vascular disease associated with hypertension have both been proposed as mechanisms.^{3,4} Acute macular neuroretinopathy has also been associated with oral contraceptive use,⁵ eclampsia⁶ and heavy caffeine consumption.⁷ The resulting scotomata can persist for several years.⁵ Proven treatment is not available.

An early report suggested that the AMN lesion was located in the superficial layers of the retina.³ A later report using OCT suggested that the lesion was located in the outer retina.⁸ Studies using early receptor potential⁹ and a multifocal electroretinogram¹⁰ pointed to photoreceptor involvement.

hsUHR-OCT showed that the focal lesion in patients with AMN occurs in the outer retina, possibly at the level of the photoreceptor outer segments with distortion of the IS/OS junction. The lesion may also represent a disturbance at the outer nuclear layer, resulting in the downward depression and disruption of the underlying external limiting membrane, photoreceptors and retinal pigment epithelium. hs UHR-OCT shows that the structural changes in the outer retina in this patient with AMN may be reversible despite the persistence of visual symptoms.

B K Monson

New England Eye Center, Tufts-New England Medical Center, Boston, Massachusetts, USA

P B Greenberg

Division of Ophthalmology, Brown Medical School/Rhode Island Hospital, Providence, Rhode Island, USA

E Greenberg

New England Eye Center, Tufts-New England Medical Center, Boston, Massachusetts, USA

J G Fujimoto

Department of Electrical Engineering and Computer Science and Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge, Massachusetts, USA

V J Srinivasan

Department of Electrical Engineering and Computer Science and Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge, Massachusetts, USA

J S Duker

New England Eye Center, Tufts-New England Medical Center, Tufts University, Boston, USA

Correspondence to: B K Monson, New England Eye Center, Tufts-New England Medical Center, 260 Tremont Street Biewend Building, 9–11th Floor, Boston, MA 02111, USA; brayan.monson@tufts.edu

doi: 10.1136/bjo.2006.098871

Accepted 10 June 2006

Competing interests: JGF received royalties from intellectual property licensed by MIT to Carl Zeiss Meditec.

References

- Drexler W, Morgner U, Ghanta RK, et al. Ultrahigh-resolution optical coherence tomography. *Nat Med* 2001;7:502–7.
- Ko TH, Fujimoto JG, Schuman JS, et al. Comparison of ultrahigh- and standard-resolution optical coherence tomography for imaging macular pathology. *Ophthalmology* 2005;112:1922.
- Bos PJM, Deutman AF. Acute macular neuroretinopathy. *Am J Ophthalmol* 1975;80:573–84.
- O'Brien DM, Farmer SG, Kalina RE, et al. Acute macular neuroretinopathy following intravenous sympathomimetics. *Retina* 1989;9:281–6.
- Desai UR, Sudhamathi K, Natrarajan S. Intravenous epinephrine and acute macular neuroretinopathy. *Arch Ophthalmol*, 111:1026–7.
- Kalina RE. Acute macular neuroretinopathy. In eds: Guyer DR, Yannuzzi LA, Chang S, et al. *Retina-Vitreous-Macula*. W B Saunders Co. 1999:593–6.
- Kerrison JB, Pollock SC, Biousse V, et al. Coffee and doughnut maculopathy: a cause of acute central ring scotomas. *Br J Ophthalmol* 2000;84:158–64.
- Feigl B, Haas A. Optical coherence tomography (OCT) in acute macular neuroretinopathy. *Acta Ophthalmol* 2000;78:714–16.
- Sieving PA, Fishman GA, Salzano T, et al. Acute macular neuroretinopathy: early receptor potentials change suggests photoreceptor pathology. *Br J Ophthalmol* 1984;68:229–34.
- Browning AC, Gupta R, Barber C, et al. The multifocal electroretinogram in acute macular neuroretinopathy. *Arch Ophthalmol* 2003;121:1506–7.
- Kiire CA, Dhillon B. The aetiology and associations of conjunctival intraepithelial neoplasia. *Br J Ophthalmol* 2006;90:109–13.
- Wabinga H, Parkin D, Wabwire-Mangen F, et al. Trends in cancer incidence in Kyadondo county, Uganda, 1960–1997. *Br J Cancer* 2000;82:1585–92.
- Ateenyi-Agaba C, Newton R. Squamous cell carcinoma of the conjunctiva: an HIV-associated cancer. *Bull R Soc Trop Health* 1999;73:3–4.
- Kestelyn P, Stevens A, Ndayambaje A, et al. HIV and conjunctival malignancies [letter]. *Lancet* 1990;336:51–2.
- Ateenyi-Agaba C. Conjunctival squamous-cell carcinoma associated with HIV infection in Kampala, Uganda. *Lancet* 1995;345:695–6.
- Waddell K, Lewallen S, Lucas S, et al. Carcinoma of the conjunctiva and HIV infection in Uganda and Malawi. *Br J Ophthalmol* 1996;80:503–8.
- Newton R, Ziegler J, Beral V, et al. A case control study of human immunodeficiency virus infection and cancer in adults and children residing in Kampala, Uganda. *Int J Cancer* 2001;92:622–7.
- Goedert JJ, Cote TR. Conjunctival malignant disease with AIDS in USA. *Lancet* 1995;ii:257–8.
- Waddell KM, Dowling RG, Lucas SB, et al. Corneoconjunctival carcinoma in Uganda. *Eye* 2006;20:893–9.
- Holkar S, Mudhar HS, Jain A, et al. Regression of invasive conjunctival squamous carcinoma in an HIV-positive patient on antiretroviral therapy. *Int J STD AIDS* 2005;16(12):782–3.
- Beral V, Newton R. Overview of the epidemiology of immunodeficiency associated cancers. *Monogr Natl Cancer Inst* 1998;23:1–6.
- Newton R. A review of the aetiology of squamous cell carcinoma of the conjunctiva. *Br J Cancer* 1996;74:1511–3.
- Newton R, Ziegler J, Ateenyi-Agaba C, et al. The epidemiology of conjunctival squamous cell carcinoma in Uganda. *Br J Cancer* 2002;87:301–8.
- Waddell K, Magyezi J, Bousarghin L, et al. Antibodies against human papillomavirus type 16 (HPV-16) and conjunctival squamous cell neoplasia in Uganda. *Br J Cancer* 2003;88:2002–3.
- Ateenyi-Agaba C, Weiderpass E, Smet A, et al. *Epidermodysplasia verruciformis*. human

for a median time of 32 months, using a simple surgical protocol applicable to resource-poor countries.⁹ They discuss treatment with topical mitomycin C and 5-fluorouracil, but these require prolonged follow-up and are not practical in much of Africa. They also call for a large controlled trial of interferon α 2b; only in Africa could a large enough series be found. Excision biopsy remains the treatment of choice for most patients, requiring only one visit, except for the rare diffuse tumours. We agree that a low threshold for advising excision of lesions is important, as tumours as small as 2–3 mm can be invasive; endophytic tumours are especially deceptive, sometimes looking like pingueculae.⁹

K M Waddell

Ruharo Eye Hospital and Uganda Eye Project, Mbarara, Uganda, Africa

R Newton

Epidemiology and Genetics Unit, Department of Health Sciences, University of York, York, UK

Correspondence to: Dr R Newton, Epidemiology and Genetics Unit, Department of Health Sciences, University of York, Seabrook Rowntree Building, Heslington, York YO10 5DD, UK; rob.newton@egu.york.ac.uk

doi: 10.1136/bjo.2006.100297

Accepted 27 June 2006

Competing interests: None.

References

- Kiire CA, Dhillon B. The aetiology and associations of conjunctival intraepithelial carcinoma. *Br J Ophthalmol* 2006;90:109–13.
- Wabinga H, Parkin D, Wabwire-Mangen F, et al. Trends in cancer incidence in Kyadondo county, Uganda, 1960–1997. *Br J Cancer* 2000;82:1585–92.
- Ateenyi-Agaba C, Newton R. Squamous cell carcinoma of the conjunctiva: an HIV-associated cancer. *Bull R Soc Trop Health* 1999;73:3–4.
- Kestelyn P, Stevens A, Ndayambaje A, et al. HIV and conjunctival malignancies [letter]. *Lancet* 1990;336:51–2.
- Ateenyi-Agaba C. Conjunctival squamous-cell carcinoma associated with HIV infection in Kampala, Uganda. *Lancet* 1995;345:695–6.
- Waddell K, Lewallen S, Lucas S, et al. Carcinoma of the conjunctiva and HIV infection in Uganda and Malawi. *Br J Ophthalmol* 1996;80:503–8.
- Newton R, Ziegler J, Beral V, et al. A case control study of human immunodeficiency virus infection and cancer in adults and children residing in Kampala, Uganda. *Int J Cancer* 2001;92:622–7.
- Goedert JJ, Cote TR. Conjunctival malignant disease with AIDS in USA. *Lancet* 1995;ii:257–8.
- Waddell KM, Dowling RG, Lucas SB, et al. Corneoconjunctival carcinoma in Uganda. *Eye* 2006;20:893–9.
- Holkar S, Mudhar HS, Jain A, et al. Regression of invasive conjunctival squamous carcinoma in an HIV-positive patient on antiretroviral therapy. *Int J STD AIDS* 2005;16(12):782–3.
- Beral V, Newton R. Overview of the epidemiology of immunodeficiency associated cancers. *Monogr Natl Cancer Inst* 1998;23:1–6.
- Newton R. A review of the aetiology of squamous cell carcinoma of the conjunctiva. *Br J Cancer* 1996;74:1511–3.
- Newton R, Ziegler J, Ateenyi-Agaba C, et al. The epidemiology of conjunctival squamous cell carcinoma in Uganda. *Br J Cancer* 2002;87:301–8.
- Waddell K, Magyezi J, Bousarghin L, et al. Antibodies against human papillomavirus type 16 (HPV-16) and conjunctival squamous cell neoplasia in Uganda. *Br J Cancer* 2003;88:2002–3.
- Ateenyi-Agaba C, Weiderpass E, Smet A, et al. *Epidermodysplasia verruciformis*. human

- papillomavirus types and carcinoma of the conjunctiva: a pilot study. *Br J Cancer* 2004;**90**:1777-9.
- 16 **Tornesello ML**, Duraturo ML, Waddell KM, *et al*. Evaluating the role of human papillomaviruses in conjunctival neoplasia. *Br J Cancer* 2006;**94**:446-9.
 - 17 **Tulvatana W**, Bhattarakosol P, Sansopha L, *et al*. Risk factors for conjunctival squamous cell neoplasia: a matched case-control study. *Br J Ophthalmol* 2003;**87**:396-8.
 - 18 **Ateenyi-Agaba C**, Dai M, Le Calvez F, *et al*. TP53 mutations in squamous-cell carcinomas of the conjunctiva: evidence for UV-induced mutagenesis. *Mutagenesis* 2004;**19**:399-401.
 - 19 **Newton R**, Ferlay J, Reeves G, *et al*. Effect of ambient solar ultraviolet radiation on incidence of squamous-cell carcinoma of the eye. *Lancet* 1996;**347**:1450-1.
 - 20 **Sun EC**, Fears TR, Goedert JJ. Epidemiology of squamous cell conjunctival cancer. *Cancer Epidemiol, Biomarkers Prev* 1997;**6**:73-7.
 - 21 **Lee GA**, Williams G, Hirst LW, *et al*. Risk factors in the development of ocular surface epithelial dysplasia. *Ophthalmology* 1994;**101**:360-4.
 - 22 **Tornesello ML**, Waddell KM, Duraturo ML, *et al*. TP53 codon 72 polymorphism and risk of conjunctival squamous cell carcinoma in Uganda. *Cancer Detect Prev* 2005;**29**:501-8.
 - 23 **Templeton AC**. Tumours of the eye and adnexa. Recent Result Cancer Research, 1973:203-14.
 - 24 **Margo CE**, Groden LR. Squamous cell carcinoma of the cornea and conjunctiva following a thermal burn of the eye. *Cornea* 1986;**5**:185-8.

Severe decompression retinopathy after medical treatment of acute primary angle closure

We describe a case of medically treated acute primary angle closure (APAC) resulting in severe visual loss owing to retinal haemorrhage. We are unaware of previous reports on this phenomenon in the world literature.

Case report

A 65-year-old woman visited her optometrist for a routine check. Her pupils were dilated and no pathology was found. Her vision progressively deteriorated that evening.

She attended the hospital and was noted to have unreactive mid-dilated pupils bilaterally. Visual acuity was 20/60 OU (pinhole). Intraocular pressure (IOP) was 60 mm Hg OD and 66 mm Hg OS. Gonioscopy showed occluded angles. The patient had moderate hypermetropia but otherwise had no other ocular risk factors for angle closure.

A diagnosis of iatrogenic APAC was made and the patient was given intravenous acetazolamide, topical dexamethasone, iodine 1% and pilocarpine 4%.

Figure 1 Colour fundus photograph showing severe pre-retinal haemorrhages at the posterior poles of the right eye, which occurred 2 h after medical intraocular pressure reduction for acute primary angle closure.

Figure 2 Colour fundus photograph showing severe pre-retinal haemorrhages at the posterior poles of the left eye, which occurred 2 h after medical intraocular pressure reduction for acute primary angle closure.

Ninety min later, IOPs were found to be 10 mm Hg OS. Acuity had improved to 20/30 OD and 20/20 OS.

Discharge was planned. After 2 h, the patient was still waiting for treatment when her vision deteriorated suddenly.

Visual acuity was hand motion OU. Pupils were small and IOP remained at 10 mm Hg OU. A clear fundal view was not possible because of miosis. B-scan ultrasound was undertaken, which raised the suspicion of a "macular bleed".

She was admitted and re-examined the next morning. IOP remained controlled and corneas were clear. Visual acuity had improved marginally to counting fingers OD and 20/200 OS. She had bilateral YAG peripheral iridotomies and was subsequently dilated. Funduscopy showed extensive bilateral retinal and pre-retinal haemorrhages (figs 1, 2). IOP remained normal 1 h after dilatation.

A diagnosis of bilateral decompression retinopathy secondary to rapid reduction in IOP was made. The patient was not taking aspirin, and had no evidence of bleeding diathesis, diabetes, vasculopathy or other systemic abnormalities that may have contributed to this complication.

Due to the severity of the visual loss it was elected to treat her surgically. She underwent bilateral vitrectomy within 1 month of onset and best corrected visual acuity improved to 20/20 in both eyes with normal IOP.

Comment

The case described is, to the best of our knowledge, unique in the literature. Decompression retinopathy is a rare complication that typically appears after glaucoma surgery. It usually manifests as transient scattered intraretinal haemorrhages at the posterior pole, which resolve within a few weeks, with visual acuity unaffected or slightly reduced.

Only three previous publications have described similar conditions.

Lai and colleagues¹ describe two cases of self-limiting retinal haemorrhages after argon laser peripheral iridoplasty for APAC. Both cases resolved conservatively and vision was restored. In other case reports following Waheeb and coworkers² describe a case of unilateral retinal haemorrhage YAG peripheral iridotomies for APAC. Nah *et al*³ describe a patient with APAC treated by peripheral iridotomy. In the latter report scattered retinal haemorrhages developed 2 weeks after treatment. The haemorrhages resolved over time with no visual sequelae.

The exact aetiology of decompression retinopathy is still a matter of speculation. The effect of acute hypotony on the eye may result in mechanical changes in the scleral shell, resulting in shearing forces, or the pressure reduction may simply facilitate an increase in arterial inflow compromising retinal capillaries by hydrostatic mechanisms. Autoregulation of these capillaries may already be defective, particularly when they have been subjected to persistently raised IOP. Decompression retinopathy may be part of the spectrum of central retinal vein occlusion, where IOP reduction causes buckling of the lamina cribrosa with compression of the central retinal vein.

This patient shows a worrying complication of acute reduction in IOP. The development of retinal haemorrhages after solely medical treatment for APAC is exceedingly rare. The severity of the retinopathy despite the absence of major hypotony at any stage is clinically relevant. The prognosis seems to be excellent even when the condition is severe.

A Alwitary, K Khan, A Rotchford, A G Zaman, S A Vernon

Department of Ophthalmology, Eye, Ear, Nose and Throat Centre, Queens Medical Centre, Nottingham, UK

Correspondence to: Dr A Alwitary, Department of Ophthalmology, Eye, Ear, Nose and Throat Centre, Queens Medical Centre, Nottingham NG7 2UH, UK; amaralwitary@aol.com

doi: 10.1136/bjo.2006.100479

Accepted 28 June 2006

Competing interests: None.

References

- 1 **Lai JS**, Lee VY, Leung DY, *et al*. Decompression retinopathy following laser peripheral iridoplasty for acute primary angle-closure. *Eye* 2005;**19**:1345-7.
- 2 **Waheeb SA**, Birt CM, Dixon WS. Decompression retinopathy following YAG laser iridotomy. *Can J Ophthalmol* 2001;**36**:278-80.
- 3 **Nah G**, Aung T, Yip CC. Ocular decompression retinopathy after resolution of acute primary angle closure glaucoma. *Clin Exp Ophthalmol* 2000;**28**:319-20.

Cytological vitreous findings in a patient with infantile neurological cutaneous and articular (CINCA) syndrome

The chronic infantile neurological cutaneous and articular (CINCA) syndrome is a rare inflammatory paediatric disease identified by Prieur *et al*¹ in 1987. Ocular manifestations have been observed in 26% of patients² and include anterior uveitis, abnormal optic disc appearance and posterior inflammation with vitritis and vasculitis.³ This article describes cytological vitreous findings, obtained by pars plana vitrectomy, in patients with CINCA syndrome.

Case report

A 1-month-old boy was initially examined because of a bilateral anterior uveitis for 10 days. He was born after a normal pregnancy. On the second day, however, a generalised urticaria was observed and his serum C reactive protein level was raised. He presented with recurrent fever, leucocytosis, neutrophilia, increased erythrocyte sedimentation rate and