group, IFA revealed no dye leakage from the early to late phases (figure 1A–C).

COMMENT

Our results indicate that eyes with endothelial decompensation after ALI may actually have a chronic postsurgical breakdown of the blood-aqueous barrier. Presumably, the predisposition to postoperative inflammatory reactions in patients with ALI-BK appears to be caused by the manifested impairment of the blood-aqueous barrier. Although the reason why such a subclinical change may continue for a long period of time after ALI is unclear, the post-ALI endothelial decompensation may possibly be due to the humoral transport of substances such as prostaglandins and cytokines (eg, TGF-β1) in the anterior segment.

Hisayo Higashihara, Chie Sotozono, Norihiko Yokoi, Tsutomu Inatomi, Shigeru Kinoshita

Department of Ophthalmology, Kyoto Prefectural University of Medicine, Kyoto, Japan

Correspondence to Shigeru Kinoshita, Department of Ophthalmology, Kyoto Prefectural, University of Medicine, Kawaramachi-Hirokoji, Kamigyo-ku, Kyoto 602-0841, Japan; shigeruk@koto.kpu-m.ac.jp

Competing interests None.

Patient consent Obtained.

Ethics approval This study was conducted with the approval of the Institutional Review Board of Kyoto Prefectural University of Medicine (No. MCHS-341).

Provenance and peer review Not commissioned; externally peer reviewed.

Accepted 6 March 2011
Published Online First 24 March 2011

Br J Ophthalmol 2011;**95**:1032–1034.
doi:10.1136/bjo.2010.192757

REFERENCES

1. **Ang LP,** Higashihara H, Sotozono C, *et al*. Argon laser iridotomy-induced bullous keratopathy-a growing problem in Japan. *Br J Ophthalmol* 2007;**91**:1613–15.
2. **Shimazaki J,** Amano S, Uno T, *et al*. National survey on bullous keratopathy in Japan. *Cornea* 2007;**26**:274–8.
3. **Shimazaki J,** Uchino Y, Tsubota K. Late irreversible corneal oedema after laser iridotomy. *Br J Ophthalmol* 2009;**93**:125–6.
4. **Yokoi N,** Kinoshita S. Clinical evaluation of corneal epithelial barrier function with the slit-lamp fluorophotometer. *Cornea* 1995;**4**:485–9.
5. **Brancato R,** Bandello F, Lattanzio R. Iris fluorescein angiography in clinical practice. *Surv Ophthalmol* 1997;**42**:41–70.

Changing the status quo bias

We read with interest the article by Durnian and Clark who presented a retrospective cohort of infants that fell outside evidence level B guidelines for screening retinopathy of prematurity (ROP) and we wish to discuss some further points.[1] The data presented in table 1 highlight that all 11 babies would be missed if screening was according to level B evidence and 2 of these would still be missed using the good practice points evidence. An alternative conclusion would be that if the guidelines had been amended to screen infants under 32 weeks or 1251 g then one extra baby would have been missed (who fortunately did not require treatment). It is also debatable based on the information presented, if any of the babies absolutely required treatment as others may have opted to observe the fibrovascular ridge seen in zone 3 in cases 3 and 12. The screening criteria should allow the test to be not only highly sensitive but also specific. In order to present a complete discussion, we would ideally like to know over the same time period how many examinations would have been avoided if the screening criteria were at the secondary level (B) and also importantly if the criteria were amended to less than 32 weeks or 1251 g.

The article also stimulates thought as to what currently defines the population at risk of developing ROP. We have moved from seeing more mature babies with ROP with higher average birth weights to current times where the survival of very premature infants is higher and consequently ROP is seen in a population that has extremely low birth weights, at least in highly developed countries. The inclusion of the Danish cohort from 1982 to 1987 in the Royal College Guidelines on ROP 2008 was offered in part as evidence for the current criteria, but these data may now be outdated.[2] More recent studies including monitoring of postnatal weight gain and insulin-like growth factor 1 have had significant success in detecting ROP and offer a potentially safe way to identify a smaller 'at risk' population for screening.[3] Ethnicity also has an influence on the prevalence of ROP that may be related to average birth weight or due to the genetic polymorphisms seen in that ethnic group, for this reason it would be interesting to know the ethnicity of the infants presented in table 1.[4] Anecdotally, over the past 15 years in Bradford where the population is predominantly Asian, no babies have been treated for ROP who have weighed more than 1001 g.

Although the genetic susceptibility to ROP for the majority of cases still remains elusive, three of the four known genes implicated in familial exudative vitreoretinopathy (FEVR), NDP, FZD4 and LRP5 have polymorphisms that account for 10–12% of ROP.[5] For cases that fall outside the currently accepted 'at risk' guidelines (eg. case 10), it may be worth contemplating if in fact they have a clinically identical condition, FEVR, or at least a genetic basis for an increased susceptibility to develop abnormal retinal vasculature when exposed to environmental stressors (that may be tested for in future screening algorithms). For this reason, it may also be important to know the systemic clinical condition of the neonates presented during their inpatient stay.

Using our current guidelines, we are only treating approximately 10% of cases screened; even if this strategy allowed us to identify all cases, this would be enough reason to suggest a refinement of the current criteria. We feel that as our understanding of molecular genetics evolves, advances in neonatal care continues to improve together with changes in the UK population demographic re-examination of the screening criteria will become necessary.

Kamron N Khan,[1] Manir Ali,[1] Carmel Toomes,[1] Chris F Inglehearn,[1] John Bradbury[2]

[1]Leeds Institute of Molecular Medicine, St. James' University Hospital, Leeds, UK; [2]Bradford Royal Infirmary, Duckworth Lane, Bradford, UK

Correspondence to Kamron N Khan, Leeds Institute of Molecular Medicine, St. James' University Hospital, Leeds LS7 9TF, UK; medknk@leeds.ac.uk

Funding The study was supported by the Wellcome Trust.

Competing interests None.

Provenance and peer review Not commissioned; not externally peer reviewed.

Accepted 11 December 2010
Published Online First 17 January 2011

Br J Ophthalmol 2011;**95**:1034.
doi:10.1136/bjo.2010.200428

REFERENCES

1. **Durnian JM,** Clark DI. Retinopathy of prematurity: keeping the status quo. A case series detailing the importance of keeping the current guidelines for screening. *Br J Ophthalmol* 2010;**94**:1693–4.
2. **Fledelius HC.** Retinopathy of prematurity. Clinical findings in a Danish County 1982–87. *Acta Ophthalmol (Copenh)* 1990;**68**:209–13.
3. **Hard AL,** Lofqvist C, Fortes Filho JB, *et al*. Predicting proliferative retinopathy in a Brazilian population of preterm infants with the screening algorithm WINROP. *Arch Ophthalmol* 2010;**128**:1432–6.
4. **Ng YK,** Fielder AR, Shaw DE, *et al*. Epidemiology of retinopathy of prematurity. *Lancet* 1988;**2**:1235–8.
5. **Shastry BS.** Genetic susceptibility to advanced retinopathy of prematurity (ROP). *J Biomed Sci* 2010;**17**:69.

Simultaneous amniotic membrane transplantation in emergency penetrating keratoplasty: a therapeutic option for severe corneal ulcerations and melting disorders

In cases of severe corneal melting, immediate penetrating keratoplasty (PK) can be required but is accompanied by a high prevalence of complications due to ongoing inflammatory stimuli and wound-healing disorders. In these situations, the properties of amniotic membrane (AM) including promotion of epithelial healing as well as antiangiogenic, anti-infectious, antiscarring and immunemodulatory effects can be beneficial. In the context of PK and AM transplantation (AMT) different surgical

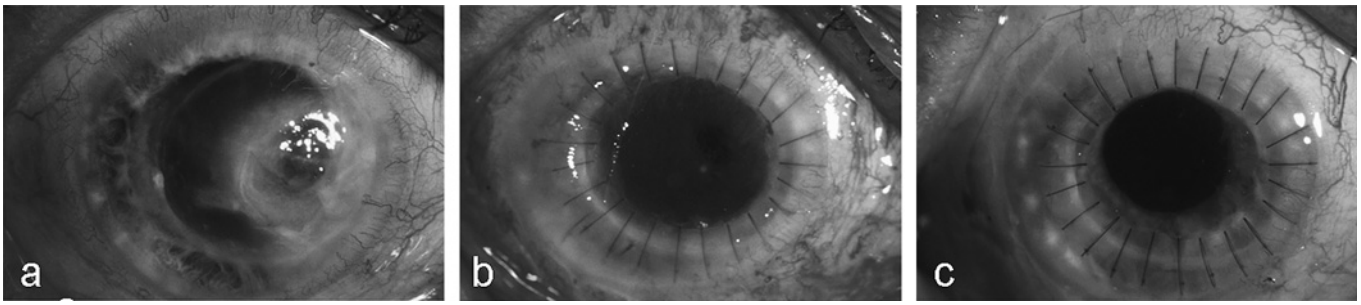

Figure 1 (A) Deep herpetic corneal ulcer with predescemetal ulceration after ipsilateral eccentric autologous rotational penetrating keratoplasty (PK), cataracta provecta. (B) First day after eccentric elliptical excimer laser PK (7.0×8.0/7.1×8.1 mm) with simultaneous extracapsular cataract extraction, posterior chamber intraocular lens implantation and 14.0 mm amniotic membrane patch. (C) Clear graft with complete epithelial closure 4 weeks after PK and 2 weeks after spontaneous detachment of the amniotic membrane patch.

approaches are possible: (1) AMT prior to PK; (2) PK with simultaneously performed AM patch, as described in this study; and (3) AMT after PK. Potential advantages of a simultaneous AMT with PK may include the following. First, epitheliotrophic effects of the AM promote wound healing and epithelialisation of the graft and therefore allow early topical steroid application.[1] Second, immune-modulatory effects of the AM on the ocular surface in the early phase after PK may reduce the risk of immunological graft rejection. AM provides a barrier between immune-competent cells in the tear film and the corneal graft, and may attract and trap inflammatory cells.[2] AM itself seems to be an immune-privileged tissue, and this property might be transfered to the grafted corneal tissue.[3 4] Third, prevention of early neovascularisation of the corneal graft by the antiangiogenic effect of AM not only sustains graft clarity, but also reduces the risk of immune rejection.[5 6]

The purpose of this study was to evaluate the combination of emergency PK with simultaneous AMT in severe corneal melting disorders to analyse the impact on the short and intermediate-term postoperative performance of the graft in terms of epithelial wound healing and graft survival in comparison with PK without AMT.

We performed a retrospective, non-randomised, single-centre observational case series. Clinical files from 53 patients with corneal melting disorders related to different infectious and non-infectious diseases who underwent emergency PK because of corneal perforation or predescemetal ulceration were analysed. PK was performed either with simultaneous AMT in 20 patients (group 1) or without AMT in 33 patients (group 2); the median age at the time of PK was 73/63 years. We used cryopreserved AMs exclusively. The follow-up time was 7.8/9.5 months on average. The main outcome measures included postoperative rate of persistent epithelial defects, graft clarity and subsequent surgical procedures.

In group 1, the AM was lost after 8.6±3 days on average. After this time, the epithelium was closed in 85% of the eyes. Eyes of group 1 showed less persistent postoperative epithelial defects: in 90% of eyes in group 1 versus 61% of eyes in group 2, the corneal epithelium was closed within 4 weeks ($p=0.02$; χ^2 test; figure 1). Only 20% of eyes in group 1 developed new corneal epithelial defects or corneal ulcers versus 42% in group 2, but this effect was statistically not significant (NS). Thirty per cent in group 1 and 46% in group 2 showed suture loosening; approximately one-third of patients in both groups (35% in group 1 vs 36% in group 2) required subsequent surgical procedures during the follow-up period. At the end of follow-up, most of the grafts (80% in group 1, 70% in group 2, NS) were clear without scarring or corneal oedema.

CONCLUSION

Simultaneous AMT as a patch can be beneficial in eyes with severe corneal melting disorders requiring immediate PK by promoting postoperative wound healing and by subsequently increasing the prognosis of the corneal graft. This technique offers an alternative strategy in advanced cases of corneal melting.

Tina Dietrich,[1,2] Renate Sauer,[2] Carmen Hofmann-Rummelt,[2] Achim Langenbucher,[3] Berthold Seitz[3]

[1]Department of Ophthalmology, University Medical Center Regensburg, Regensburg, Germany; [2]Department of Ophthalmology, Friedrich-Alexander-University Erlangen-Nürnberg, Erlangen, Germany; [3]Department of Ophthalmology, Saarland University Hospital, Homburg/Saar, Germany

Correspondence to Dr Tina Dietrich, Department of Ophthalmology, University Medical Center Regensburg, Franz-Josef-Strauss-Allee 11, Regensburg 93053, Germany; tinadie@gmx.net

Competing interests None.

Provenance and peer review Not commissioned; externally peer reviewed.

Accepted 7 November 2010
Published Online First 13 December 2010

Br J Ophthalmol 2011;**95**:1034–1035.
doi:10.1136/bjo.2010.189969

REFERENCES

1. **Kim JS,** Kim JC, Na BK, *et al*. Amniotic membrane patching promotes healing and inhibits proteinase activity on wound healing following acute alkali burn. *Exp Eye Res* 2000;**70**:329–37.
2. **Sridhar MS,** Bansal AK, Sangwan VS, *et al*. Amniotic membrane transplantation in acute chemical and thermal injury. *Am J Ophthalmol* 2000;**130**:134–7.
3. **Noda Y,** Kaji Y, Hori J, *et al*. Amniotic membrane confers immune privilege on corneal allografts when placed at a non-privileged site. *Invest Ophthalmol Vis Sci* 2001;**42**:S473.
4. **Kubo M,** Sonoda Y, Muramatsu R, *et al*. Immunogenicity of human amniotic membrane in experimental xenotransplantation. *Invest Ophthalmol Vis Sci* 2001;**42**:1539–46.
5. **Kim JC,** Tseng SCG. The effects of inhibition of corneal neovascularization after human amniotic membrane transplantation in severely damaged rabbit corneas. *Korean J Ophthalmol* 1995;**9**:32–46.
6. **Hao Y,** Ma DH, Hwang DG, *et al*. Identification of antiangiogenic and antiinflammatory proteins in human amniotic membrane. *Cornea* 2000;**19**:348–52.

Simultaneous amniotic membrane transplantation in emergency penetrating keratoplasty: a therapeutic option for severe corneal ulcerations and melting disorders

Tina Dietrich, Renate Sauer, Carmen Hofmann-Rummelt, Achim Langenbucher and Berthold Seitz

Br J Ophthalmol 2011 95: 1034-1035 originally published online December 13, 2010
doi: 10.1136/bjo.2010.189969

Notes