

## LETTERS TO THE EDITOR

### Ocular leprosy

SIR,—I very much enjoyed the recent mini review on leprosy by Dr T J fyfche.<sup>1</sup> It is always interesting for those of us working in what are sometimes regarded as exotic or obscure specialties to see our interests featured in other journals and it does, of course, bear repeating that such apparent exotica appear from time to time among the more mundane workload of western developed medicine.<sup>2</sup> Hence your journal's recent articles featuring ocular leprosy are an important contribution to maintaining a level of necessary awareness of this problem among your regular readers both abroad and at home.

There were, however, some points in the review which merit comment. It is, of course, accepted that motor and sensory disturbances involving the eye are found throughout the spectrum of leprosy.<sup>3</sup> While loss of lid function caused by weakness or paralysis of the orbicularis oculi muscle (lagophthalmos) is more often found in tuberculoid, borderline tuberculoid, and borderline patients, under the Ridley-Jopling classification,<sup>4</sup> as a result of a type I (reversal) reaction involving the zygomatic branch of the facial nerve, this does not usually coincide with significant corneal hypoesthesia, which is much less common.<sup>5</sup> While a degree of corneal sensory loss can be detected in some patients with lagophthalmos of several years' duration, sensory loss on the cornea is more a feature of longstanding borderline lepromatous disease, and lepromatous disease where bacillary infiltration is more likely to be found in the ciliary nerve endings running towards the limbus and cornea and where there may have been repeated episodes of iritis.<sup>6</sup> The inflammatory process in the facial nerve is the result of a sudden increase in specific cell-mediated immunity against the leprosy bacilli which concentrate in the cooler part of the nerve as it crosses the zygoma. The motor function loss is therefore almost invariably of sudden onset and does not take place over a long period of time. The patient may, however, take a considerable time to report this new nerve damage. The treatment of lagophthalmos of less than 6 months' duration is systemic corticosteroids. The other anti-inflammatory drugs mentioned in the mini review, clofazimine and thalidomide, have no place in the management of leprosy-induced facial palsy. On the contrary, it is for repeated iridocyclitis, a result of type II (erythema nodosum leprosum or ENL) reaction, that these two drugs can be so valuable.<sup>7</sup> This is sometimes complicated in borderline lepromatous patients who can develop both types of reaction, occasionally one triggering off the other, and hence the picture is not always as clear as the textbooks would have us believe.

Despite this, facial patches in tuberculoid, borderline tuberculoid, and borderline leprosy patients do not go into type II or ENL reaction, implied in the mini review. It is the type I reaction in a facial patch which is such a sinister portent for the integrity of the facial nerve and this was clearly described by Hogeweg *et al* in their recent paper.<sup>8</sup>

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- 2 Malin AS, Waters MFR, Shehade SA, Roberts MM. Leprosy in reaction: a medical emergency. *BMJ* 1991; 302: 1324-6.
- 3 fyfche TJ. Residual sight-threatening lesions in leprosy patients completing multidrug therapy and sulphone monotherapy. *Lep Rev* 1991; 62: 35-43.
- 4 Ridley DS, Jopling WH. Classification of leprosy according to immunity. *Int J Lepr* 1966; 34: 255-73.
- 5 Somers EJ, Dharmendra. Eye lesions in leprosy. In: Dharmendra, ed. *Leprosy*. Volume 1. Bombay: Kothari Medical Publishing House, 1978: 143-50.
- 6 Karacorlu MA, Cakiner T, Saylan T. Corneal sensitivity and correlations between decreased sensitivity and anterior segment pathology in ocular leprosy. *Br J Ophthalmol* 1991; 75: 117-9.
- 7 Kumar B. Clofazimine - a review. *Indian J Lepr* 1991; 63: 78-92.
- 8 Hogeweg MK, Kiran KU, Suneetha S. The significance of facial patches and Type I reaction for the development of facial nerve damage in leprosy. A retrospective study among 1226 paucibacillary leprosy patients. *Lep Rev* 1991; 62: 143-9.

\*\*(This letter arrived after Mr fyfche's reply to Dr Hogeweg, *Br J Ophthalmol* 1992; 76: 254-5.

### Use of a blue filter in visual field analysis

SIR,—As an alternative to blue-on-yellow perimetry for more sensitive visual field testing in glaucoma, Hugkulstone and Vernon<sup>1</sup> recently proposed blue-on-blue perimetry (usage of blue glasses in combination with a white-on-white perimeter). Technically this would be an attractive alternative, but is this alternative equivalent to blue-on-yellow perimetry?

The concept of blue-on-yellow perimetry is based on the so called two-colour threshold method introduced by Stiles in the late 1940s.<sup>2</sup> Application in the present field was discussed by Johnson *et al*.<sup>3</sup> Stiles monitored the threshold of a test stimulus as a function of the luminance of a background. In certain wavelength combinations, different branches in the threshold function could be distinguished, indicating response systems with different spectral sensitivities. Stiles called these systems pi mechanisms. They represent the functional

channels of the visual system, with characteristic spectral sensitivities in three wavelength regions. Pi-1 to pi-3 resemble blue cone (short wavelength sensitive (SWS)) sensitivity. Pi-4 green cone (medium wavelength sensitive (MWS)) sensitivity and pi-5 red cone (long wavelength sensitive (LWS)) sensitivity.

From the two-colour threshold theory can be calculated that in routine perimetry, stimulus and background conditions (because of their luminance and spectral composition) are such that MWS and LWS channels are tested. Blue-on-yellow perimetry is designed to test the SWS channel selectively. Figure 1 shows the spectral sensitivity of the three systems for no background. The SWS channel has its maximum sensitivity at 440 nm (blue). The MWS and LWS channels however have the same sensitivity at this wavelength as the SWS channel. In order to test the SWS channel selectively it is necessary to decrease the sensitivity of the MWS and LWS channels, relative to the sensitivity of the SWS channel. This is achieved by a yellow background that contains only wavelengths above 550 nm. Maximum separation between the sensitivity of the SWS channel and the MWS and LWS channels is reached if the brightness is 200 cd/m<sup>2</sup>.<sup>4</sup> It can be derived from the two-colour threshold theory that the separation reached at 440 nm is about 2.5 log units (25 dB) (Fig 2). Stiles' theory was based on foveal vision. Johnson showed a comparable separation to be present in peripheral vision.<sup>5</sup> Unless these conditions are met it is not possible to test the SWS channel selectively.

What is to be expected if blue stimuli are presented on a blue background? This background decreases the sensitivity of the SWS channel, but also of the MWS and LWS channels. At 440 nm the relative position between the SWS channel and the other two channels is about the same as in Figure 1. So the blue stimulus is again perceived by all three channels. This might explain why the authors did not find significant differences between the blue field score as compared to the standard condition. If a blue stimulus on a white background is used a separation of only about 0.7 log units (7 dB) results, but this seems to give no advantage above a white stimulus on a white background.<sup>6</sup> In both conditions the MWS and LWS channels may play an important role.

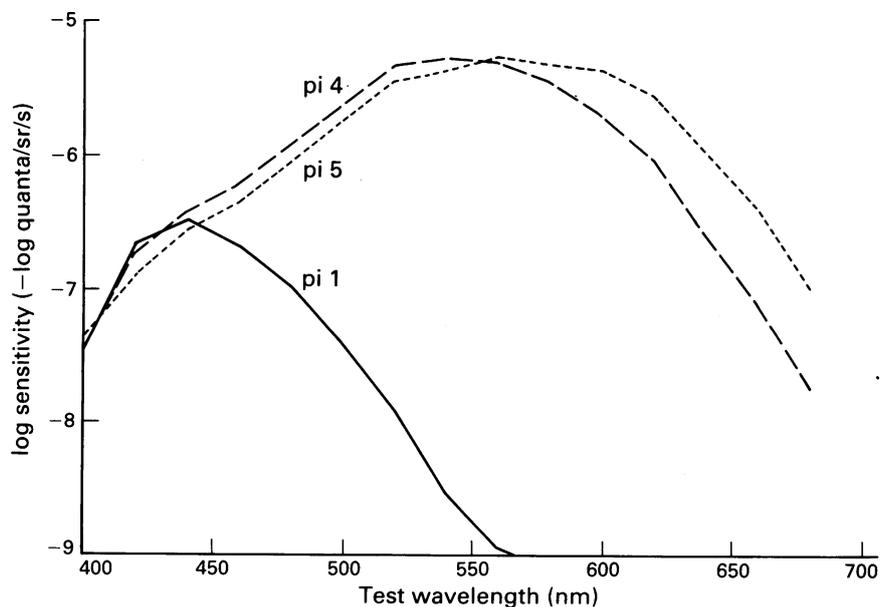


Figure 1 Spectral sensitivities of the pi mechanisms for the no background conditions.