LETTERS TO THE EDITOR

Late dehiscence of healed corneal scars

EDITOR,—The stroma comprises about 90% of the total corneal thickness and is responsible for most of the corneal tensile strength. Presumably because of its avascularity, healing of corneal wounds is slower than in other connective tissues. Continued histopathological changes in human corneal laceration wounds have been observed years after injury, despite meticulous local suture closure.1 The wounds appear to undergo permanent, dynamic remodeling, a fine balance between constructive and destructive processes. We report three cases of late, full-thickness corneal wound dehiscence occurring spontaneously or after minor blunt trauma 17–56 years after the original injury.

CASE REPORTS

Case 1
A 61 year old man was referred for spontaneous corneal perforation right eye. At age 5, he had sustained a full thickness corneal laceration in this eye which was repaired with sutures. The patient did well with an uncorrected visual acuity of 20/50 right eye until the terminal corneal perforation 56 years later whereupon he noted the sudden onset of eye pain and loss of vision in this eye upon awakening 2 days before referral. He denied any recent eye trauma or antecedent vigorous rubbing of the eye. He was in excellent health with no previous history of corneal melting disorders. At the time of his first visit to us, the best corrected visual acuities were light perception right eye and 20/20 left eye. There was an inferonasal, 3 mm linear, vertically orientated corneal scar in the right eye not involving the limbus. The iris was incarcerated and externalised along an inferior 1.0 mm long dehiscence in the corneal scar, dragging the entire pupil into the perforation. The Seidel test showed a slow, spontaneous leakage of aqueous humour from the dehiscence. An emergency lamellar corneal patch graft was performed with excision of the dehisced corneal scar and the proliferated iris. Subsequent surgeries included pupilloplasty, cataract extraction, excision of cyclitic membranes, and penetrating keratoplasty. Pathological specimens revealed extensive epithelial downgrowth. The eye eventually became phthisical. Rheumatoid factor (RF), antinuclear antibodies (ANA), antinuclear cytoplasmic antibodies (ANCA), erythrocyte sedimentation rate (ESR), complete blood counts (CBC), and chemical profile were normal.

Case 2
This 42 year old woman sustained a full thickness, 8 mm long, corneal laceration in the left eye at age 25 from an exploding glass bottle. The linear laceration was repaired with multiple 10-0 nylon sutures. During a routine follow up visit 17 years after the injury, the patient was able to see 20/60 without correction and 20/30 with a contact lens in the left eye. The corneal scar appeared well healed and stable. Three months later, she bumped her left eye on the edge of a door, after which she noted mild soreness and a very slow decrease in vision in the left eye. Considering the mildness of the impact, she did not seek medical attention until her vision became noticeably worse. She presented to our clinic 2 weeks after the injury with a visual acuity of 20/20 right eye and counting fingers in the left eye. A self sealing, 5 mm linear dehiscence of the corneal scar was found to be incarcerated with iris. The Seidel test was positive only upon provocation. The incarcerated iris was surgically released and the dehisced corneal scar was repaired with 10-0 nylon sutures. Two weeks after surgery, the uncorrected visual acuity improved to 20/200 left eye. The RF, ANA, ANCA, ESR, CBC, and chemical profile were normal.

Case 3
While using an electric saw, a 68 year old man sustained a perforating wood chip injury of the cornea in his right eye. The resulting peripheral corneal laceration was repaired with 10-0 nylon sutures. A month later, the patient underwent operative extraction of a traumatic cataract in this eye. Subsequently, the best corrected visual acuity was 20/40 with a hard contact lens and spectacle overrefraction. Seventeen years after the injury, the corneal scar dehisced spontaneously in the absence of recent trauma. A peripheral tectonic penetrating keratoplasty was performed, completely excising the dehisced corneal scar. The patient later underwent a central, 8.0 mm, optical penetrating keratoplasty, combined with implantation of a posterior chamber intraocular lens by sulcus fixation. This resulted in a best corrected visual acuity of 20/20 in this eye.

COMMENT
These three cases illustrate the innate structural weakness of healed corneal scars. Two of the scars dehisced without any mechanical provocation. Although corneal scars become optically dense and hypercellular, they never regain the full original preinjury tensile strength.3 Unsurfaced wounds, such as radial keratotomy incisions, are particularly weak.4 Even sutured full thickness wounds may not regain more than 30–40% of their original tensile strength.5 In penetrating keratoplasty, rupture after blunt trauma may occur many years after surgery and always occurs at the graft host junction, the weakest point in the cornea.6 In full thickness corneal wounds, the discontinuity in Descemet’s membrane further deprives the cornea of sufficient wound integrity. The incarceration of the dehisced corneal scar is seen on ultrasonography.7 Outcomes are favourable when the thickness of the corneal healing is seen on ultrasonography.8 The outcome is favourable when the choroidal melanoma develops into a scar on ophthalmoscopic examination, substantial regression of the tumour thickness is seen on ultrasonography together with an increased reflectivity on the diagnostic A-scan, and hypofluorescence is visible in the treated area on the early and late phases of the fluorescein angiogram. TTT is not indicated in melanoma patients with severe media opacities, in patients with insufficient dilution of the pupil, or in elevated, peripherally located melanomas.9

Simultaneous use of TTT with brachytherapy in the management of melanomas is called “sandwich therapy”.8,9,10 The outcome is favourable when the choroidal melanoma is thick.3 TTT is maximal at the top of the tumour and brachytherapy efficiently treats the base of the tumour.11,12 Combining both treatments has several advantages. It enabled us to treat patients with tumours thicker than 5 mm, generally the maximum height for ruthenium-106 brachytherapy.13 Insufficient melanoma regression and/or recurrences after a combined treatment might be retreated with TTT alone.14 The combination might also lead to a decreased radiation dose of the isotope used in brachytherapy.

In principle, TTT can also be applied as the sole therapy. A satisfactory local tumour control is reported in the early years after TTT as sole therapy for small choroidal melanomas.15 TTT as sole therapy seems especially attractive in treating small choroidal melanomas in and around the posterior pole. Visual outcome may be better after TTT than after brachytherapy because the laser beam, but not the radiation beam delivered by the radioactive plaque, can be focused.16 As the macular capillaries are very radiosensitive to brachytherapy, this may finally result in radiation

maculopathy with a considerable loss of central vision. However, after extramacular applications of sole TTT, macular complications such as transient cystoid macular oedema may be also seen. A dense scotoma is generally produced by TTT at the time of application, whereas a scotoma after photocoagulation therapy usually does not develop for up to a year or several years. If heat treatment is performed as sole therapy, effective treatment of the sclera over the tumour is as important as viavable the tumour itself because intra- and episcleral tumour invasion is present in, respectively, 55.7% and 8.2% of patients with medium and large tumours. In a group of 21 patients with enucleated small melanomas, 17 showed scleral improvement on histopathological examination. Intrascleral melanoma cells surviving treatment might be a focus for tumour recurrence, which is associated with a two to threefold higher risk of metastasis. This is evident from the results after photocoagulation treatment of choroidal melanomas showing a high rate of tumour regrowth. This might be attributed to the low diffusion of photocoagulation penetration, insufficient to destroy the intrascleral melanoma cells. 

In TTT as sole therapy, the question arises as to whether the effect of the heat induced by TTT is so strong that a choroidal melanoma is identical to the effect of the heat to the possible melanoma cells in the sclera. In one eye, intentionally enucleated after experimental TTT, total tumour necrosis up to the sclera was evident from scleral oedema which was visible on histopathological examination. TT therapy of the tumour cells with a viable aspect was located near the inner border of the sclera. In a recent clinicopathological report on two cases of recurrent juxtapapillary choroidal melanoma after TTT revealed tumour cells appearing histopathologically intact and presumably viable. One patient was insufficiently treated with TTT because of cataract, another patient was treated with TTT and brachytherapy. Interpreting these data, we have to keep in mind that a phototherapeutic laser is often unable to guess viability of melanoma cells in an enucleated eye after any treatment, especially in an undertreated eye. Unfortunately, no sensitive clinical technique evaluates the effect of TTT on intra- and episcleral tumour cells, their destruction, and the early development of extrascleral recurrences. To reduce the risk of insufficient treatment of the sclera and because episcleral tumour recurrences rarely develop as a late complication of brachytherapy, one may consider combining TTT with brachytherapy (the sandwich therapy). TTT remains an investigative procedure until long term results are available. In the meantime we have to choose between TTT as sole or combined treatment for patients with choroidal melanoma.

ASYMPTOMATIC DIABETIC RETINOPATHY ASSOCIATED WITH FUCHAR'S HETEROCHROMIC CYCITIS

Enoverson.—Diabetic retinopathy (DR), with its complications, is the leading cause of blindness among the working population in developed countries. Asymptomatic diabetic retinopathy (DR) has been defined as proliferative disease in one eye and background or no retinopathy in the fellow eye, persisting for at least 2 years. Previous reports have described systemic and local factors associated with the development of asymmetric disease. These include unilateral carotid artery stenosis, choroidal scarring, complete posterior vitreous detachment, amблиopia, unilateral elevated intraocular pressure, optic atrophy, retinal pigment epithelial atrophy, myopia ≥5D, anisometropia >1D, concurrent retinal vascular disease, cataract extraction, vitreous loss, trauma, radiation, tumour, and unilateral recurrent panuveitis.

We observed a patient with proliferative DR in the right eye and no proliferative changes in the left eye which had Fuchs’ heterochromic cyclitis (FHC). In the absence of other known risk or protective factors, FHC was felt to have preoperative resolution of macular oedema after focal laser treatment, increased hard exudates or intraretinal haemorrhages in eyes.

The patient was a 56 year old insulin treated type II diabetic. He also had systemic hypertension and was a smoker. FHC of the left eye was diagnosed on the basis of typical stellate keratic precipitates scattered over the entire corneal endothelium, chronic low grade anterior uveitis, iris heterochromia, and posterior subcapsular cataract. Pharmacological testing with 4% cocaine excluded a diagnosis of Horner’s syndrome in the left eye. He suffered widespread vascular complications of his combined diabetic and hypertensive state, including nephrotic syndrome and peripheral vascular disease culminating in left below knee amputation. These were accompanied by the development of new vessels at the disc in the right eye (Fig 1A), but no background changes in the left eye, although ischaemic changes were evident on fundus fluorescein angiography (Fig 1B).

At his initial assessment in the ophthalmology clinic, best corrected Snellen visual acuities were right eye 6/6; left eye 6/9. The refractive errors were right eye +1.00/ +0.50×180; left eye +2.00 DS. Intraocular pressures were 16 mm Hg either eye. Retinal pigment epithelial changes were present at the left macula (Fig 1B) but there was no extensive retinal pigment epithelial atrophy or chorioretinal scar. There was neither proliferative diabetic retinopathy nor clinically significant macular oedema in either eye.

Nine months after the first examination he developed clinically significant macular oedema in the right eye. This was treated with focal argon laser with resolution of the macular oedema. Two years later new vessels at the right disc (Fig 1A) were noted and panretinal photocoagulation was performed (2707 burns in two sessions). Despite laser treatment, vitreous haemorrhage ensued. Further laser treatment to the right eye (1149 burns) led to regression of new vessels at the right disc (Fig 2A). Cataract progressed in the eye with FHC so that 5 years after his first visit to the ophthalmology department left phacoemulsification with heparin coated intraocular lens implant was required. Extracapsular cataract extraction is associated with accelerated retinopathy progression postoperatively. Accelerated retinopathy was defined as the development of any of the following within 6 months postoperatively: new clinically significant macular oedema, recurrent clinically significant macular oedema in eyes that had preoperative resolution of macular oedema after focal laser treatment, increased hard exudates or intraretinal haemorrhages in eyes.
described. Ultimately there is narrowing of the vessel lumen, or even occlusion. This may explain the ruberosis and neovascular glaucoma sometimes seen in eyes with FHC.

Sympathetic theories for FHC have also been proposed, although a sympathetic aetiology has never been demonstrated. Loewenfeld and Thompson felt there was inadequate evidence to support the proposed connection with sympathetic paralysis or denervation. Despite the arguments put forward in their review to reject the connection between FHC and hemifacial atrophy (Parry-Romberg syndrome), and the hypothesis of a sympathetic defect implicated in both diseases, many authors still support this theory.17 Sympathicodendal paralysis explicable by denervation hypersensitivity of the blood-ocular barrier, with escape of cell elements, primarily albumin and lymphocytes, into the aqueous and vitreous. If denervation hypersensitivity occurs, because of an increase in receptor sites following destruction of postganglionic neurons, there may be rebound vasoconstriction with reduction in blood flow.

The arm-retina time measured by fluorescein angiography is a measure of the vascular system supplying the eye. The absence of any haemodynamically significant carotid artery stenosis and the normal arm-retina time suggest that there were no haemodynamic factors, even in the more distal branches of the internal carotid system, which contributed to the asymmetric retinopathy. In fact, pulsatile ocular blood flow in the left eye was normal (1101 µl/min), despite signs of ischaemia on fluorescein angiogram (Fig 2B). Ocular blood flow in the right eye was also normal (824 µl/min), although this was after extensive panretinal photocoagulation. Our hypothesis, therefore, is that FHC protected his left eye from progression to proliferative diabetic retinopathy.

This case suggests that FHC protected against proliferative DR but the mechanism is unclear and merits further consideration. Hopefully, this new observation will help to increase our understanding of these complex diseases and eventually affect the formulation of clinical practice.

D C MURRAY
V C T SUNG
M P HEADON
Wolverhampton and Midland Counties Eye Infirmary
Correspondence to: M P Headon, Wolverhampton and Midland Counties Eye Infirmary, Compton Road, Wolverhampton WV10 0PB

CASE REPORT

A 77 year old white woman underwent uncomplicated phacoemulsification with insertion of a foldable acrylic (AcrySof, Alcon Laboratories, Hemel Hempstead) IOL (23.0 dioptre, 6.0 mm optical diameter, model number MA60BM) through a superiorly sited scleral tunnel (June 1998). The capsulohyaline diameter was 5.5 mm. No attempt was made to remove anterior lens epithelial cells (LECs) during irrigation aspiration of lens cortex. Ophthalmic history was negative for uveitis, pseudoxefoliation, and myopia. Postoperatively she made a good recovery, achieving an unaided visual acuity of 6/9. Three months later she presented again because of reduced vision (6/24 corrected). Dilated examination revealed fibrosis as well as marked phimosis of the anterior capsular opening (Fig 1A). The contraction was symmetrical and no decentration or tilting of the lens was noted. There was no posterior capsular opacification of note. Nd:YAG radial anterior capsulotomy (193.5 mJ TE) was carried out (Fig 1B). She regained a visual acuity of 6/9 when reviewed 1 month later (Fig 1C).

COMMENT

Kohner et al have put forward a working hypothesis for the pathogenesis of DR.14 The first change is hyperperfusion initiated by hyperglycaemia and influenced by high blood pressure and impaired autoregulation. The hyperglycaemia damages both pericytes and endothelial cells. The increased blood flow results in further damage to vessel walls, occlusion of some vessels, hypoxia, and ischaemia, resulting in proliferative DR. Factors which induce or worsen retinal blood flow therefore have a protective effect in DR.

Although the aetiology of FHC is unknown, a vascular pathogenesis is one of the proposed hypotheses for its cause. An immune complex vasculitis may be the cause of abnormal haemalisation of the iris vessel walls previously

Anterior capsular phimosis following Acrysof lens insertion

EDITOR,—Anterior capsular phimosis is one of the complications of continuous curvilinear capsulorhexis (CCC). It was first described by Hansen and the term “capsule contraction syndrome” was coined by Davison in 1993.1Capsular contraction has previously been reported to occur with poly(methylmethacrylate) (PMMA) and with silicone intraocular lenses (IOLs), particularly plate haptic silicone IOLs. Several authors have reported that the anterior lens capsule is more stable when in contact with an acrylic IOL (AcrySof) compared with PMMA and silicone lenses.2

To our knowledge this is the first case report of anterior capsular contraction following implantation of an AcrySof IOL.

[Figure 2: April 1998; fundus fluorescein angiogram. (A) Right eye, late phase. After multiple sessions of panretinal laser the right eye shows regression of disc new vessels with no residual leakage. (B) Left eye, mid venous phase. Following cataract surgery the hyperfluorescence shows regression of disc new vessels with no residual leakage. (B) Left eye, mid venous phase. Following cataract surgery the hyperfluorescence shows regression of disc new vessels with no residual leakage. (B) Left eye, mid venous phase. Following cataract surgery the hyperfluorescence shows regression of disc new vessels with no residual leakage. (B) Left eye, mid venous phase. Following cataract surgery the hyperfluorescence shows regression of disc new vessels with no residual leakage.]

ACKNOWLEDGMENTS

We thank Drs J de Jong and P Thulkens for permission to publish these cases.
CASE REPORT

A 43 year old Asian man presented with a 3 week history of blurred central vision and metamorphopsia affecting his left eye. Ocular examination revealed best corrected visual acuity of 6/9 in both eyes. Funduscopy revealed a neurosensory retinal detachment overlying the left fovea, with bilateral multiple retinal pigment epithelial changes. Fundus fluorescein angiography (FFA) and indocyanine green angiography (ICGA) confirmed the diagnosis of bilateral CSR (Figs 1 and 2).

The neurosensory retinal detachment in the left eye resolved spontaneously. Seven months after his initial presentation, he developed sudden loss of vision in his left eye to counting fingers at 1 metre. Ocular examination revealed a large macular subretinal haemorrhage, which progressed to a dense vitreous haemorrhage after a week. Ultrasonomography revealed no evidence of a retinal detachment. The vitreous haemorrhage subsequently cleared spontaneously leaving an atrophic macular scar.

Central serous retinopathy complicated by massive bilateral subretinal haemorrhage

Editor,—Central serous retinopathy (CSR) is a common cause of visual disturbance in the younger age group. Spontaneous visual recovery occurs in the majority of patients. A minority of patients, however, suffer permanent visual loss commonly caused by chronic retinal pigment epithelial changes. We report a devastating complication of untreated CSR, with bilateral massive subretinal and vitreous haemorrhages.

Central serous retinopathy (CSR) is a common cause of visual disturbance in the younger age group. Spontaneous visual recovery occurs in the majority of patients. A minority of patients, however, suffer permanent visual loss commonly caused by chronic retinal pigment epithelial changes. We report a devastating complication of untreated CSR, with bilateral massive subretinal and vitreous haemorrhages.

Figure 1 (A) Slit lamp photograph showing anterior capsular phimosis and fibrosis. (B) Appearance of anterior capsule immediately after Nd:YAG radial anterior capsulotomy. (C) Appearance of anterior capsule 5 weeks after laser.

A 43 year old Asian man presented with a 3 week history of blurred central vision and metamorphopsia affecting his left eye. Ocular examination revealed best corrected visual acuity of 6/9 in both eyes. Funduscopy revealed a neurosensory retinal detachment overlying the left fovea, with bilateral multiple retinal pigment epithelial changes. Fundus fluorescein angiography (FFA) and indocyanine green angiography (ICGA) confirmed the diagnosis of bilateral CSR (Figs 1 and 2).

The neurosensory retinal detachment in the left eye resolved spontaneously. Seven months after his initial presentation, he developed sudden loss of vision in his left eye to counting fingers at 1 metre. Ocular examination revealed a large macular subretinal haemorrhage, which progressed to a dense vitreous haemorrhage after a week. Ultrasonomography revealed no evidence of a retinal detachment. The vitreous haemorrhage subsequently cleared spontaneously leaving an atrophic macular scar.

Central serous retinopathy complicated by massive bilateral subretinal haemorrhage

Editor,—Central serous retinopathy (CSR) is a common cause of visual disturbance in the younger age group. Spontaneous visual recovery occurs in the majority of patients. A minority of patients, however, suffer permanent visual loss commonly caused by chronic retinal pigment epithelial changes. We report a devastating complication of untreated CSR, with bilateral massive subretinal and vitreous haemorrhages.

Figure 2 (A) Fluorescein angiography of the right macula reveals multiple areas of leakage; (B) ICGA reveals more extensive disease with diffuse hyperfluorescence representing multiple areas of choroidal hyperpermeability; (C) late phase ICGA demonstrates serum retinal pigment epithelial detachments with characteristic central hypofluorescence and hyperfluorescent staining of the surrounding ring (arrows).

COMMENT

Massive subretinal macular haemorrhage can occur secondary to a number of causes such as choroidal neovascularisation (CNV), retinal artery macroaneurysm, idiopathic polypoidal choroidal vasculopathy, blood dyscrasia, or trauma. Histopathological analysis of patients with age-related CNV complicated by massive subretinal haemorrhage may be associated with rupture of a large choroidal blood vessel.1 CNV is known to occur infrequently in patients with CSR affected with laser photoagulation.7 In only two previous cases has CNV developed spontaneously in patients with CSR.8 Massive subretinal haemorrhage, however, was not the feature in these two reported cases. In our case, the use of ICGA had helped to understand the mechanical events (Figs 2 and 3) but the underlying aetiology remains unclear.

The pathogenesis of CSR has been disputed. Recent studies with ICG suggest focal choroidal hyperpermeability as the possible initial event, leading to the formation of serous retinal pigment epithelial detachment. Excessive fluid accumulation then leads to pressure on the retinal pigment epithelium, resulting in either mechanical disruption or retinal pigment epithelial decapsulation.9 The chronic secondary retinal pigment epithelial changes, if extensive, may predispose to the development of CNV. In our patient, the sudden onset of haemorrhage in both eyes may in part be explained by the presence of disorganised and dysfunctional choroidal blood vessels. The latter leads to an initial increase in choroidal hyperpermeability (hence the CSR) and later, the tendency to rupture suddenly resulting in massive haemorrhage (as illustrated by our case).

P I LIP
L MOWATT-DIXON
M W HOPE-ROSS
The Birmingham and Midland Eye Centre, City Hospital NHS Trust, Dudley Road, Birmingham B18 7QH.

Correspondence to: Mrs Peck-Lin Lip, The Birmingham and Midland Eye Centre, City Hospital NHS Trust, Dudley Road, Birmingham B18 7QH.

Accepted for publication 17 March 1999


Various phenotypic expressions of familial aniridia with a PAX6 mutation

EPISTOTOLOGY—Aniridia is an uncommon congenital bilateral panocular disorder characterised by complete or partial absence of the iris and foveal hypoplasia. Aniridia can appear in a high penetrance form associated with other ocular anomalies such as keratopathy, foveal hypoplasia, cataract, ectopia lentis, and glaucoma.9 Recent studies showed that aniridia is caused by mutation of the PAX6 gene,10 which controls early events in cerebral and ocular formation.11 We present a pedigree with various clinical findings of aniridia in which a mutation of the PAX6 gene was identified.

CASE REPORTS

The family tree is shown in Figure 1A. Case I-1 is a 52 year old man with visual impairment and nystagmus. He had cataract from an early age (the detail was unknown). His vision was right eye finger counting at 50 cm and left eye 0.01; eye examination revealed bilateral partial aniridia, dense cataract, corneal pannus, and foveal hypoplasia (Fig 2A, B). His cataracts were removed and posterior chamber intraocular lenses were implanted at an age of 52. One son, II-1, is 16 years old with nystagmus, visual acuities of right eye 0.3 and left eye 0.2, bilateral corneal pannus, iris thinning, and mild foveal hypoplasia; his lenses were clear (Fig 2 C, D). Another son, II-2, is 14 years old with nystagmus, visual acuities of right eye 0.2 and left eye 0.2, bilateral iris thinning, corneal pannus, and mild foveal hypoplasia; his lenses were clear (Fig 2 E, F).

Case II-3 is a 13 year old male with nystagmus, visual acuities of right eye 0.3 and left eye 0.2, bilateral aniridia, corneal pannus, and mild foveal hypoplasia; his lenses were clear (Fig 2 G, H). All affected patients were normal in size for age and had normal intelligence and karyotype (46XY). We analysed genomic DNA isolated from leucocytes of patients and family members. Genomic DNA representing 14 exons for the PAX6 gene was amplified by polymerase chain reaction (PCR) and subjected to SSCP analyses.9 An abnormal pattern for exon 11 was identified indicating a heterozygous mutation in all affected patients but not in unaffected members of the immediate family or in over 100 normal individuals (Fig 1A) Sequencing analysis demonstrated a deletion of a single nucleotide at the 1434th position (in this study, the numbers of the nucleotide and amino acid were based on the sequence of GenBank Accession No M93650) (Fig 1B). No other changes in nucleotide sequence were detected.

COMMENT

The human PAX6 gene is 422 amino acids long and has paired box and homeobox DNA binding domains. These are separated by a 78 amino acid linker segment and followed by a 152 amino acid C-terminal region rich in proline, serine, and threonine (PST domain). The human PAX6 gene is a master control gene that controls the development of multiple axial structures from the neural tube to the end of the pronephric duct. Hittner et al.11 12 described suspected familial aniridia cases in which expressivity was variable as was seen in our cases. Probably many modifiers affect a variety of phenotypic expression in a pedigree with the same PAX6 mutation. Because the PAX6 gene is a master control gene,13 it may control numerous downstream genes, whose expression pattern probably is slightly different among each individual. Af
Effects, or environmental factors. The fact that the pedigree also supports this hypothesis.

Figure 2 Photograph of anterior segment of case I-1 (A, right eye; B, left eye) with corneal pannus, absent iris, dense cataract; case II-1 (C, right eye; D, left eye) with corneal pannus and iris thinning; case II-2 (E, right eye; F, left eye) with corneal pannus, partially absent iris; and case II-3 (G, right eye; H, left eye) with corneal pannus, partially absent iris, and nubue cataract.

Iopidine allergy causing lower eyelid ecropion progressing to cicatrical entropion

Editor,—Apraclonidine hydrochloride 1% (Iopidine) is a selective α2-adrenergic agonist used to treat glaucoma or to protect against pressure spikes before laser treatments. Up to 48% of patients taking Iopidine for over 3 weeks develop follicular conjunctivitis.1 Periocular contact dermatitis was also associated with Iopidine allergy in 62% of the cases.2 We report a case of an Iopidine allergic reaction presenting with eyelid ecropion which further progressed to cicatrical entropion.

CASE REPORT
A 64 year old man was referred with a 6–8 month history of non-resolving conjunctivitis, epiphora, and resultant left lower eyelid ecropion. The conjunctivitis was resistant to treatment with Ocufox OS four times daily. As a result, the referring provider added Tobradex (tobramycin) and Naphcon A (naphazoline), and referred him for evaluation. His ocular history was notable for bilateral pterygium excision 2 years earlier and open angle glaucoma. The patient’s current ocular medications included Timoptic 0.5% in both eyes twice daily, Iopidine left eye twice daily, and Tobradex in left eye three times daily. Of historical note, the patient began the Iopidine approximately 2 months before developing these symptoms in the left eye. The patient had no known drug allergies. Corrected visual acuities were 20/20 right eye and 20/100 left eye. External examination revealed left upper eyelid ptosis, left lower punctal and eyelid ecropion, and diffuse left eye papillary conjunctivitis (Fig 1).

The Iopidine and the Tobradex were discontinued. The patient began prednisolone (Pred-Forte 1%) left eye every 2 hours in addition to his current regimen of Timoptic and Ocufox. Within 3 weeks, his left eye improved dramatically. However, he developed a cicatrical entropion with sylmblepharon, keratinised lower eyelid margin, and persistent left upper eyelid ptosis requiring surgical correction (Fig 2). Tissue samples submitted for histological examination revealed lymphocytic infiltration, admixed with plasma cells, and foci of a haemorrhage within the conjunctiva and subepithelial stroma. Immunohistochemical preparations revealed 50% B cells and 50% T cells, leading to the diagnosis of reactive lymphoid infiltrate.
COMMENT
Our finding of reactive lymphocytic infiltrates in the conjunctival specimen is consistent with a type IV hypersensitivity reaction and the diagnosis of Iopidine allergy. To our knowledge, this is the first report of an ectropion progressing to a cicatricial entropion resulting from an Iopidine allergy response. Iopidine has been reported to cause upper eyelid retraction and entropion. Similarly, dipivefrin, another adrenergic agent and a topical antiglaucoma medication, has been reported to cause lower eyelid ectropion; however, this ectropion resolved 3 weeks after drug discontinuation. In our case, the inflammation induced by the topical medication caused the initial ectropion which progressed upon resolution and scar formation to cicatricial entropion. Iopidine induced conjunctivitis can produce both ectropion and entropion.

MICHELLE T BRITT
MICHAEL A BURNSTINE
Department of Ophthalmology and Doheny Eye Institute, University of Southern California School of Medicine, Los Angeles, California

Correspondence to: Michael A Burnstine, MD, Doheny Eye Institute, University of Southern California, 1450 San Pablo Street, Los Angeles, CA 90033, USA.

Accepted for publication 16 March 1999

Central serous retinopathy complicated by massive bilateral subretinal haemorrhage

P L Lip, L Mowatt-Dixon and M W Hope-Ross

*Br J Ophthalmol* 1999 83: 987
doi: 10.1136/bjo.83.8.987d

Updated information and services can be found at:
http://bjo.bmj.com/content/83/8/987.5

These include:

**References**
This article cites 4 articles, 0 of which you can access for free at:
http://bjo.bmj.com/content/83/8/987.5#BIBL

**Email alerting service**
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/