic diseases, and we believe ophthalmologists should be aware that an ophthalmic artery occlusion can be associated with vitrectomy in patients with Terson’s syndrome.

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Acute bilateral blindness caused by accidental methanol intoxication during fire “eating”

Methanol intoxication can cause severe visual dysfunction and death. Indeed, small amounts of ingested methanol are sufficient to produce acute destruction of parts of the central nervous system leading to permanent neurological dysfunction and irreversible blindness. More than half of the methanol related morbidity and mortality is classified as accidental and therefore preventable. We present, to the best of our knowledge, the first case of a methanol intoxication caused by accidental ingestion of methanol during fire eating (US, fire spitting).

Case report
A 19 year old German patient was admitted to a Spanish university hospital with acute methanol intoxication. The comatose patient had a metabolic acidosis with pH 7.16 and...
was treated by intravenous ethyl alcohol and bicarbonate. Neurological examination 2 days later with the patient awake revealed extrapyramidal motor disturbances, and computer tomography (CT) scans correspondingly showed basal ganglia infarctions. Visual acuity at this time was light perception in both eyes. Optic discs were reported to be oedema-
tous with diluted peripapillary vessels.

During summertime, the patient had experienced living by fire eating at different
Spanish locations. According to the patient, a sudden episode of hiccough during fire eating
cased accidental ingestion of denatured alcohol containing methanol.

The patient was transferred to Germany therefrom and presented to our department 6
weeks after the acute intoxication. Visual acuity was light perception. The pupils were
dilated and unreactive to light. The eyes were otherwise unremarkable, with the exception of
pronounced pale, atrophic optic discs with “pseudogliacomasus” thinning of the neu-
roretinal rim area (Fig 1A and B). Acute loss of nerve fibres presumably had induced a “waxy
mottled” pattern of internal limiting membrane. Nerve fibre layer measurement using GDx technology demonstrated abnor-

mally low values. On magnetic resonance
tomography (MRT) imaging, bilateral puta-

tamen necrosis typical of methanol intoxication
was seen (Fig 2); otherwise the MRT exam-


ation was normal. Flash visual evoked

potentials (VEPs) were nearly extinguished.

Comment

As a clear, colourless, volatile liquid with a weak odour, methanol is difficult to differ-
tenate from other forms of alcohols such as ethanol.\(^1\) Methanol is rapidly absorbed not
only after oral ingestion but by inhalation or after cutaneous exposure and becomes oxy-
dised in the liver to formaldehyde and to for-
mic acid, metabolites which are more toxic
than methanol itself and which inhibit mito-

chondrial ATP production. Methanol poison-
ing can be life threatening and blinding. Early
ocular symptoms and signs include photo-

phobia, blurred vision, and painful eye move-
mements. Any single or combination of symptoms
usually indicates signs of methanol intoxication
was seen (Fig 2); otherwise the MRT exami-
nation was normal. Flash visual evoked

potentials (VEPs) were nearly extinguished.

Central serous chorioretinopathy

after inhaled steroid use for

post-mycoplasmal

bronchospasm

Central serous chorioretinopathy (CSR) is an uncommon cause of central visual loss, meta-

morphopsia, and dyschromatopsia, generally

involving subretinal pigment epithelial

pigment epithelial (RPE) fluid blisters. While

most cases of CSR are idiopathic, several asso-
ciated risk factors have been implicated, such as so called type A personality, emotional
stress, and male sex.\(^1\) Systemic steroid use has

long been known to be associated with CSR.\(^2\)

This case report demonstrates the develop-

ment of CSR secondary to inhaled steroid use specifically for the management of primary

bronchospasm.

Case report

We evaluated a 40 year old white woman for

complaints of metamorphopsia and decreased

visual acuity on the left side for approximately

a 2 month period. She denied previous similar

episodes in either eye. Four months earlier,
treatment for bronchospasm following myco-

plasmal pneumonia had been initiated with

fluticasone and chromonyl sodium oral inhal-
ers. The only other medication she had been
taking was synthetic thyroid hormone re-

placement for the management of primary

hypothyroidism.

Examination revealed best corrected visual

acuities of right eye 20/15 and left eye

20/20–2. She scored right eye 7/7 correctly and

left eye 6/7 correctly using Hardy-Rand-Rittler
colour plates. The patient reported some cen-

tral distortion on Amsler grid testing on the

left side. A single spot of RPE hypopigmen-
tation was observed in the right macula, and

a shallow blister of submacular fluid on the

left side (Fig 1). No anterior or posterior segment

inflammatory cells were seen in either eye, and

the remainder of the external, slit lamp, and
dilated funduscopic examinations were

normal in both eyes.

Intravenous fluorescein angiography dem-

onstrated several macular RPE “window”
defects, more prominent on the left side than

the right, and several foci of RPE leaks in the

left macular region (Fig 2). A diagnosis of CSR was made and the oral

steroid inhaler was discontinued. Over the

next several weeks, the patient’s symptoms

and objective clinical findings resolved, with

the exception of some residual foci of RPE

hypopigmentation in the left macula. At the

2 year follow up, the patient was free from

recurrent symptoms and without new oph-

thalmoscopic findings. Acuity remained right

eye 20/15 and left eye 20/20.

Comment

Systemic steroid use has been recognised in

association with CSR since 1984.\(^4\) Inhaled

steroids, administered orally or nasally, have

been available commercially in the United

States since the early 1980s. There are three

published reports describing ophthalmic com-

plications of inhaled steroid use, including

ocular hypertension,\(^5\) CSR,\(^6\) and posterior

subcapsular cataracts.\(^7\) To our knowledge, no

case has been reported of an association

between CSR and inhaled steroid use specific-

ally for the management of post-

mycoplasmal bronchospasm.

The apparently strong association between systemic steroid use and CSR, as well as a

reported association between Cushing’s syn-
drome and CSR,\(^5\) may indicate a cause and
effect relation. It is likely that cortisol plays a

part in the development of CSR. However, the

hormonal, cellular, and biochemical nature of

such a relation remains obscure at this time.

Most cases of CSR are self limited. A few

individuals may require specific treatment

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Figure 1  (A) Foci of retinal pigment epithelial hypopigmentation, right eye. (B) Shallow

submacular fluid, left eye.
Concentration of intravitreally injected triamcinolone acetonide in aqueous humour

The unwanted proliferation of intraocular tissue such as vascular retinal tissue in eyes with ischaemic retinopathies, subretinal neovascular tissue in eyes with exudative age related macular degeneration, and retinal pigment epithelium cells in the case of proliferative vitreoretinopathy, is one of the important problems still mostly involved in clinical ophthalmology. Since the early 1950s, corticosteroids have been used in ophthalmology to suppress intraocular inflammation by reducing inflammatory exudation and inhibiting proliferation of fibroblasts and formation of granulation tissue. They have been applied either topically as eyes drops, locally by subconjunctival, parabulbar or retrobulbar injections, or systemically as oral medications or intravenous or intramuscular injections. Machemer et al., based on clinical observations and pathogenic considerations, suggested the intravitreal application of cortisone to locally suppress intraocular inflammation and proliferation of cells, especially in patients with proliferative vitreoretinopathy. Since cortisone is washed out of the eye within approximately 24 hours after a single intravitreal injection, Machemer et al. suggested the use of the crystalline form of cortisone, which may provide intraocularly available cortisone for a longer period than the single injection of soluble cortisone. Clinical studies have correspondingly revealed that a single intravitreal injection of triamcinolone acetonide may be a therapeutic option as adjunctive treatment of exudative age related macular degeneration, diabetic cystoid macular oedema, and proliferative diabetic retinopathy. It is unknown, so far, how long after a single intravitreal injection clinically detectable concentrations of triamcinolone acetonide are available in the eye. Ophthalmoscopic findings of patients who received an intravitreal injection of triamcinolone acetonide suggest that triamcinolone acetonide crystals remain visible in the eye up to at least 6 months after the injection. The purpose of the present study was, therefore, to assess the concentration of triamcinolone acetonide in aqueous humour samples obtained from patients who had previously received an intravitreal injection of triamcinolone acetonide. Case report

The study included three female patients aged 74, 76, and 80 years. They had received an intravitreal injection of 25 mg of triamcinolone acetonide as an attempt to treat exudative age related macular degeneration with subfoveal occult neovascularisation. All patients were fully informed about the experimental character of the treatment and all patients signed an informed consent. The ethics committee of the university had approved the study following the tenets of the Declaration of Helsinki. A sample of aqueous humour was obtained from the anterior chamber through a paracentesis at the start of cataract surgery which had become necessary because of the cataractogenic effect of steroids (n = 2), or which was performed before an intravitreal re-injection of triamcinolone acetonide (n = 1). The concentration of triamcinolone acetonide was 13 µg/l in the sample removed 3.5 months after the intraocular application of triamcinolone acetonide. The concentration of triamcinolone acetonide was 3 µg/l in the aqueous humour sample obtained from the eye which had undergone the intravitreal triamcinolone injection 6 months before sampling. Triamcinolone acetonide was not detectable in the aqueous humour sample removed 12 months after the intraocular application of triamcinolone acetonide. Comment

The results suggest that detectable concentrations of triamcinolone acetonide can be found in the aqueous humour up to 6 months after its intravitreal instillation. Future studies may evaluate whether the concentrations of 13 µg/l or 3 µg/l are sufficient for an antiproliferative effect of triamcinolone acetonide in eyes with exudative age related macular degeneration or other proliferative intraocular diseases; which factors, besides the time interval after its injection, may be responsible for the varying concentrations of triamcinolone acetonide and which is the therapeutic range of concentrations of intravitreal triamcinolone acetonide for an antiproliferative or antexudative effect.
A 56 year old woman who had Wegener's granulomatosis was referred to the eye department with sudden loss of vision in her right eye. Her medical history included rheumatoid arthritis, secondary Sjögren's syndrome, vitiligo, and pernicious anaemia treated with vitamin B12 injections. She took ibuprofen and azathioprine for arthritis.

Both patients presented with posterior ischemic optic neuropathy (PION) where there was visual loss, with signs of optic tract neuropathy but normal optic discs which later became atrophic and electroretinograms showed normal electroretinograms with low amplitude visual evoked responses though normal latency.

Comment
Both patients with posterior ischemic optic neuropathy (PION) where there was visual loss, with signs of optic tract neuropathy but normal optic discs which later became atrophic and electroretinograms showed normal electroretinograms with low amplitude visual evoked responses though normal latency.

There are no disc signs initially as the part of the optic nerve affected is posterior to the retrolaminar region and the blood supply is from the peripheral centripetal vascular system rather than the posterior ciliary artery circulation affected in anterior ischaemic optic neuropathy.

Eosinophilic fascitis is a rare connective tissue disorder first described by Shulman in 1974, presenting with painful swelling and brawny induration of the limbs and trunk, characteristic histology with sclerosis and lymphocytic inflammation affecting the deep fascia, subcutaneous tissue, and a peripheral eosinophilia (often more than 7% of the differential WCC). More than 200 cases have been described and there may be haematological associations such as aplastic anaemia, thrombocytopenia, leukocytosis, and myelodysplasia; other associated systemic conditions such as arthritis, thyroid disorders, inflammatory bowel disease, hepatitis, pericarditis, pulmonary and pleural involvement have been described. There is often a good response to corticosteroids with 70% expecting improvement and remission in 15%.

The second case of PION continued to lose vision although she was already on steroids and chemotherapy. Wegener's granulomatosis is a rare multisystem disorder with a necrotising vasculitis which affects the upper respiratory tract and lungs. It may cause a glomerulonephritis and has ocular involvement in 40% of cases; which may be varied including conjunctivitis, episcleritis, scleritis, corneal ulceration, retinal vasculitis, orbital and lacrimal masses. One series of five patients with Wegener's granulomatosis described vasculitis of the temporal artery and overlapping features of giant cell arteritis with headaches, jaw claudication, and sudden visual loss. Optic neuropathy is usually related to pressure from an orbital granuloma or sinus disease. In case 2 there was no evidence of this and we felt this was due to retrobulbar vasculitic pathology. This is extremely rare; only two other cases have been reported in the literature. Our patient had rapidly sequential bilateral retrobulbar ischaemic optic neuropathy while she was on chemotherapy and steroids which were started before she had any visual symptoms. In a patient with Wegener's granulomatosis even when there is no evidence of optic nerve or chiasmal compression visual disturbance may herald this rare but devastating manifestation and should be treated aggressively.
Case 2 has been presented as a poster at the Royal Society of Medicine Ophthalmic Trainees Meeting 8 June 2000 as bilateral sequential retrobulbar optic neuropathy—a devastating complication of Wegener’s granulomatosis.

References

MAILBOX
Quantifying corneal endothelial cell death
We read with interest the paper by Gain et al., which assessed two distinct techniques to quantify corneal endothelial cell death in donor corneas. A significantly higher rate of cell death was observed with the TUNEL assay, which labels nuclei with fragmented DNA, compared to the trypan blue exclusion method, which detects cells with disrupted cell membranes. The authors conclude that TUNEL analysis is more accurate than trypan blue exclusion as a means of assessing the impact of different corneal storage methods on endothelial viability.

Our experience of using a number of cell death assays to investigate fibroblast apoptosis together with the findings of others supports the notion that trypan blue exclusion is not a good method for detecting apoptosis in vitro. However, we would like to propose that the sequential analysis of the same corneal tissue in this study might account for some of the disparity observed between the two methods. Following initial incubation in trypan blue, buttons were subjected to image analysis as well as cell density measurements after further incubation in 0.9% sodium chloride. After this the buttons were fixed overnight in 10% formaldehyde in preparation for TUNEL. It is possible that the higher rates of death observed by TUNEL reflect the known toxicity of trypan blue, or are a consequence of subsequent manipulation in image analysis and cell density measurement. The low rates of cell death observed by both techniques in non-stored corneas do not negate this possibility since healthier corneas may be more resistant to the effects of trypan blue subsequent analysis. Randomisation of the sequence of analysis between the techniques compared would not have been possible, but the authors could have divided the corneas before storage or used paired eyes as separate matched specimens.

The authors argue that the disparity between endothelial cell loss and observed cell death is greater for trypan blue than TUNEL analysis because loss of membrane integrity occurs relatively late, giving a shorter observational window in which to detect dying cells than TUNEL analysis, which detects apoptosis earlier. But the relatively high percentage of apoptotic cells (12.7%) observed by TUNEL analysis may be an overestimate. Although the time span for apoptosis varies greatly depending on the cell type and nature of the apoptotic trigger, many estimates suggest that the processes is completed in less than 24 hours. If 12.7% of cells undergo apoptosis at any given time it can be predicted that complete endothelial cell death would occur within 8 days. The partial blue and subsequent the 22 day incubation period in this study was however only around 14%.

We agree with the authors regarding the need for accurate methods for determining endothelial cell death. A sequential analysis approach is ideal for both quantifying and determining the mode of cell death and combinations of assays should give a clearer picture of the impact of variations in corneal storage on endothelial viability.

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References

Dacryocystorhinostomy for partial nasolacrimal obstruction
We have read with avid interest the article on external dacryocystorhinostomy (DCR) for partial nasolacrimal obstruction (PNLO) in adults.1 We would like to clarify a few pertinent aspects which are of relevance in understanding this rather complex issue.

Firstly, we are not in consonance with the authors’ definition of PNLO, which they define as “a freely patent nasolacrimal system to irrigation with minimum or no reflux from the upper canaliculus or punctum.” In our clinical experience and as quoted in the literature, a patient is usually diagnosed as having PNLO if there is a relative resistance to passage of fluid on irrigation along with some degree of reflux thorough the opposite punctum.2 So, the use of the term “freely patent” may not be appropriate to describe PNLO.

Secondly, although we agree that most patients with PNLO may eventually require a DCR the importance of giving a thorough trial to less invasive treatments such as forced Buckley lacrimal irrigation and silicone intubation before undertaking a DCR in such cases has not been adequately emphasised. It is true that variable results have been reported with these techniques but it is also pertinent that studies which show success rates as high as 73.3% with antegrade balloon dilatation combined with silicone intubation even in cases of complete nasolacrimal obstruction over a 1 year follow up.3

We would like to share with the readers our own experience in handling such cases where we routinely use a procedure of dilatation of the nasolacrimal duct with lacrimal probes of progressively increasing diameters, taking care not to damage the puncta. During probing, we augment its effect by employing a technique which we call “reaming” of the nasolacrimal duct, which involves rotating the proximal end of the probe in circles of increasing diameter, which translates into a similar movement of its distal end. This is followed by silicone intubation. This is a safe and simple procedure which gives results comparable to balloon catheter dilatation and can be adopted by centres in the developing world that do not have access to expensive treatments and instrumentation.

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References

NOTICES
Sight Savers International Honoured by American Medical Association Award
Sight Savers International, the UK’s leading charity tackling blindness in the developing world, is the 2002 recipient of the Nathan Davis International Award, presented by the American Medical Association. This is the first time ever a non-US organisation has received this prestigious Award.

The annual Award, named after the founder of the American Medical Association, honours physicians and health sector organisations...
that further health information and medical practice around the world.

The panel of judges made a unanimous decision to award the $25,000 prize in recognition of Sight Savers’ support for the provision of vital eye care services in some of the poorest communities around the world over the last 50 years.

Richard Porter, Executive Director of Sight Savers who received the award in Chicago commented: “We are delighted and honoured to receive the Dr Nathan Davis International Award. Our vision is of a world where no one is needlessly blind and where irreversibly blind people share the same opportunities as everyone. This award recognises the enormous difference which can be made to the lives of people in poor communities through some of the most simple and cost effective treatments available.”

Sight Savers is dedicated to combatting avoidable blindness in developing countries. The charity works with partner organisations in poor and under served communities to develop and support healthcare programmes that prevent and cure blindness, and provide services to irreversibly blind people.

Patient care
The latest issue of Community Eye Health (No 41) discusses patient care with both ophthalmologists’ and patients’ views given. For further information please contact: Janet万, Community Eye Health, International Centre for Eye Health, Institute of Ophthalmology, 11–43 Bath Street, London EC1V 9EL, UK (tel: +44 (0)20 7608 6910; fax: +44 (0)20 7250 3207; email: eyeresource@ucl.ac.uk; website: www.jcem.org.uk). Annual subscription (4 issues) UK£25/US$40. Free to workers in developing countries.

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; email: eyeresource@ucl.ac.uk).

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 website (www.secondsight.org.uk) or by contacting Dr Lucy Mathen (lucymathen@yahoo.com).

Specific Eye ConditionS (SPECS)
Specific Eye ConditionS (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 524258; email: k@eyeconditions.org.uk; www.eyeconditions.org.uk).

The British Retinitis Pigmentosa Society
The British Retinitis Pigmentosa Society (BRPS) was formed in 1975 to bring together people with retinitis pigmentosa and their families. The principle aims of BRPS are to raise funds to support the programme of medical research into an eventual cure for this hereditary disease, and through the BRPS welfare service, help members and their families cope with the everyday concerns caused by retinitis pigmentosa. Part of the welfare service is the telephone helpline (+44 (0)121 800 363), which is a useful resource for any queries or worries relating to the problems retinitis pigmentosa can bring. This service is especially valuable for those recently diagnosed with retinitis pigmentosa, and all calls are taken in the strictest confidence. Many people with retinitis pigmentosa have found the Society helpful, providing encouragement, and support through the Helpline, the welfare network and the BRPS branches throughout the UK. (tel: +44 (0)1280 821 334; email: lynda@brps.demon.co.uk; web site: www.brps.demon.co.uk).

Ophthalmic Anesthesia Society (OAS) 16th Scientific Meeting
The 16th Scientific Meeting of the OAS will be held on 4–6 October 2002 in The Westin, Michigan Avenue, 909 North Michigan Avenue, Chicago, USA (reservations +1 800 228 3000). Further details: OAS, 793-A Foothill Blvd, PMB 110, Santa Barbara, CA 93050, USA (tel: +1 805 771 8300; website: www.eyeanaesthesia.org).

BEAVRS Meeting
The next BEAVRS meeting will be held in the Dalmahoy Hotel near Edinburgh on 31 October to 1 November 2002. Further details: Susan Campbell, Medical Secretary, Gartnavel General Hospital (email: susan.j.campbell.wg@northglasgow.scot.nhs.uk).

Cornea 2002—Celebrating 50 Years of Eye Banking
The Cornea 2002 meeting will be held in Le Meridien Hotel, London, Gatwick on 14–15 November 2002. Subjects to be covered will include eye banking, penetrating and lamellar keratoplasty, stem cell restoration, keratoprosthesis, advanced keratoplasty techniques, paediatric cornea, keratorefractive surgery, and intraocular refractive surgery. Spaces are limited and a beneficial package rate is available prior to 30 September 2002. Further details: CORNEA 2002 organiser at the Corneo Plastic Unit, The Queen Victoria Hospital, Holtye Road, East Grinstead, West Sussex, RH19 3DZ, UK (tel: 01342 410 210 ext 560; fax: 01342 317 181; email: Cornea2002@hotmail.com).

Introductory Course in Osteo-odonto-keratoprosthesis (OOKP)
The University of Brighton Postgraduate Medical School is holding an introductory course in osteo-odonto-keratoprosthesis (OOKP) on the 20–21 November 2002 in the New Seminar Room, Sussex House, Brighton & Sussex University Hospitals Trust in Brighton. The course will comprise of a variety of lectures with live surgery, two way audio and video links (Stage 1 and Stage 2 OOKP surgery), and examination of patients. Further details: Mrs Erica Strange, University of Brighton, Postgraduate Medical School, Falmer Campus, Brighton, East Sussex BN1 9PH, UK (tel: +44 (0)1273 644 005; fax: +44 (0)1273 644 002; email: e.strange@brighton.ac.uk).

23rd Annual Conference and Dinner Glaucoma Society (UK & EIRE)
The 23rd Annual Conference and Dinner of the Glaucoma Society will be held on Thursday 21 November 2002, 8.30am to 5.00pm at the Central Conference Centre, London. The Annual Dinner is from 6.30pm to 10.00pm at The Royal College of Surgeons, London. Conference charges: £60 members; £80 non-members. Price entitles delegates to refreshments, lunch, abstract book, programme, and annual dinner. (Maximum number of places 250—apply now to secure your place). Further details: Janet Flowers, Administrator, 29 Quarry Hill, Grays, Essex, RM17 5BT, UK (tel/fax: 01375 383172; email: glauosc@uere.freeserve.co.uk).

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C Cursiefen and A Bergua

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