CORRESPONDENCE

Measurement of optic disc size

EDITOR,—Garway-Heath et al described a “keratometry and ametropia” method to correct measurements of optic disc size for ocular magnification.1 The new method implies that the refraction, the power of the lens, and the power of the cornea are all independent (uncorrelated) variables. Table 2 on page 644 (Summary of ocular biometry) clearly demonstrates that this is not always the case; in fact, the variance of the lens power was almost the same as the variance of the total power of the eye. The explanation has to be that the power of the lenses and cornea were negatively correlated. Measurements of the corneal curvature were therefore of little use to their purpose. Garway-Heath et al noted that the improvement over the use of uncorrected measurements was moderate, but they failed to draw the obvious conclusion: if correction is necessary, and correction based on spectacle refraction is unsatisfactory, or if corneal power and axial length have to be balanced. The relation between corneal power and lens power is modified by axial length.

Both corneal power and lens power are negatively correlated with axial length (r = −0.17, p <0.000 and r = −0.36, p <0.000 respectively), so that both corneal power and lens power decrease with increasing axial length.

The term (w/n).F 1.F L is highly positively correlated with the power of the lens (r = 0.73, p <0.000) and less so with the power of the cornea (r = 0.32, p <0.000). Since this term is subtracted from the other two, it will tend to decrease the overall variance. This partly explains why the variance of the refractive power of the eye is lower than the sum of the variance of lenses and corneal powers.

In order to maintain emmetropia in an eye, variables such as corneal power, lens power, and axial length have to be balanced. The correlation between corneal power and lens power is modified by axial length.

Table 1 summarises the means and standard deviations for each variable in the pooled data.

Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refractive power of cornea (D)</td>
<td>43.00</td>
<td>1.41</td>
</tr>
<tr>
<td>Equivalent power of lens (D)</td>
<td>23.33</td>
<td>2.94</td>
</tr>
<tr>
<td>Equivalent power of the eye (D)</td>
<td>4.49</td>
<td>0.51</td>
</tr>
<tr>
<td>Refractive power of the eye (D)</td>
<td>61.84</td>
<td>2.87</td>
</tr>
</tbody>
</table>

The finding is consistent with previous three patient groups (209 eyes) confirms this (Fig 1, significance of regression p = 0.21) and the finding is consistent with previous reports.1 The power of the lenses and the power of the cornea are also unrelated to refractive error.

The refractive power of the eye depends on the refractive power of the cornea, the equivalent power of the crystalline lens, and the distance between the two (F e = F 1 + F L − [(w/n).F 1.F L], where F 1 = refractive power of the eye, F e = refractive power of the cornea, F L = equivalent power of the crystalline lens, and w/n is a function of the distance of the crystalline lens from the cornea).2 If two random variables are added to produce an outcome, then the variance of the outcome is the sum of the variance of those variables if they are independent (if there is a degree of positive correlation the variance is higher than the sum).3 Bengtsson points out that the variance of the lens power is almost the same as the variance of the total power of the eye, and concludes that the power of the lens and cornea must be negatively correlated. There are, however, three variables that contribute to the equivalent power of the eye, the third variable being the term [(w/n).F 1.F L]. Table 1 summarises the means and standard deviations for each variable in the pooled data.

Finally, Bengtsson states that we failed to draw the obvious conclusion that ocular magnification correction based on axial length is the only alternative—quite feasible in these days when ultrasound biometry is used to predict intracocular lens power for cataract surgery.

BO BENGTSSON
Department of Ophthalmology, Malmo University Hospital, S-205 02 Malmo, Sweden


Elevated serum levels of soluble ICAM-1 in uveitis patients predict underlying systemic disease

EDITOR,—Recent research has shown that cell adhesion molecules are integral to the homing and migration of leucocytes into areas of inflammation. Soluble forms of cell adhesion molecules can be detected in the sera after shedding from activated vascular endothelium.1 Increased levels of soluble ICAM-1 have been found in the sera of patients with a number of autoimmune and inflammatory disorders including uveitis.1,2 We hypothesised that circulating levels of cell adhesion molecules should be higher in patients with uveitis associated with an underlying systemic disease, where there are greater amounts of activated vascular endothelium. We therefore compared the sICAM-1 levels in the sera of patients with uveitis associated with an underlying systemic disease with uveitis patients with disease limited to the eye and to normal controls.

Sera were collected from 19 patients with active uveitis and from 15 age and sex matched controls and stored at −70°C. Recorded information included medical history, physical and ophthalmological examination, and diagnostic tests. Soluble ICAM-1 levels in the sera were measured at the same time using ELISA (Bender MedSystems, Vienna, Austria).

Patient characteristics including age, sex, and diagnosis are listed in Table 1. There was no statistically significant difference between patients with uveitis and controls. Ten of the 19 patients had uveitis without associated underlying systemic disease. Six of these patients had idiopathic retinal vasculitis and four had birdshot retinochoroidopathy. Nine of the 19 patients with uveitis had an underlying systemic disease. Six patients had Behçet’s disease and three patients had biopsy proved sarcoidosis. At the time sera were drawn, all uveitis patients had active ocular inflammation.

Correlation coefficient was calculated using the method of least squares.

Figure 1

Figure 2


Our data show that levels of sICAM-1 were higher in the sera of patients with uveitis than in normal controls. Importantly, sICAM-1 levels were significantly higher in sera of patients with uveitis associated with an underlying systemic disease. In contrast, Zaman et al reported that patients with accompanying systemic disease had similarly sICAM-1 levels to those with isolated ocular disease. Our study showed no significant difference in sICAM-1 levels in patients receiving or not receiving systemic anti-inflammatory medications. Droogan et al similarly reported that methylprednisolone did not affect sICAM-1 levels in patients with multiple sclerosis. Therefore, it is unclear whether sICAM-1 levels could be used to assess or predict therapeutic effect. In summary, our data suggest that elevated sICAM-1 levels in the sera of patients with uveitis may predict the presence of an underlying systemic disease and warrant a diagnostic evaluation in these patients.

Table 1 Patient characteristics

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>10</td>
</tr>
<tr>
<td>Age (years)</td>
<td>35.3 (2.5)</td>
</tr>
<tr>
<td>Mean (SE)</td>
<td>39.2 (2.5)</td>
</tr>
<tr>
<td>Range</td>
<td>20–56</td>
</tr>
<tr>
<td>Sex</td>
<td>6:4</td>
</tr>
</tbody>
</table>

Our study showed no significant difference in sICAM-1 levels in patients receiving or not receiving systemic anti-inflammatory medications. Droogan et al similarly reported that methylprednisolone did not affect sICAM-1 levels in patients with multiple sclerosis. Therefore, it is unclear whether sICAM-1 levels could be used to assess or predict therapeutic effect. In summary, our data suggest that elevated sICAM-1 levels in the sera of patients with uveitis may predict the presence of an underlying systemic disease and warrant a diagnostic evaluation in these patients.


Do patients with age related maculopathy and cataract benefit from cataract surgery?

Editor—We were interested to read Shuttleworth and colleagues’ recent paper on the benefit of cataract surgery on patients with age related macular degeneration (ARMD). The article suggested that the prognosis of patients with ARMD after cataract extraction was not as poor as had been previously thought and that more than two thirds of patients benefit from surgery and consider the procedure worthwhile.

Previous research has suggested that cataract surgery may increase the risk of ARM. Van de Schaft et al reported an increased prevalence of disciform macular degeneration in postmortem pseudophakic eyes with IOL implants. The Beaver Dam Eye Study indicated a statistically significant relation between cataract surgery and the incidence and progression of disciform ARM. Pollack et al reported a 19% increase in progression following surgery on the first eye of patients with moderate, bilateral ARM. In a further study they reported an even higher incidence of progression (24%) when the second eyes of patients with previous uneventful postoperative maculopatic course were operated on.

In 1997, we performed a pilot study to assess the feasibility of a major prospective study comparing the progression of ARM on patients undergoing cataract surgery, with age matched controls. A quality of life questionnaire was administered before and after surgery to a group of patients (n=23) diagnosed with ARM, and their case notes reviewed retrospectively for visual acuity, simple grading of ARM, and status of fellow eye. Thirteen patients had mild dry ARM, seven had moderate dry ARM, two had severe dry, and one had severe wet ARM at the time of surgery. Visual acuity (classified into four categories—less than 6/60; 6/60–6/90; 6/24 to 6/18; and 6/12 to 6/6) improved in 18 patients, remained the same in three, and deteriorated in two patients. The poor visual outcome of the five patients whose eye sight did not improve was directly attributable to their ARM and not to other ocular conditions. Both patients whose visual acuity declined had moderate, dry ARM.

When quality of life measures were considered, two areas showed significant change. Before surgery only 16% of patients reported that they were satisfied with their vision and 84% were dissatisfied. Following surgery 71% of patients were satisfied with their vision and only 29% were dissatisfied. Visual disability was assessed using the VF-14, a widely used questionnaire of patient functional impairment designed for use in cataract studies, and the mean score increased from 54% to 73%.

The rate of ARM reported in these studies, although widely different, is still higher than would be expected by the natural course of the disease over the same period. Some of the variation in the reported incidence and progression may be attributed to study design. Shuttleworth et al’s study was retrospective, with information gathered from case notes and a questionnaire, and included patients with all forms of ARM. Pollack et al’s study was prospective and had strict inclusion criteria—only patients with moderate ARM were selected. It is possible that the patients included in Pollack et al’s study were at a greater risk of progression, as all the patients had an intermediate form of the disease, which may still have been active. Surgery may provoke an inflammatory reaction or mechanical trauma that speeds up the degenerative process or triggers a more severe response.

These studies suggest that there is a specific group of patients who are at greatest risk of ARM progression following cataract surgery, and it is this group of patients that we...
must try to identify for better assessment, follow-up, and documentation of the disease.

At present, we are conducting a prospective case control study, funded by the Gift of Thomas Pocklington, that aims to determine the effects of cataract surgery on ARMD progression. The hope is that it will yield valuable information enabling clinicians to assess the quality of life improvement and risk progression of ARMD in our increasing elderly population.

**ANA MARIE AMBRECHT**
**CATHERINE FINDLAY**
**PETER ASPINALL**
**BHAI DHILLON**

Visual Impairment Research Group, Princess Alexandra Eye Pavilion, Chalmer Street, Edinburgh EH3 9HA

---

If you wish to order, or require further information regarding the titles reviewed here, please write or telephone the BMJ Bookshop, PO Box 295, London WX1H 9TE. Tel: 0171 383 6244. Fax: 0171 383 6662. Bookings are accepted post free in the UK and for British Forces Posted Overseas addresses. Overseas customers should add 15% for postage and packing. Payment can be made by cheque in sterling drawn on a UK bank, or by credit card (MasterCard, Visa, or American Express) stating card number, expiry data, and your full name. (The price and availability are occasionally subject to revision by the Publishers.)

---

**BOOK REVIEWS**

---


The first author of this interesting volume is renowned within the ophthalmological community for his unique approach to ophthalmology. He was a pioneer in the early days of intracapsular lens implantation with the development of the first lens, but more importantly he is widely known for his studies of the anatomy of the vitreous gel, particularly what he terms the “cisternal anatomy”. Most vitreoretinal surgeons will appreciate that the elusive gel structures indeed have particular anatomical and clinical significance that is important to the vitreoretinal surgeon and vitreoretinal surgeon. Ian Worst has added further to this knowledge. His work has been founded on the use of coloured dyes injected into the various compartments of the vitreous to identify their features. Some of the spaces have been named after him, such as the Worst premacular bursa.

This volume is a culmination of many years of work and contains a remarkable set of data which will not be repeated elsewhere. Vitreoretinal surgeons, indeed all clinicians interested in the ophthalmology and anatomy and, in particular, vitreous pathology should read this book. It is organised in a series of chapters detailing the cisternal anatomy, functional anatomy, and the transcystic anatomy of the vitreous. This is followed by an interesting chapter on the decompartamentalization concept in relation to cataract surgery which is written in the context of intracapsular and intracapsular cataract extraction. This particular chapter would have benefited from an evaluation of the compartments of the vitreous in relation to phacoemulsification techniques for cataract extraction since the special forces are placed on the vitreous structure during
Correspondence, Book reviews, Notices, Correction

255

(632) 927-2317 or (632) 925-3789; fax: (632) 729-6666; email: secretariat@pcos.org.ph)

zon City, Metro Manila, Philippines. (Tel: (632) 932-3333; email: secretariat@pcos.org.ph)

Primary Eye Care

The latest issue of the Community Eye Health (no 26) discusses the importance of primary eye care, particularly in the developing world. For further information please contact Community Eye Health, International Centre for Eye Health, Institute of Ophthalmology, 11–43 Bath Street, London EC1V 9EL. (Tel: (44) 171 608 6910; fax: (+44) 171 250 3207; email: eyesresource@ucl.ac.uk) Annual subscription £25. Free to workers in developing countries.

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, Secretary of the Foreign Exchange Committee, European Board of Ophthalmology, Institute of Ophthalmology, University College Dublin, 60 Eccles Street, Dublin 7, Ireland.

Office of Continuing Medical Education

The 21st Annual Wilmer Institute’s Current Concepts in Ophthalmology will be held on 4–9 February 1999 at the Hyatt Regency Cromer Beach Hotel, Dorado, Puerto Rico. Further details: Program Coordinator, Johns Hopkins Medical Institutions, Office of Continuing Medical Education, Turner 20/720 Rutland Avenue, Baltimore, MD 21205, USA. (Tel: (410) 935-2959; fax: (410) 614-8613; email: cmene@som.adm.jhu.edu)

XVII Asia-Pacific Academy of Ophthalmology Congress

The XVII Asia-Pacific Academy of Ophthalmology Congress will be held in Manila, Philippines on 7–12 March 1999. Its theme is “Ophthalmology in the Asia Pacific Region for the 21st century”, the main topics being Cataract, Infection and Inflammation, Glaucoma, and Vitreoretinal disease. Further details: Secretariat, Philippine College of Surgeons’ Bureau 3F, N.E. North Edsa, 1105 Quezon City, Metro Manila, Philippines. (Tel: (632) 927-2317 or (632) 925-3789; fax: (632) 924-6550; email: pao@pao.org.ph)

NOTICES

Ophthalmic diagnostic ultrasound

A 1 day intensive course in ophthalmic diagnostic ultrasound will be held on 12 March 1999 at Royal Victoria Hospital, Newcastle upon Tyne. Topics to be covered include A and B-scan examination techniques of the eye and orbit; principle of standardised echography; display of ultrasound images; measurement of vitreous which Dr Worst and his co-author Dr Los wish to draw to our attention. In this respect they have been outstandingly successful and more often than not they have been quite convincing.

JOHN V FORRESTER

12th Annual Meeting of German Ophthalmic Surgeons

The 12th annual meeting of German Ophthalmic Surgeons will be held on 10–13 June 1999 at the Meistersingerhalle, Nürnberg, Germany. Further details: MCN Medizinische Congress-Organisation Nürnberg GmbH, Walddienstrasse 6, D-90419 Nürnberg, Germany. (Tel: +49 911-3931621; fax: +49 911-3931620; email: doerflinger@mcn-juernberg.de)

XII Congress European Society of Ophthalmology

The XII Congress European Society of Ophthalmology will be held in Stockholm, Sweden on 27 June–1 July 1999. Further details: Congress (Sweden) AB, PO Box 5819, S-114 86 Stockholm, Sweden. (Tel: +46 8 459 66 00; fax: +46 8 661 92 25; email: sec@congresx.se; http://www.congresx.com/soc/)

4th Meeting of the European Neuro-Ophthalmology Society

The 4th meeting of the European Neuro-Ophthalmology Society will be held on 29 August–2 September 1999 in Jerusalem, Israel. Further details: Secretariat, 4th Meeting of the European Neuro-Ophthalmology Society, PO Box 5006, Tel Aviv 61500, Israel. (Tel: 972-3-514000; fax: 972-3-5175674/972-3-5140077; email: Eunos99@kenes.com)

Ophthalmological Clinic, University of Creteil

An international symposium on the macula will be held on 26–27 March 1999 at the Ophthalmological Clinic, University of Creteil. Further details: Professor G Soubrane, Chef de Service, Clinique Ophthalmologique Universitaire de Creteil, Centre Hospitalier Intercommunal, 40 Avenue de Verdun, 94010 Creteil, France. Fax: 01 45 17 52 27.

Leonard Klein Award 1999

The Leonard Klein Award 1999, valued at DM30 000, will be given for innovative, scientific work in the field of development and application of microsurgical instruments and microsurgical operating techniques. It can be conferred on an individual as well as a group of researchers. The work must be submitted in either English or German by 31 March 1999. Further details: Stifterverband für die Deutsche Wissenschaft eV, Herrn Peter Beck, Postfach 16 44 60, D-45224 Essen, Germany.

XVIII Tuebingen Detachment course: Retinal and Vitreous Surgery

The XVIII Tuebingen Detachment course: Retinal and Vitreous Surgery will be held 8–9 April 1999 at the lecture hall “Kupferbau” of the University, Geminiestrasse 8, 72076 Tuebingen, Germany. Further details: Congress-Secretariat (T), Professor I Kreissig, Augenheilkunde III, Schleichstrasse 12, D-72076 Tuebingen, Germany. (Fax: +49-7071-293746; email: ingrid.kreissig@uni-tuebingen.de)

1999 annual meeting

The 1999 annual meeting of the Association for Research in Vision and Ophthalmology will take place on 9–14 May 1999 in Fort Lauderdale Convention Center, Fort Lauderdale, Florida. Further details: ARVO, 9650 Rockville Pike, Bethesda, MD 20814-3998, USA. (Tel: (301) 571-1844; fax: (301) 571-8311.)

Correction

An error occurred in the article by Levy et al that appeared in the October issue of the BJO (1998;32:1154–8).

The sentence comprising the conclusion in the abstract was wrong. It should read: Conclusion—Integration of neoadjuvant chemotherapy and combined treatment with carboplatin and diode laser into the therapeutic armamentarium for retinoblastoma has enabled us to limit the indications for more aggressive treatments such as enucleation and external beam radiation.

We apologise for this error.
Elevated serum levels of soluble ICAM-1 in uveitis patients predict underlying systemic disease

SCOTT M WHITCUP, BARBARA P VISTICA, M TERESA MAGONE and ROGER K GEORGE

Br J Ophthalmol 1999 83: 252
doi: 10.1136/bjo.83.2.252-b

Updated information and services can be found at:
http://bjo.bmj.com/content/83/2/252.2

These include:

References
This article cites 5 articles, 1 of which you can access for free at:
http://bjo.bmj.com/content/83/2/252.2#BIBL

Email alerting service
Receive free email alerts when new articles cite this article. Sign up in the box at the top right corner of the online article.

Notes

To request permissions go to:
http://group.bmj.com/group/rights-licensing/permissions

To order reprints go to:
http://journals.bmj.com/cgi/reprintform

To subscribe to BMJ go to:
http://group.bmj.com/subscribe/