Comparative study of intraoperative mitomycin C and β irradiation in pterygium surgery

EDITOR,—We read with interest the study that compared intraoperative mitomycin C with β irradiation in primary pterygium surgery. The authors rightly commented that long-term complications of β irradiation, such as scleral necrosis, may arise more than 10 years after the irradiation. Longer follow-up visits are necessary to reveal such complications.

We performed primary pterygium excision with intraoperative β irradiation in one eye of six patients between 1988 and 1990. A dose of 1000 rad of β irradiation was applied to the scleral bed intraoperatively and 1 week later. The patients were recently reviewed in our clinic for recurrence and complications. We also performed ultrasound biomicroscopic examination (UBM) for both eyes in each patient, looking for corneal and scleral thinning. Corneal thickness was arbitrarily measured 0.5 mm anterior to the scleral spur at the 12, 3, 6, and 9 o'clock positions of each eye, while the scleral thickness was measured 2 mm posterior to the scleral spur at the same positions.

Mean follow up was 138.0 months. Mean age at time of surgery was 37.5 years (range 32–45 years). All six eyes were right eyes with nasal pterygia in male patients. No recurrence was found, using the same definition. There was neither significant deterioration in visual acuity nor increase in intraocular pressure in any eye. There were no signs of inflammation, haemorrhage, or significant differences in the scleral and corneal thickness between the treated nasal position of the operated eye (mean scleral 0.617 (SD 0.112) mm; mean corneal 0.656 (0.076) mm) and the control nasal position of the fellow eye (mean scleral 0.611 (0.030) mm; mean corneal 0.645 (0.044) mm).

Furthermore, there were no significant differences in the mean scleral and corneal thickness between the operated eye (scleral 0.590 (0.077) mm; corneal 0.635 (0.067) mm) and the fellow eye (scleral 0.590 (0.059) mm; corneal 0.624 (0.054) mm). The mean scleral and corneal thicknesses were calculated by averaging the scleral or corneal thickness at the four measured positions in each eye.

It appears that β irradiation is safe, even in the long term. We believe these additional data could supplement the findings by Amano et al.

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Visual field defects after vitrectomy with fluid-air exchange

EDITOR,—The paper by Cullinan and Cleare1 presents an excellent prospective study of peripheral visual field loss in patients undergoing macular hole surgery. The authors compared vitrectomy with complete posterior cortical vitreous peeling to limited vitrectomy with removal of cortical vitreous off the macula, but not off the optic nerve head or the periphereal retina. The authors showed a statistically significant decrease in peripheral visual field defects with the limited vitrectomy technique (0%, 0/22 patients) compared with the complete vitrectomy group (23%, 18/82 patients).

The authors postulated that this difference is due to the avoidance of traction on the optic nerve head and the posterior hyaloid, thus limiting damage to the peripapillary nerve fibre layer, which they believed would be most severe nasally because of former vitreopapillary attachments nasally. This explanation does not take into account the variable position of visual field defects found in other studies based on the position of the infusion cannula. If the infusion cannula is superonasally located, visual field defects occur inferonasally and not inferotemporally.2

The inferotemporal location of field defects noted in most studies is based on the conventional placement of the infusion cannula inferotemporally in three port vitrectomy, which results in infused air directed towards the superonasal mid-peripheral retina.

Animal studies show damage to the inner limiting membrane, nerve fibre layer, and ganglion cells of the retina in the path of the pressurised air flow from the infusion cannula.3 This inner retinal damage can be caused by desiccation of the retina or by direct mechanical damage by the pressurised air flow.4 However, humidification of air did not prevent inner retinal damage in animal models,5 and the sharp demarcation between damaged and undamaged retina on electron microscopic studies supports the theory of direct mechanical damage to the inner retina.6 In addition, decreasing the infusion air pressure also decreased the risk of inner retinal damage.7

I think this work by Cullinan and Cleary shows that leaving the peripheral vitreous in place is another way of protecting the peripheral retina from mechanical damage by pressurised air flow. However, I would be concerned about the potential risk of increased postoperative retinal detachment, which was 10% in the limited vitrectomy group and 4% in the complete vitrectomy group, but was not statistically significant because of small sample size. However, this increased risk of retinal detachment was also a concern in a previous study utilising similar surgical techniques (Brian Conway, Western Association for Vitreoretinal Education Meeting, Maui, Hawaii, 1996). Because of the studies on retinal damage by fluid-air exchange in vitro, it is important to know the usual infusion air pressure utilised during fluid-air exchange by the authors, and if the infusion air pressure varied at any point during the period of the study or between the two vitrectomy groups. Currently, in order to minimise retinal damage induced by pressurised air infusion during vitrectomy for any surgical indication requiring fluid-air exchange, I would recommend simply using a low infusion air pressure.

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Sclerectomy complications following pars plana vitrectomy

EDITOR,—The work of West and Greggor again points out the importance of sclerectomy complications following pars plana vitrectomy.2 They demonstrate that, even in the hands of a skilful and experienced surgeon, vitreous haemorrhage after vitrectomy for diabetic retinopathy is common and requires vitreous cavity washout (VCWO) in 12% of cases. In their series, over half of the eyes had detectable fibrovascular ingrowth (FVI) as the cause of the haemorrhage.

Interestingly, in this case series of 159 eyes, no occurrences of anterior hyaloidal fibrovascular proliferation (AHPF) were noted. Definition of the relationship between these two entities has been controversial, to say the least. Part of the controversy is due to a misunderstanding of the nature and pathogenesis of FVI. As McLvod points out in his editorial, FVI is a term that has been used inadvisedly, suggesting that epithelial tissue grows into the eye through the sclerectomy incision.2 While epithelial tissue, scleral fibroblasts, and ciliary epithelium all contribute, the majority of the fibroproliferative healing of a sclerectomy originates from the uvea of the ciliary body.

In normal wound healing, early fibrovascular proliferation in the incision is followed by its invasion and contraction, with the result being the small scar seen at the internal aspect of a healed sclerectomy.3 Inevitably, because of the proximity of the vitreous base and anterior hyaloid, vitreous strands are adherent to the wound and fibrovascular tissue extends a short way into the vitreous body. This tissue may contain blood vessels, even with normal healing. From this perspective, all sclerectomy wounds heal with fibrovascular ingrowth. That is, in growth of tissue from the eye wall extends into the vitreous cavity. Fortunately, only in unusual circumstances does this process become exaggerated and result in what clinicians have termed FVI with its concomitant intraocular mischief.4

McLeod pointed out that ischaemia is an important factor in inducing FVI and that it is seen mainly following vitrectomy for ischaemic retinopathies. I agree that this is the case if one includes anterior proliferative vitreoretinopathy (APVR) in this group. Patients with APVR who have had previous vitrectomy frequently have an excessive amount of fibrovascular scarring from their sclerotomies, which significantly affects the pathological anatomy of the basal vitreous and its environs. These patients, however, often have had extensive scleral buckling and cryoexpy, processes which undoubtedly induce some anterior ischaemia in themselves.  

In the series of West and Gregor, no patient was found to have a retinal detachment ultrasonographically or at the time of VCWO. In the original description of AHFP, most of the patients had retinal detachments that had required scleral buckling. Since retinal detachment and scleral buckling exacerbate anterior ischaemia, it is likely that AHFP, which is fibrovascular proliferation into the vitreous base from the retina and ciliary body, is induced by an ischaemic drive similar to that of FVI. The two entities exist on a continuum. When there is a surgical injury such as a sclerotomy, with disruption of tissue and inoculation of blood into the surrounding vitreous, excessive proliferation may occur with less induction than that which causes AHFP.

Personally, although I have observed cases of AHFP without having previous vitrectomy, I have never seen a case of post-vitrectomy AHFP without some concurrent FVI.

Finally, I'd like to make two other points. The first is that West and Gregor used clinical criteria to determine whether or not FVI existed and caused the recurrent vitreous haemorrhage. I have observed vitreous haemorrhage in a necropsy eye from what grossly appeared to be a normally healed sclerotomy wound. Microscopically, that white scar contained numerous capillaries that were the source of the haemorrhage. Therefore, it may be that some of their non-FVI patients might actually have had vitreous haemorrhage from a source other than FVI. Furthermore, FVI can evolve with time, becoming less vascular in its appearance. So, the frequency of FVI may be even higher than reported.

Lastly, I agree that episcleral sentinel vessels, externally entering the wound site, sometimes, but not always, indicate a possible FVI. These vessels are the result of a high degree of metabolic activity during the healing of sclerotomy wounds and may persist even though wound fibroplasia becomes involu-
tional and clinically unimportant. Similar vessels are seen microscopically in the ciliary body. When present, sentinel vessels should raise our suspicions of FVI, but they do not rule it in, nor does their absence rule it out.

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BOOK REVIEWS


If only one had time in clinic to become fully dark adapted, instead of listening and talking to patients, all these illustrated wonders of vitreous architecture would yield to routine examination. As it is, much of what we perceive under unfavourable circumstances is, in fact, inferred although vitreous surgery provides regular opportunities for confirmation of the assumed pathology. This atlas of vitreous biomicroscopy provides a wealth of photographic documentation, especially as they affect transparent gel, and is supplemented by images of scanning laser ophthalmoscopy. Much of the material appears to have been published previously over many years, 1950s as a collaboration with Professor Otto Lowenstein in the Columbia Presbyterian Medical Center in New York. Following Otto Lowenstein’s death in 1965, Irene Loewenfeld continued writing, eventually publishing through Wayne State University Press in 1993.

This atlas is more likely to figure on the departmental coffee table than in the clinician’s own collection.

DAVID McLEOD


This text represents a lifetime body of work for Professor Irene Loewenfeld. Perhaps more accurately, it represents a greater part of two lifetimes’ work; having been commenced in the 1930s as a collaboration with Professor Otto Lowenstein at the Columbia Presbyterian Medical Center in New York. Following Otto Lowenstein’s death in 1965, Irene Loewenfeld continued writing, eventually publishing through Wayne State University Press in 1993.

Presented in two volumes, the first includes the text and runs to 1645 pages, divided into five sections, while the second volume supplies a separate bibliography, thereby making the text (marginally) more transportable. The first volume is a comprehensive review of the anatomy and physiology of the pupil with its associated neurology and the diseases which play a part in compromising pupil function.

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www.bjophthalmol.com
As a physiologist, Loewenfeld has written a book with a thorough foundation in basic science, with comprehensive discussion covering pupillary function across the animal kingdom, not simply restricting the project to humans.

Having been inscribed over a near 40 year period, the text has a strong historical perspective, presenting research work in chronological order over a period during which understanding of pupil function has evolved. In striving to be comprehensive Irene Loewenfeld has included papers which may subsequently have been reinterpreted or simply proved incorrect. She has willingly injected a subjective flavour to the book when giving her own interpretation of the work which serves to mark out the text readable. This is also true for the bibliography where she includes “reference manager” style comments about the value of many references.

By its nature, such a reference tome can be difficult to “dip into”. To assist those who may want rapid access to a subject each section is presented on three levels: a “thumbnail” summary for readers in a hurry, elaboration with historical perspectives for those with more time; plus an additional level with material delving into the background for readers keen to look to the source of understanding.

One section where clinical work may be used is the chapter on glaucoma. Here the text focuses on historical record of the pharmacological influence of drugs upon pupil function and their role in therapeutics. Recent clinical work on pupillometry in glaucoma, however, has not been presented.

However, with this one exception, this text represents the definitive work upon the pupil which all ophthalmologists will find valuable, either as an introduction to the field or as the last word on the subject.

J P DIAMOND

Ocular Immunology in Health and Disease. By Steven B Koevray. £32; Pp 224. Oxford: Butterworth-Heinemann, 1999. ISBN 0750699900. A pocket sized book with a very large remit is hard to achieve. Presently, there are several books on the market covering this increasingly popular topic, all with different emphases and depth of given information. Over the past 20 years there have been considerable developments in general immunobiology as well as immune responses and immune regulation of the eye and its adnexa. This book is a good and brave attempt to introduce ophthalmologists to immune mechanisms during health and disease. It begins with an overview of innate and acquired immunity and is a standard introduction to basic fundamentals in immunology. However, as a result of brevity, the book fails to do justice to the mechanisms of T cell activation, expansion and recruitment, interaction of cytokines and chemokines, and the role of tolerance and regulatory cells—all massive topics in their own right. Nevertheless the book maintains a steady pace and is easy to read and digest. Although more detail of immune mechanisms follows in subsequent chapters, an overview of T cell regulation and apoptosis, for example, would have been more appropriate at the beginning. All subsequent chapters are good and succinct, covering ocular immune privilege and tissue immunology, autoimmunity, allergy, allograft rejection, and tumour immunology. I was surprised that there was no dedicated section on infection, but there again the book does succeed in being small, readable, and well referenced.

ANDREW DICK

NOTICES

Vision 2020: cataract outcomes

The latest issue of Community Eye Health (35) discusses cataract surgery outcome. For further information please contact Community Eye Health, International Centre for Eye Health, Institute of Ophthalmology, 11-43 Bath Street, London EC1V 9EL. Tel: (04) 0 27608 6909/6910/6923; fax: (04) 0 7250 3207; email: eyeresource@ucl.ac.uk. Annual subscription £25. Free to workers in developing countries.

Second Sight

Second Sight, a UK based charity whose aims are to eliminate the backlog of cataract blind in India by the year 2020 and to establish strong links between Indian and British ophthalmologists, will be sending volunteer surgeons to India early in 2001. Details can be found at the charity website www.secondsight.org.uk or by contacting Dr Lucy Mathen (email: lucymathen@yahoo.com).

Residents’ Foreign Exchange Programme

Any resident interested in spending a period of up to one month in departments of ophthalmology in the Netherlands, Finland, Ireland, Germany, Denmark, France, Austria, or Portugal should apply to: Mr Robert Acheson, European Board of Ophthalmology, Institute of Ophthalmology, University College Dublin, 60 Eccles Street, Dublin 7, Ireland.

American Institute of Ultrasound in Medicine—Millennium Ultrasound Course Series

A course entitled “Obstetrical Ultrasound” will be held in Marina del Rey, CA, on 12–14 January 2001. Further details: Stacey Bessling, Public Relations Coordinator, AIUM, 14750 Sweitzer Lane, Suite 100, Laurel, MD 20707-5906, USA (tel: 301-498-4100; email: bsessling@aium.org).

Optometry Study Tour to Kenya, Tanzania, and Zanzibar

The tour offers a wonderful opportunity to optometrists and ophthalmologists to examine eye care in East Africa. It will take place from 28 January to 10 February 2001. Further details: Master Travel, Croxton Mews, 28 Croxton Road, London SE24 9BY (tel: 0208 678 5320; fax: 0208 674 2712; email: tours@mastertravel.co.uk).

First International Congress on Non-Penetrating Glaucoma Surgery—Lausanne, Switzerland

The First International Congress on Non-Penetrating Glaucoma Surgery will take place in Lausanne, Switzerland on 1–2 February 2001. Further details: Dr Tarek Shaarawy, Organiser, American University of Lausanne, Hospital Ophthalmique Jules Gounin, Avenue de France 15, 1004 Lausanne, Switzerland (tel: 41 21 626 88 88; website: www.glaucoma-lausanne.org).

Call for papers—6th European Forum on Quality Improvement in Health Care, 29–31 March 2001, Bologna, Italy

Further details: BMABMJ Conference Unit, BMA House, Tavistock Square, London WC1H 9JR. Tel: (+44) 0 20 7383 6409; fax: (+44) 0 20 7383 6869; email: quality@bma.org.uk; website: www.quality.bmjipg.com.

Optometry 01

Optometry 01 will take place on 21–23 April 2001 with more than 100 events—lectures and workshops—at the Atrium Gallery, NEC, Birmingham, UK. Further details: tel: 020 261 9661; email: info@optometry01.co.uk; website: www.optometry01.co.uk.

14th Annual Meeting of German Ophthalmic Surgeons

The 14th Annual Meeting of German Ophthalmic Surgeons will be held in the Meisterinshalle, Nurenberg, Germany on 17–20 May 2001. Further details: MCN Medizinische Congress-organisation Nurenberg AG, Zerrabelshofstrasse 29, 90478 Nurenberg, Germany (tel: ++49-911-3931621; fax: ++49-911-3931620; email: doerflinger@mcn-nuernberg.de).

European Association for the Study of Diabetic Eye Complications (EASDEC)

The next meeting of the European Association for the Study of Diabetic Eye Complications (EASDEC) will be held in Paris, France, on 19–20 May 2001. Further details: Colloquium, 12 Rue de la Croix Faubin, 75 557 Paris Cedex 11, France (tel: +33-1-44 64 15 15; fax +33-1-44 64 15 10; email: s.mundler@colloquiun.fr).

American Institute of Ultrasound in Medicine—Millennium Ultrasound Course Series

A course entitled “Obstetrical and Gynecological Ultrasound” will be held in New York, NY, on 24–26 August 2001. Further details: Stacey Bessling, Public Relations Coordinator, AIUM, 14750 Sweitzer Lane, Suite 100, Laurel, MD 20707-5906, USA (tel: 301-498-4100; email: bsessling@aium.org).

4th International Conference on the Adjuvant Therapy of Malignant Melanoma

The 4th International Conference on the adjuvant therapy of malignant melanoma will be held at The Royal College of Physicians, London on 15–16 March 2002. Further details: Conference Secretariat, CCI Ltd, 2 Palmerston Court, Palmerton Way, London SW8 4AJ, UK (tel: +44 (0) 20 7720 0600; fax: +44 (0) 20 7720 7177; email: melanoma@confcom.co.uk; website: www.confcom.co.uk/Melanoma).