Figure 1 Left eye of a patient with papilloedema and a peripapillary choroidal neovascular membrane. There is prominent subretinal haemorrhage and exudation near the peripapillary choroidal neovascular membrane in the colour photograph (left), and a fluorescein angiogram reveals late leakage (right).

Figure 2 Colour photographs after treatment with combination photodynamic therapy and juxtascleral triamcinolone acetonide. At 2 months after treatment (left), there is a resolving edge of exudation and at 6 months after treatment (right), the choroidal neovascular membrane has decreased in size and there is resolution of subretinal blood.

Although a longer follow up may be necessary, we report the successful treatment of a peripapillary choroidal neovascular membrane related to papilloedema with combination photodynamic therapy and juxtascleral triamcinolone acetonide.

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Advanced bilateral persistent fetal vasculature associated with a novel mutation in the Norrie gene

Unilateral cases of persistent fetal vasculature (PFV) are sporadic,¹ while bilateral cases may be associated with X linked Norrie disease.² Associated sensorineural deafness and mental retardation in males³ may be absent,⁴ and genetic testing can be useful in separating sporadic PFV from Norrie disease as the following report illustrates.

Case report

A male proband (III:1, fig 1), the first child of healthy non-consanguineous white parents, was born by normal vaginal delivery, at term, following normal pregnancy and weighed 3.64 kg. Bilateral PFV was noted (fig 2) with a normal systemic examination including hearing test. During bilateral vitreo-lensectomy, severe retinal and optic nerve dysplasia was found. The four generation family history was negative for eye problems. Development at 15 months was normal. The karyotype was normal. A missense mutation in the Norrie disease gene (NDP) was identified in the proband. This was 123G>T, leading to an amino acid substitution of arginine to serine at codon 41 (R41S), which is a non-conservative change. As this sequence change had not been previously reported in Norrie disease, it was unclear whether it was a pathogenic mutation or a polymorphism in the gene, unrelated to the patient's phenotype. Genetic testing of the mother (II:2, fig 1) identified the same mutation in the heterozygous form, indicating that it had not arisen de novo in the proband. In the absence of signs of PFV in the mother, genetic testing of other family members was performed. The mutation was absent from the proband's maternal grandparents, indicating that it had probably arisen on one of the maternal X chromosomes. It is therefore highly likely to be a pathogenic mutation.

Comment

Norrie disease is an X linked disease causing bilateral blindness as a result of the primitive

Figure 1 Three generation pedigree. Males are shown as squares and females as circles. The proband is indicated with an arrow. The solid symbols represent affected individuals and open symbols represent unaffected individuals. A dot in the centre of a symbol represents an unaffected carrier.

Figure 2 Lenticular vascularisation of the left eye.

hyaloid failing to regress. The Norrie disease gene (*NDP*) maps to Xp11.3⁶ and has two coding exons. Multiple pathogenic mutations have been reported with no strong genotype-phenotype correlation, although there is evidence that mutations at the 3' end of the gene lead to a milder phenotype.⁷ In addition, intrafamilial variability of the ocular phenotype has been described.⁸ The sequence change in the Norrie gene detected in this family led to a non-conservative amino acid change (R41S), but it was not certain that this variant would have a functional effect since it had not been reported previously. Family studies have, however, demonstrated that it is a de novo change, probably arising in the grandparental germline, and is therefore likely to be pathogenic. The proband's mother was 24 weeks' pregnant and the study suggested a low recurrence risk for isolated PFV, but a one in two chance that future sons would have Norrie disease, and a one in two chance that any future daughters would be carriers. Prenatal testing was declined, but this could be offered in future pregnancies. The proband's maternal aunt can be offered carrier testing because although the mutation most likely arose de novo in the proband's mother, the possibility that one of the proband's maternal grandparents might carry the mutation in a mosaic form cannot be excluded.

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Isolated lichen planus of the conjunctiva

Lichen planus is an autoimmune condition of unknown aetiology affecting the skin and mucous membranes. Classic lesions appear as recurrent, small, discrete, polygonal, flat topped, violaceous, pruritic papules distributed symmetrically on the flexor surfaces of the extremities and trunk. These lesions are often accompanied by lesions of the oral, genital, and rarely, ocular mucosa. Conjunctival lichen planus can lead to irreversible damage to the ocular surface and loss of vision from corneal scarring.^{1,2} We report two patients with isolated lichen planus of the conjunctiva. The referring ophthalmologists had attributed these ocular findings to a severe dry eye state. The correct diagnosis was made by conjunctival biopsy. Treatment with topical ciclosporin A resulted in suppression of the inflammation and arrest of the progressive cicatrization.

Case 1

A 57 year old white woman with a diagnosis of secondary Sjögren's syndrome was referred for further management of severe keratoconjunctivitis sicca, which had been refractory to treatment with multiple topical medications, including topical steroids, as well as punctal plugs. The patient had a history of rheumatoid arthritis with crippling deformities in her hands.

On examination, slit lamp biomicroscopy revealed inadequate tear film with debris, severe scar formation of the upper tarsal conjunctiva, moderate bulbar conjunctival hyperaemia, inferior fornix foreshortening, and severe diffuse punctate epithelial keratitis, bilaterally (fig 1). A conjunctival biopsy specimen was harvested from the inferior fornix of the left eye for evaluation. Direct immunofluorescence staining of the specimen revealed a heavy linear fibrinogen deposition along the epithelial basement membrane zone (fig 2). No IgG, IgA, IgM, or C3 deposition was present. A systemic examination of the patient revealed no lesions on the skin, oral, or genital mucosa. A trial of pulsed topical prednisolone acetate 1% was initiated but was quickly tapered and discontinued after a rise in the intraocular pressure. While tapering the topical steroids, the patient was started on ciclosporin A 0.05% eyedrops (Restasis, Allergan Inc) four times daily. The ciclosporin dose was increased to six times daily after the discontinuation of the topical steroids, and within 1 month the inflammation was fully controlled. The ciclosporin was gradually tapered to a maintenance dose of twice daily, on which the patient's cicatrising conjunctivitis has remained quiescent for 20 months, with no evidence of skin or other mucosal involvement.

Case 2

An 86 year old white man was referred for further management of keratoconjunctivitis

sicca and blepharitis attributed to acne rosacea. The patient's condition had been refractory to treatment with oral tetracyclines combined with topical steroids. His ocular history was remarkable for postoperative endophthalmitis in the left eye following combined cataract extraction and trabeculectomy, necessitating a subsequent penetrating keratoplasty with secondary intraocular lens implantation. The graft failed within a few months of transplantation.

On examination, slit lamp biomicroscopy demonstrated eyelid thickening with irregular margins, marked telangiectasis, and significant meibomian gland dysfunction in both eyes. The bulbar conjunctivae were hyperaemic. Symblepharon formation and foreshortening of lower forniceal conjunctivae were present bilaterally. The corneal epithelium on the right was irregular, with subepithelial and superficial stromal haze. The left eye had a failed corneal graft with 360 degrees of neovascularisation. A conjunctival specimen was harvested from the inferior fornix of the left eye. Direct immunofluorescence staining revealed shaggy linear deposition of fibrin along the epithelial basement membrane zone. No immunoglobulin or complement deposition was present. A detailed medical examination of the patient revealed no lesions on the skin, oral or genital mucosa. A trial of topical ciclosporin A 0.05% drops (Restasis, Allergan Inc) four times daily, combined with prednisolone acetate 1% four times daily, brought the symptoms under control. During the 18 months of follow up, both medications have been successfully tapered, and there has been no progressive cicatrization.

Figure 1 Patient 1. Significant foreshortening and subepithelial scar formation of the right lower forniceal conjunctiva.

Figure 2 Direct immunofluorescence staining of the lower bulbar conjunctival biopsy specimen from the same patient, demonstrating a heavy, linear deposition of fibrinogen along the basement membrane.