

TGF- $\beta$ , which are known to induce expression of  $\alpha E\beta 7$  on IELs.<sup>9</sup> This may be another reason why IELs are present throughout all the layers of the dysplastic epithelium but only along the basal cells of normal conjunctival epithelium.

We did not notice any definite relationship between the degree of dysplasia and E-cadherin expression. These findings contrast to observations made with cervical intraepithelial neoplasia where reduced E-cadherin expression related to an increasing loss of cell differentiation.<sup>10</sup> The observations made in this study with regard to E-cadherin suggest that the distribution of IELs in normal conjunctiva and CIN cannot be explained by the distribution of E-cadherin alone.

### Acknowledgements

Supported by grants from the Royal College of Surgeons of Edinburgh and the Royal Air Force Medical Branch.

### References

- 1 Dua HS, Gomes JAP, Jindal VK, Appa SN, Schwarting R, Eagle RC Jr, Laibson PR. Mucosa specific lymphocytes in the human conjunctiva, corneoscleral limbus and lacrimal gland. *Curr Eyr Res* 1994; **13**: 87–93.
- 2 Dua HS, Donoso LA, Laibson PR. Conjunctival instillation of retinal antigens induces tolerance. Does it invoke mucosal tolerance mediated via conjunctival associated lymphoid tissue (CALT)? *Ocular Immunol Inflamm* 1994; **2**: 29–36.
- 3 Franklin RM, Remus LE. Conjunctival-associated lymphoid tissue: evidence for a role in the secretory immune system. *Invest Ophthalmol Vis Sci* 1984; **25**: 181–187.
- 4 Cepek KL, Shaw SK, Parker CM. Adhesion between epithelial cells and T lymphocytes mediated by E-cadherin and the  $\alpha E\beta 7$  integrin. *Nature* 1994; **372**: 190–193.
- 5 Duband JL, Dufour S, Hatta K, Takeichi M, Edelman GM, Thiery JP. Adhesion molecules during somatogenesis in the avian embryo. *J Cell Biol* 1987; **104**: 1361–1374.
- 6 Takeichi M. Cadherins: a molecular family important in selective adhesion. *Annu Rev Biochem* 1990; **59**: 237–252.
- 7 Dua HS, Gomes JAP, Donoso LA, Laibson PR. The ocular surface as part of the mucosal immune system: conjunctival mucosa-specific lymphocytes in ocular surface pathology. *Eye* 1995; **9**: 261–267.
- 8 Scott RAH, Lauweryns B, Snead DMJ, Haynes RJ, Mahida Y, Dua HS. E-cadherin distribution and epithelial basement membrane characteristics of the normal human conjunctiva and cornea. *Eye* 1997; **11**: 607–612.
- 9 Austrup F, Rebstock S, Kilshaw PJ, Hamann A. Transforming growth factor  $\beta_1$ -induced expression of the mucosa-related integrin  $\alpha E$  on lymphocytes is not associated with mucosa-specific homing. *Eur J Immunol* 1995; **25**: 1487–1491.
- 10 Vessey CJ, Wilding J, Folarin N *et al*. Altered expression and function of E-cadherin in cervical intraepithelial neoplasia and invasive cell carcinoma. *J Pathol* 1995; **176**: 151–159.

RAH Scott<sup>1</sup>, HS Dua<sup>1</sup>, A Joseph<sup>1</sup>, R Haynes<sup>1</sup>, D Snead<sup>2</sup> and NM Hand<sup>2</sup>

<sup>1</sup>Department of Ophthalmology  
Queen's Medical Centre  
Nottingham, UK

<sup>2</sup>Department of Pathology  
Queen's Medical Centre  
Nottingham, UK

Correspondence: HS Dua  
Tel: +44 (0)115 9249924 Ext. 42530  
Fax: +44 (0)115 9709963  
E-mail: Harminder.Dua@nottingham.ac.uk

Sir,

**Orbital cellulitis following sub-Tenon's anaesthesia**  
*Eye* (2002) **16**, 200–201. DOI: 10.1038/sj/EYE/6700055

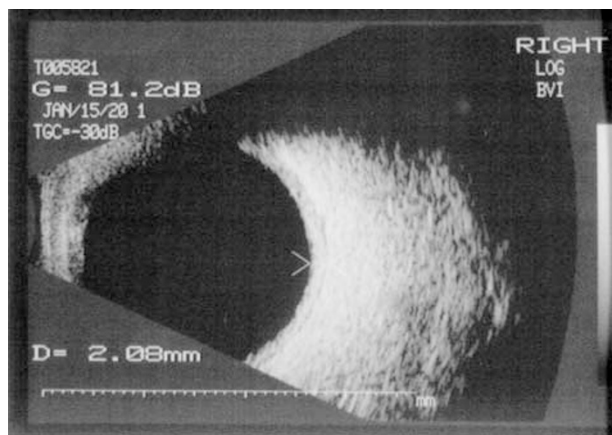
The injection of local anaesthetic agents into the episcleral, or sub-Tenon's, space is widely used for cataract surgery. Since its introduction 9 years ago, no serious adverse events have been reported.<sup>1,2</sup> We have recently encountered a case of orbital cellulitis following sub-Tenon's anaesthesia and phacoemulsification with lens implantation. To our knowledge, this is the first report of an infectious complication of sub-Tenon's anaesthesia.

A 63-year-old female patient underwent phacoemulsification with posterior chamber lens implant under sub-Tenon's local anaesthesia. Preoperatively, Benoxinate drops were instilled, and a single injection of 2 ml Lignocaine 2%, 2 ml Bupivacaine 0.75% and 500 IU Hyaluronidase was administered into the inferonasal sub-Tenon's space. The eye was then prepared with an aqueous solution of povidone-iodine 10% (Betadine<sup>R</sup>), and a routine phacoemulsification procedure was performed. At the end of the operation, a subconjunctival injection of Gentamycin 20 mg and Betamethasone 2 mg was given.

On the first postoperative day, the patient complained of ocular pain. There were no unusual findings except moderate postoperative anterior uveitis. The patient was commenced on G Maxitrol<sup>R</sup>



**Figure 1** Mild chemosis, periorbital erythema and lid oedema right side.



**Figure 2** Posterior scleral thickening on B-ultrasound scan.

(Dexamethasone 0.1% with Neomycin and Polymyxin B) six times a day. One day later visual acuity was 6/4 unaided, but the pain persisted. There was non-tender swelling of the eyelids and infraorbital soft tissues, chemosis and conjunctival injection, and moderate anterior uveitis. Intraocular pressure and fundoscopy were normal. Intolerance to any of the drugs used before, during, and after surgery was unlikely, as the patient had undergone contralateral phacoemulsification following the same regime 2 months earlier. Topical steroids and antibiotics were increased in frequency, but lid swelling and chemosis worsened slightly over the following days (Figure 1). In addition, the patient developed pain on eye movements, mild limitation in all directions of gaze, and mild proptosis (1 mm) of the affected eye. Four days after surgery, a clinical diagnosis of orbital cellulitis, with a differential diagnosis of surgically induced scleritis was made. A CT scan and ENT consultation excluded sinusitis. Ultrasound B scanning showed scleral thickening (Figure 2).

Because of previous anaphylactic reactions to penicillin, the patient was treated with intravenous Ciprofloxacin 200 mg twice daily, and the swelling completely resolved over the following 3 days, supporting the diagnosis of an infectious aetiology.

There are two possible explanations for the development of orbital cellulitis in this patient: either this was a coincidence, although no other risk factors for orbital infection were identified, or bacteria from the ocular surface or skin flora entered the episcleral space during or after the sub-Tenon's injection of local anaesthetic. Orbital cellulitis has been reported following cataract surgery with peribulbar<sup>3</sup> and retrobulbar anaesthesia.<sup>4</sup> When the now widely used technique for sub-Tenon's anaesthesia was first described, the possibility of infections was discussed, but considered a 'theoretical risk'.<sup>1</sup> So far, no cases of orbital cellulitis have been reported. A simple way of reducing the risk of bacteria entering the episcleral space consists in administering topical povidone-iodine (Betadine<sup>®</sup>) solution after instilling topical anaesthetic drops and before opening the conjunctiva.<sup>2</sup> Topical povidone-iodine decreases the number of bacterial colonies on the conjunctiva by 91%.<sup>5</sup> We recommend a change in the current practice of sub-Tenon's anaesthesia by ensuring that topical povidone-iodine is applied before the episcleral space is opened.

## References

- 1 Stevens J. A new local anaesthesia technique for cataract extraction by one quadrant sub-Tenon's infiltration. *Br J Ophthalmol* 1992; **76**: 670–674.
- 2 Guise P. Single quadrant sub-Tenon's block. Evaluation of a new local anaesthetic technique for eye surgery. *Anaesth Intensive Care* 1996; **24**: 241–244.
- 3 Hofbauer J, Gordon L *et al*. Acute orbital cellulitis after peribulbar injection. *Am J Ophthalmol* 1994; **118**: 391–392.
- 4 Kimbrough B, Young A *et al*. Orbital cellulitis and cavernous sinus thrombosis after cataract extraction and lens implantation. *Ann Ophthalmol* 1992; **24**: 313–317.
- 5 Apt L, Isenberg S *et al*. Chemical preparation of the eye in ophthalmic surgery. III. Effect of povidone-iodine on the conjunctiva. *Arch Ophthalmol* 1984; **102**: 728.

AH Dahlmann<sup>1,2</sup>, S Appaswamy<sup>1</sup> and MP Headon<sup>1</sup>

<sup>1</sup>Wolverhampton Eye Infirmary, Wolverhampton, UK

<sup>2</sup>Birmingham and Midland Eye Centre, City Hospital NHS Trust, Birmingham, UK

Correspondence: AH Dahlmann  
E-mail: adahlmann@hotmail.com