Retinopathy

BRITISH JOURNAL OF OPHTHALMOLOGY

Entonox proves effective during PRP in pilot study

Readability	✓ ✓ ✓ ✓
Applicability to practice	✓ ✓ ✓
WOW! factor	✓ ✓

1 Some patients with proliferative diabetic retinopathy cannot tolerate panretinal photocoagulation (PRP) because of pain.

2 Entonox is a mixture of 50% nitrous oxide and 50% oxygen. Inhaled Entonox is a new analgesic method for PRP treatment, with a good safety record and no serious recorded side-effects.

3 A randomised, cross-over, double-masked pilot study was performed on 20 patients. Patients inhaled air or Entonox, half the PRP was applied and then treatment was completed with the alternate inhaled gas.

4 Mean pain scores from the Entonox and air treatments, graded by participants using a visual analogue scale, were 2.94 (sd 2.73) *vs* 3.73 (sd 3.20) respectively ($P<0.03$).

5 Entonox was found to be an effective and safe analgesic for PRP treatment

Cook HL, Newsom RSB, Mensah E et al (2002) Entonox as an analgesic agent during panretinal photocoagulation *British Journal of Ophthalmology* **86**: 1107-8

Inhaled Entonox could make painful laser treatment for diabetic retinopathy a thing of the past

Deborah Broadbent, Director of Diabetic Eye Screening, Royal Liverpool University Hospital

Cook et al (see left) have highlighted a problem regularly encountered in ophthalmic laser clinics, namely the experience of pain in a small number of patients during panretinal photocoagulation. Whether this then leads to undertreatment in a significant number of cases is debatable, but certainly some patients find the experience unpleasant and some are understandably reluctant to undergo further treatment, particularly when mostly they are asymptomatic.

As the authors discuss, the pain response is individual and variable but tends to occur after a number of treatments to a particular eye or with re-treatment. Inadvertent laser application to the areas of retina corresponding to the location of the (invisible) long ciliary nerves can be acutely painful.

The majority of patients in the study appeared to experience less pain with Entonox administration than with placebo. However, the study was based on small numbers of patients and confidence limits are not given. Additionally the study is described as double-masked, but it is not clear how this was achieved since it must be clear to the patient and operator which gas is in use. There is also no correlation with variables such as the number of laser burns or treatment episodes or location of treatment, all of which the authors have themselves cited as possible factors.

It would have been interesting to see whether there was a difference if inhalation of Entonox had been compared to no treatment, as the inhalation of air itself could provoke a placebo effect.

However, the use of inhaled Entonox is a novel and attractive approach in that it is safe, easily applied and non-invasive. While laser treatment remains the only effective and proven treatment for diabetic eye disease, everything should be done to ensure compliance with treatment in order to preserve vision.

With the emphasis on optimal medical management of diabetes and the development of medical treatments for retinopathy, it is to be hoped that soon painful laser treatment will be a thing of the past!

Blindness due to diabetic retinopathy in India: preventive strategies needed

Readability	✓ ✓ ✓ ✓
Applicability to practice	✓ ✓ ✓
WOW! factor	✓

1 Diabetes has the potential to reach epidemic proportions in India, with far-reaching consequences for vision loss associated with diabetic retinopathy.

2 The aim of this population-based assessment was to estimate the prevalence of diabetic retinopathy in self-reported subjects with diabetes in a population of southern India.

3 A cluster sampling technique was used to select a cross-sectional cohort of subjects aged 50 years and older.

4 Of the 5212 people examined, 26.2% of 260 people with self-reported history of diabetes had diabetic retinopathy.

5 More research is needed to establish the changing magnitude of diabetic retinopathy and diabetes,

BRITISH JOURNAL OF OPHTHALMOLOGY

and to determine the risk factors for diabetic retinopathy and visual loss in the above population.

6 Blindness due to retinopathy may become a public health problem in India unless preventive strategies are developed.

Narendran V, John RK, Raghuram A et al (2002) Diabetic retinopathy among self reported diabetics in southern India: a population based assessment *British Journal of Ophthalmology* **86**:1014-18

'Retinal microvascular abnormalities are related to elevated concurrent BP; retinal arteriolar narrowing and possibly arterio-venous nicking are related to previously elevated BP.'

BRITISH JOURNAL OF OPHTHALMOLOGY

Retinal changes reflect severity and duration of hypertension

Readability	✓ ✓ ✓
Applicability to practice	✓ ✓ ✓
WOW! factor	✓ ✓

1 This study investigated the relation of hypertension status and concurrent and past blood pressure (BP) to retinal microvascular abnormalities in older men and women.

2 In 1989–90, BP was measured in individuals from four US communities. In 1997–8, 2405 people from the original group, with gradable retinal photographs, were evaluated for signs of focal microvascular abnormalities and the diameters of individual arterioles were measured.

3 In non-diabetic subjects, elevated BP taken at the time of retinal photography was associated with the presence of retinal microvascular lesions. Generalised arteriolar narrowing and possibly arteriovenous nicking were associated with past raised BP. These associations were weaker in people with diabetes.

4 Retinal microvascular abnormalities are related to elevated concurrent BP. Retinal arteriolar narrowing and possibly arteriovenous nicking are related to previously elevated BP.

5 Retinal microvascular changes reflect severity and duration of hypertension.

Wong TY, Hubbard D, Klein R et al (2002) Retinal microvascular abnormalities and blood pressure in older people: the Cardiovascular Health Study. *British Journal of Ophthalmology* **86**:1007-13

'Pyridoxamine protected against a range of pathological changes in the diabetic retina...'

DIABETES

Pyridoxamine inhibits retinopathy in diabetic rats

Readability	✓ ✓
Applicability to practice	✓ ✓ ✓
WOW! factor	✓ ✓

1 Pyridoxamine (PM) inhibits the formation of advanced glycation end-products (AGEs) and lipoxidation end-products (ALEs).

2 This study examined the ability of PM to protect against diabetes-induced retinal vascular lesions.

3 PM, vitamin E (VE) and R-α-lipoic acid (LA) were compared in streptozotocin-induced diabetic rats.

4 Results indicated that PM protected against a range of pathological changes in the diabetic retina; inhibition of AGE and ALE formation by PM may be the key to its beneficial effects in the retina.

Stitt A, Gardiner TA, Anderson NL et al (2002) The AGE inhibitor pyridoxamine inhibits development of retinopathy in experimental diabetes. *Diabetes* **51**: 2826-32

BRITISH JOURNAL OF OPHTHALMOLOGY

AF imaging after RPE laser treatment

Readability	✓ ✓ ✓
Applicability to practice	✓ ✓ ✓
WOW! factor	✓ ✓

1 Selective retinal pigment epithelium (RPE) laser treatment damages the RPE while sparing the neural retina.

2 This pilot study investigated whether fundus autofluorescence (AF) can detect ophthalmoscopically invisible laser lesions from selective laser treatment.

3 Patients with macular diseases were treated with repetitive short laser pulses of a frequency doubled Nd:YAG laser. AF was excited by 488 nm and detected by a barrier filter at 500 nm.

4 Patients were examined by ophthalmoscopy, fluorescein angiography and autofluorescence measurements following treatment.

5 Imaging of non-visible selective RPE laser effects can be achieved by AF measurements, mainly in patients without retinal oedema. This treatment improves the prognosis of macular diseases without risk of laser scotomas.

Framme C, Brinkmann R, Birngruber R, Roider J (2002) Autofluorescence imaging after selective RPE laser treatment in macular diseases and clinical outcome: a pilot study. *British Journal of Ophthalmology* **86**:1099-106

'Clinically significant macular oedema disappeared in 50% of the eyes following photo-coagulation... paralleled by a decrease in passive permeability.'

Photocoagulation effects on the blood–retinal barrier

Readability	✓ ✓ ✓
Applicability to practice	✓
WOW! factor	✓

1 While the visual loss secondary to diabetic macular oedema can be controlled by photocoagulation, the mechanism of action of this beneficial effect is largely unknown.

2 This study set out to quantify the effect of photocoagulation treatment on the blood-retinal barrier using fluorescein as a tracer of passive and active transport.

3 A prospective study of 46 eyes in 34 patients with clinically significant macular oedema were examined by vitreous fluorometry before macular photocoagulation treatment, and 6 months later.

4 Clinically significant macular oedema disappeared in 50% of the eyes following photocoagulation, and was paralleled by a decrease in passive permeability.

BRITISH JOURNAL OF OPHTHALMOLOGY

5 The study does not support the hypothesis that an increase in the active transport from the retina to the blood follows photocoagulation.

Sander B, Larsen M, Engler C et al (2002) Diabetic macular oedema: the effect of photocoagulation on fluorescein transport across the blood-retinal barrier. *British Journal of Ophthalmology* **86**: 1136-42