CORRESPONDENCE

Natural history of recurrent erosion syndrome

Editor,—I read with interest the recent article by Heyworth and coworkers.1 In their paper there is no specific mention of, or discussion of, the role of oral tetracycline in the treatment of recurrent corneal erosions. In their results they state that 55% of patients who were symptomatic were taking some form of treatment, which included topical drops or ointment. They do not mention whether any patients were using systemic treatment in the form of oral tetracycline or any other systemic treatment. In the discussion there is no reference to the possible role of oral tetracycline in the management of these patients. They refer to topical treatment and possible surgical treatments. They also do not indicate whether any of the patients in the review are using a bandage contact lens to manage their symptoms. In their introduction they state there have been no randomised controlled trials of treatment in the management of recurrent corneal erosion. This in fact is incorrect and our paper in 1994 on the role of oral tetracycline in the treatment of recurrent corneal erosions reported the results of a prospective randomised controlled trial.2

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Reply

Editor,—McDonnell is correct in stating that no mention was made regarding the role of systemic tetracycline in the management of recurrent corneal erosions. Our study1 looked at a group of patients who were initially treated for recurrent corneal erosions using topical lubricants. This group of patients was recruited over 5 years ago before the results of Hope-Ross and McDonnell’s valuable study were known.2 Our study was a telephone questionnaire which was not investigating different treatment modalities in the management of recurrent erosions but merely reporting the symptomatology of a well documented group 4 years after the original study. We can say with some certainty that among those who were using some form of treatment those who were self medicating (67%) were not taking systemic tetracycline, but with regard to the remainder it is unlikely that those attending their general practitioner (26%) were taking systemic tetracycline. We do not have the data available for the remaining two patients who were continuing to attend an ophthalmologist. Although we accept Hope-Ross and McDonnell’s study findings our continued clinical experience with tetracycline has been less encouraging than their. Only two patients from this study continue to attend an ophthalmologist. One had certainly used a bandage contact lens in the past but had subsequently undergone phototherapeutic keratectomy and was still symptomatic, although to a lesser degree. Bandage contact lenses certainly have a role in the management of recurrent erosions in patients who are sufficiently troubled by symptoms to seek medical advice—something that the vast majority of these patients were not doing.

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Topical ointment does not prevent recurrent symptoms following traumatic corneal abrasion

Editor,—We would like to expand on comments by Heyworth et al1 regarding the use of topical lubricating ointment for prophylaxis of symptoms of recurrent corneal erosion.

The authors make the point that there are very few available data as to the prevalence of symptoms following traumatic corneal abrasion. We have addressed this specific issue in an ongoing prospective study. The study was designed to assess symptoms following uncomplicated traumatic corneal abrasion, and to assess the effect on symptoms of using a topical lubricant ointment. The project has the approval of our local research ethics committee.

All patients presenting with traumatic corneal abrasion in a previously healthy eye were treated with our standard regimen of cycloplegic ointment 1% immediately and fluorometholone eye drops four times daily for 5 days; eyepad were not used.3 Injuries caused by a fingernail are felt to be at higher risk of progressing to recurrent corneal erosion,4 so the patients were randomised to one of two treatment groups. One group received our “standard regimen” alone, the other group continued with a “prophylactic regimen” of lubricating ointment (Lacrilube, Allergan) at night for 2 months. Patients were followed up after 3 months by telephone, using a symptom based questionnaire. Recurrent symptoms were graded as: (i) none or minimal, (ii) mild, (iii) moderate (difficulty with some daily activities, or sought further advice from a health professional), and (iv) severe (macroform corneal erosion). Case notes were reviewed at 2 years. Three year follow-up, again by telephone questionnaire, is due to take place later this year.

Seventy four patients completed the 3 month follow up questionnaire (Table 1). Symptoms were considered to be due to recurrent corneal erosion if they were reported as frequent and significant pain, grittiness, photophobia, or watering of the injured eye only. A total of 21 patients (28%) reported such recurrent symptoms at 3 month follow up. We found no significant difference in symptom prevalence between “fingernail” and “non-fingernail” injuries which had been managed with our standard regimen (χ2 test: p = 0.54). Treatment of fingernail injuries with additional nightly ointment was associated with a higher prevalence of symptoms at 3 months (significant to χ2 test, p = 0.016).

Despite the high prevalence of symptoms in all groups at 3 months, only two patients had re-presented with macroform recurrent corneal erosion by 2 years. Both had been injured by a fingernail: one presented 3 months after treatment with our standard regimen, the other presented 7 months after a similar injury which was treated with additional nightly ointment.

These early results suggest that nightly lubricating ointment does not prevent recurrent symptoms when used following uncomplicated traumatic corneal abrasion. Instead, the reverse appears to be true in that the group receiving additional ointment had significantly more symptoms at 3 month follow up. We were surprised at the high prevalence of recurrent symptoms in all groups. These early results should be considered the place of both eye pad and ointment in our initial management. Future studies of treatment for corneal abrasion or erosion should pay close attention to patient symptoms.

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Table 1 Prevalence and severity of recurrent symptoms, 3 months after treatment for traumatic corneal abrasion. Symptoms were assumed to be due to recurrent corneal erosion if they were described as frequent and significant pain, grittiness, photophobia, or watering of the injured eye only5

<table>
<thead>
<tr>
<th>Cause of injury and treatment group</th>
<th>No symptoms</th>
<th>Minimal symptoms</th>
<th>Moderate symptoms (difficulty with daily activities, or sought further opinion)</th>
<th>Severe symptoms (macroform corneal erosion)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fingernail: standard regimen (see text)</td>
<td>17 (85%)</td>
<td>2 (10%)</td>
<td>0</td>
<td>1 (5%)</td>
</tr>
<tr>
<td>Fingernail: additional nightly ointment (see text)</td>
<td>11 (50%)</td>
<td>7 (32%)</td>
<td>4 (18%)</td>
<td>0</td>
</tr>
<tr>
<td>Other causes: standard regimen (n=32)</td>
<td>25 (78%)</td>
<td>3 (10%)</td>
<td>4 (12%)</td>
<td>0</td>
</tr>
</tbody>
</table>

(continued)

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Horner's syndrome in infancy

Editor,—George et al1 recently undertook a review of 23 cases of Horner's syndrome presenting in the first year of life. They remind us of the difficulty in differentiating between congenital and acquired Horner's syndrome in this age group. In their introduction they state that, in both congenital and acquired cases, “heterochromia may appear to be progressive as the child develops normal pigmentation in the fellow iris”. Iris heterochromia would therefore appear to be of little value in distinguishing between congenital and acquired cases, the latter potentially being caused by an underlying pathological condition. The authors conclude with a management protocol for the investigation of Horner's syndrome in infancy—namely, a full general examination and urinary vanillylmandelic acid and catecholamine analysis. However, their inclusion of the recommendation that further investigation is indicated if increasing iris heterochromia is noted would appear to be contradictory to their earlier statement. Iris pigmentation depends predominantly on the distribution of pigment within melanocytes of the anterior border and within the stroma. These cells migrate into the human iris late in gestation and are postnatally modulated by the sympathetic nervous system.1 In 1915, Sym noted that iris colour is not fully developed until the first 18 months of life. However, progressive heterochromia has been reported following acquired Horner's syndrome in both children and adults.2,3 In our patient with progressive heterochromia a Horner's syndrome had been diagnosed in infancy. When she presented to us the child's mother was concerned that the affected eye had originally had some pigment but was becoming progressively depigmented. A computed tomography of the thorax was subsequently performed and showed a ganglion-neuroma. We have therefore included increasing heterochromia in our series as an index of suspicion because this had prompted further investigation in this one patient.

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Improved impression cytology techniques for the immunopathological diagnosis of superficial viral infections

Editor,—I read with great interest the paper by Thiels et al1 who applied immunoperoxidase and immunofluorescence techniques to diagnose viral infections of the ocular surface. Eleven years ago, we described a method of immunocytological staining for virus antigens on ocular surface cells collected on cellulose acetate strips.2 Thiels and coworkers should be congratulated for improving this methodology by the use of a Biopore membrane device that facilitates specimen collection and processing. Another advantage common to these diagnostic techniques is that sample collection simultaneously accomplishes debridement, which may be beneficial in herpetic keratitis and other viral infections of the ocular surface.

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Visual field progression in glaucoma

Editor,—We read with interest the article by Viswanathan et al.1 We were surprised by the authors' progression criteria for the PROGRESSOR method; their criteria are extremely sensitive and very non-specific: only one point needs to show significantly negative slope when tested on the 5% level, together with an observed slope of <−1 dB/year and <−2 dB/year for inner and outer points, respectively. With 74 test points, it goes without saying that one here faces a problem with mass significance testing, which explains the very low specificity. It is obvious that almost any stable glaucoma patient would be included as progressing with the reported method. To illustrate the effect, we studied 10 patients with manifest glaucoma which, after at least 5 year follow up and with 24 and eight visual fields, did not show visual field progression on the same clinical grounds as those used by Viswanathan et al. We had used the same type of visual field test as the authors—that is, Humphrey 30-2 full threshold. In order to eliminate the possibility of any significant subclinical progression, the order of field tests were randomised before tests were analysed by the PROGRESSOR method. This randomisation ensures that all significant progression would be the result of pure chance. Using the progression criteria of Viswanathan et al, stated above, five visual fields showed progression at the fourth visit, and already at the sixth visit eight eyes (80%) had shown false progression at one or more visits.

Further, we performed a Monte Carlo simulation study with the same criteria: 10 000 fields were simulated and tested 10 times and the regression slope was tested at each point starting at the third test occasion. The field was divided into two regions with 50 inner points and 24 outer points, respectively, as stated by Viswanathan et al, and the field
generated by Gaussian variables with one homogenous random component common to all points in the region (SD 1.1 dB), and with an independent inhomogeneous varia-
tion (SD 0.9 dB) between points. All fields were assumed to be stable, with constant mean at all test occasions. We assumed three tests to be performed each year. With the cri-
teria of Viswanathan et al, 60% of the simulated fields showed significant progres-
sion in at least one inner point and 29% showed progression in at least one outer point.
This means that at least 72% showed false sig-
nificant progression on at least one occasion. In
fact, 55% of the simulated fields showed progression on two consecutive test occasions.
If we had included the short term fluctuation, the number of false significances would have
been even larger. This finding of 72% false
significances is in agreement with our experi-
ence with the 10 glaucoma patients.
Viswanathan et al must have been fooled by
their own selection of progressing patients, and the use of remaining statistical signifi-
cance at the last visit as a criterion for reliabil-
ity is erroneous. It is not surprising that many points in subjectively progressing visual
field tests show significant progression after the end of the follow up period, and this yields no information as to the specificity of any analyses employed.
It is generally and correctly considered that,
because of the large random variability of
glaucomatous visual fields, real progression can seldom be demonstrated in glaucomatous
visual fields in only 1 year. In view of this we
are quite satisfied that the mean time until
progression was demonstrated with STATPAC 2 was more than 2 years. In fact, we recommend strict criteria for STATPAC 2 than those used by the authors, again in the interest of specificity.
Linear regression analysis has advantages in visual field follow up, one is that all available
data are used. Such analyses can be applied
both properly and improperly. Analyses that
lack specificity are only misleading, however, and may even result in improper clinical man-
agement. A more thorough analysis of linear
regression analyses for visual field follow up is
needed, and we will address this subject in a
future article.

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Reply

EDITOR.—We thank Heijl et al for their interest in our paper. Their letter raises a number of issues, all of which are worthy of discussion.
Our paper was a continuation of previous work (ref 25 in our paper) comparing a new analysis program (PROGRESSOR) with the widely available visual field analysis program STATPAC 2. In the earlier paper we showed that the two programs identified the same loca-
tions in the visual field as “progressing.” In this paper we showed that “progression” as we
defined it occurred much earlier with PRO-
GRESSOR than STATPAC 2. As an uncorrected
outcome of glaucoma management is (fur-
ther) visual field loss, any approach looking for
early detection of visual field loss seemed to
have merit.
Drs Heijl, Bengtsson, and Lindgren criticise us
on our methodology and approach. Specifi-
cally they express concern at the use of a signif-
ificant level of p<0.05, suggest that our
patient selection would bias the results, and
express satisfaction that the mean time before
progression which STATPAC 2 can detect progression is more than 2 years.
We set the significance level for our study at
the 5% level because this is the only significance level available with STATPAC 2. With this in mind, we set out to compare PRO-
GRESSOR and STATPAC 2 in as fair a trial as
possible.
"Problem with mass significance testing" is in agreement with our
earlier detection of visual field progression in
glaucoma: a comparison of PROGRESSOR and
Birch MK, Wishart PK, O’Donnell N. Determin-
Smith SD, Katz J, Quegley HA. Analysis of progressive change in automated visual fields in
McNaught AI, Crabb DP, Fitzke FW, et al. Visual field progression: comparison of Pro-
gressor and Statpac 2 and pointwise linear regression analys-
is. Graefes Arch Clin Exp Ophthalmol 1996;254:
111–18.
Schulzer M. Errors in the diagnosis of visual field progression in normal-tension glaucoma. Ophthal-

Topical steroids and alkali burns

EDITOR.—In their recent report attesting to the safety of topical prednisolone in the treat-
ment of alkali burns1 Davis and colleagues do not specify the type of prednisolone which was
prescribed. Prednisolone acetate (Pred Forte) is absorbed into the human eye and reaches aqueous concentrations many fold higher than
prednisolone phosphate (Predsol)2 perhaps on account of an acetyllating enzyme in the
connea.
It is therefore important to know which form of prednisolone was employed in this study.

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1 Viswanathan AC, Fitzke FW, Hitchings RA. Early detection of visual field progression in
glaucoma: a comparison of PROGRESSOR and
3 Birch MK, Wishart PK, O’Donnell N. Determin-
5 Smith SD, Katz J, Quegley HA. Analysis of progressive change in automated visual fields in
6 McNaught AI, Crabb DP, Fitzke FW, et al. Visual field progression: comparison of Pro-
gressor and Statpac 2 and pointwise linear regression analys-
is. Graefes Arch Clin Exp Ophthalmol 1996;254:
111–18.
7 Schulzer M. Errors in the diagnosis of visual field progression in normal-tension glaucoma. Ophthal-
Avoidable blindness

The latest issue of the Community Eye Health (no 25) discusses the elimination of avoidable blindness. With an editorial by Bjorn Thyfors, the director of the WHO Programme for the Prevention of Blindness and Deafness, the issue covers treatment of cataract in regions of India and the role of patient counsellors in increasing the uptake of cataract surgery and IOLs. 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: eyeresource@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.

IN MEMORIAM

Fred Hollows

Fred Hollows died on 10 February 1993 in the age of 63 years after a short and valiant battle with kidney, lung, and brain cancer. In his remarkable career he had quickly risen to becoming an international figure in the world of ophthalmic surgery.

In the 1950s Fred Hollows decided as a young medical student to become an ophthalmologist because this would give him a useful skill to work in Africa. As a postgraduate ophthalmology student in Wales, Hollows studied epidemiology so that he could link eye disease with wide ranging community health programmes. In 1968 at Wattie Creek in northern Australia Hollows identified an aboriginal community “dahlak blindness”, a hazy corneal condition first found in Eritrea. He began to lobby for funds and between the years 1976 and 1979 a “better vision for all” programme called the National Trachoma and Eye Health Programme treated the eyes of 100 732 people; 62 116 of these were indigenous Australians.

Eventually this led to series of eye health programmes in Eritrea, Nepal, and Vietnam, which have restored the sight of thousands, and to a struggle to lessen disparity in health and treatment between the “haves” and “have nots”.

When he went to Eritrea in 1988 during the hottest struggle for independence he taught the medical doctors in ophthalmological surgery. There were many patients with cataract who could not be treated in Eritrea at that time because of lack in experience and many of the patients came from Danakel (south eastern Eritrea), said to be the hottest place on the earth.

From 1990 to 1992 Professor Hollows gathered the necessary capital to build the intraocular lens factory in Asmara; such a factory has been put to the test before in Australia.

His dream came true: The Foundation of Fred Hollows was officially opened on 20 January 1994 in Asmara by the president of the state of Eritrea, I Afeworki, the Australian senator of foreign affairs, Gareth Evans, and Mrs Gabi Hollows with their children. This laboratory is an expression of his admiration, understanding, and love of the people of Eritrea and their struggle to achieve independence and self reliance. The factory produces an estimated 60 000 intraocular lenses per year; in Eritrea there are 30 000 cataract patients per year.

His desire to help and identify himself with the suffering of the people of Eritrea did not end with the eye programme. He undertook the task of finding a solution to the removal of the millions of landmines scattered in Eritrea and other countries.

Fred Hollows was no dry, dusty academic but had considerable style and joie de vivre. He maintained an active family life with his wife and five young children.

Fred Hollows will remain for a long time in our hearts and memories. We share deepest sympathy with his family.

BINIAM GHEBREMEDHIN

NOTICES

IV meeting of the European Society for Out-Patient Eye Surgery (ESOPES)

The IV meeting of the European Society for Out-Patient Eye Surgery (ESOPES) will be held in Vittel, France on 9–11 October 1998. Further details: Mrs Gillian Bennerson, Senior Ophthalmic Photographer, Bristol Eye Hospital, Lower Maudlin Street, Bristol BS1 2LX. (Tel: 0117-928-4677.)

Vlth International Symposium on Graves’ Ophthalmopathy

The Vlth International Symposium on Graves’ Ophthalmopathy will be held on 27–28 November 1998 in Amsterdam. Further details: Amsterdam Thyroid Club, Department of Endocrinology, F9-171, Academisch Medisch Centrum, Meibergdreef 9, 1105 AZ Amsterdam, Netherlands.

Hong Kong Ophthalmological Symposium 98

The Hong Kong Ophthalmological Symposium 98 on myopia will be held on 28–29 November 1998 at the Hong Kong Convention and Exhibition Centre. Further details: Dr Woon-ming Chan, Secretary, Organising Committee, Hong Kong Ophthalmological Symposium 98, University Eye Centre, 5/F, Hong Kong Eye Hospital, 147K Argyle Street, Kowloon. (Tel: (852) 2761 9128; fax: (852) 2715 0089; email: cohk@netvigator.com)

Singapore National Eye Centre

The 3rd SNEC international meeting and 11th international meeting on cataract, implant, microsurgery and refractive keratoplasty (ICIMRK) will be held at the Shangri-La Hotel, Singapore on 28–30 November 1998. Further details: Organising Secretariat, 3rd SNEC International Meeting and 11th ICIMRK, Singapore National Eye Centre Pte Ltd, 11 Third Hospital Avenue, Singapore 168751. (Tel: (65) 2377-255; fax: (65) 2277-290/1)
Natural history of recurrent erosion syndrome

PETER J McDONNELL

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