Sir,

Exercise-related visual loss in patients with glaucoma

We read with interest the clinical study by Shah *et al*¹ reporting cases of exercise-related visual loss in patients with glaucoma. The visual functions, including visual acuity, foveal sensitivity and visual fields, of two patients were studied before and after exercise, and the results showed deterioration in the visual functions with exercise. A hypothesis of 'vascular steal' was suggested in these patients with advice to limit their activities. We feel that a vascular steal may not be the cause of visual symptoms in the above patients since physiological changes during exercise cause shunting of blood from the skin and abdominal organs to the heart and other muscles in demand, but the cerebral and ocular circulations, which are autoregulated, remain unaffected. Furthermore, ocular perfusion pressure (OPP) equates to mean blood pressure (MBP)–intraocular pressure (IOP), where MBP=diastolic pressure + 1/3 (systolic BP–diastolic BP).² Therefore, in the above patients, the OPP should have either remained at pre-exercise levels or increased, since the MBP was unchanged and the IOP was either stable or lowered with exercise.

Although we cannot offer an explanation for the transient visual loss, we have recently seen a patient in whom an explanation was ascertained. The 74-year-old patient presented to clinic with intermittent episodes of blurred vision following sexual intercourse. There was no significant past medical history and ocular examination was unremarkable. We wondered whether this was due to hypoperfusion; however, his MBP and IOP remained stable pre- and post-exercise. Carotid Doppler scans showed no stenosis.

He presented 2 weeks later with persistent blurring, which had not settled by the morning. He was found to have a unilateral cloudy cornea, raised intraocular pressure and a semi-dilated pupil. A diagnosis of sub-acute angle closure glaucoma was made. He remains asymptomatic following YAG iridotomies. We believe his attacks may be triggered by pupillary dilatation associated with increased sympathetic flow during intercourse and initially relieved by miosis associated with sleep. The visual loss may be explained by the reduction in OPP as a result of increased IOP, rather than a 'vascular steal'.

We feel that episodes of sub-acute closure should be ruled out in patients presenting with exercise-related visual loss and that limiting their activities may not be justified without further studies.

References

- 1 Shah P, Whittaker KW, Wells AP, Khaw PT. Exercise-induced visual loss associated with advanced glaucoma in young adults. *Eye* 2001; **15**: 616–620.

- 2 Hart WM. *Adlers Physiology of the Eye*. 9th ed. Mosby: St. Louis, MO.

A Patel and M McKibbin

Department of Ophthalmology
St James University Hospital
Leeds LS9 7TF, UK

Correspondence: A Patel
Tel.: +44 113 2066 429
Fax: +44 113 2065 748
E-mail: amitpatel@doctors.org.uk

Eye (2003) **17**, 112. doi:10.1038/sj.eye.6700258

Sir,

Reply

We thank Dr Patel and Mr McKibbin for their comments regarding our recent paper, which reported cases of exercise-induced visual loss in young patients with advanced glaucomatous optic neuropathy. They raised the point that angle closure should be ruled out in all patients presenting with exercise-induced visual loss and we would certainly agree with this clinical comment. As part of the assessment of our patients, we did indeed exclude angle closure occurring during exercise (all patients had wide open drainage angles) and also excluded reverse pupillary block and also pigment dispersion induced by exercise.^{1,2} In the absence of these features, we feel that the most probable aetiology of the exercise-induced visual loss we observed was a vascular steal effect and would again recommend that this phenomenon is considered in all patients presenting with the symptom of exercise-induced visual loss.

References

- 1 Jenson PK, Niseen O, Kessing SV. Exercise and revised pupillary block in pigmentary glaucoma. *Am J Ophthalmol* 1995; **120**: 110–112.
- 2 Haynes WL, Johnson AJ, Aylward WL. Effects of jogging exercise on patients with pigmentary dispersion syndrome and pigmentary glaucoma. *Ophthalmology* 1992; **99**: 1096–1103.

P Shah, K Whittaker, A Wells and PT Khaw

Good Hope Hospital NHS Trust
Rectory Road
Sutton Coldfield
West Midlands B75 7RR
UK