

'There is a growing body of good evidence about the effectiveness of glaucoma treatments. An effective service for prevention of glaucoma blindness requires highly developed infrastructure, including fully integrated primary, secondary and tertiary eye care services'

lacking. Trials are needed to evaluate new treatments such as laser iridoplasty and lens extraction, and some are underway.

No one doubts the need to do a peripheral iridotomy (PI) in acute angle closure, both of the affected eye and the contra-lateral one, as a preventive measure. This is not based on trial evidence, but on the observation that if this is not done, the probability of an attack in the second eye is higher than 50 per cent.¹¹ However, this is not always the solution. Peripheral iridotomy or iridectomy solves pupil block, relative or absolute, if it is contributing to the glaucoma mechanism. It will have no impact if the angle is crowded by a swollen lens, or anterior displacement of the entire iris, lens, and ciliary body as in malignant glaucoma (aqueous misdirection), or acute choroidal effusions or haemorrhage.

The best management of chronic angle closure and chronic angle-closure glaucoma remains uncertain. Imaging the anterior segment using high-frequency ultrasound (UBM) or scanning laser tomography (OCT) will help identify whether pupil block is an important component of the process. Many advocate iridotomy in case it is. We are currently awaiting the results of a trial of the effectiveness of PI as a prophylactic measure to prevent optic nerve damage. However, when pupil block is only marginal in the process, the angle recess may widen after PI, but the pressure is unaffected or may be higher. This is especially the case if high energy is needed to penetrate the iris with the YAG laser and much debris and pigment deposited in an already malfunctioning drainage system. In patients with thick brown irides, some advocate doing a surgical PI. Trials comparing laser and surgical PI showed that laser PI was as good as surgery but not better.

Many of these patients also have an incipient cataract, a larger lens in a smaller eye (hypermetropia is a risk factor), and they will likely need cataract extraction before long. If they have already had a difficult laser PI, the iris will be adherent to the lens and the surgery more difficult, with a higher risk of corneal damage and other complications. Some time ago, clear lens extraction was advocated for chronic narrow-angle glaucoma (CNAG), but no trial was conducted and smaller incision cataract surgery was not so prevalent. Now the question is being asked again. A systematic review in the current edition of CLIB¹² found no RCTs, and although some non-randomised studies suggest a benefit, there is an urgent need for new trials to assess whether primary lens extraction works as well, and is as acceptable to patients, as current management.

Outcomes

Outcomes represent a great challenge in glaucoma since the aim of treatment is preserving sight in the long term. The natural history of the disease is as long as a clinician's career, so it is inevitable that surrogate or proxy measures must be used. IOP has had to suffice for many short-term studies, but those asking the question about preserving sight must measure visual function. Progression, however measured, has become the key parameter, because we seek to reduce visual decay to a rate that is compatible with the patient's sighted lifetime. It should be the primary outcome of any new trial. Harmful effects are of equal importance.

Conclusion

There is a growing body of good evidence about the effectiveness of glaucoma treatments. In terms of VISION 2020, deploying an effective service for prevention of glaucoma blindness requires highly developed infrastructure, including fully integrated primary, secondary and tertiary eye care services. This is an ideal far removed from reality for most poorer countries, and is not in place in many so-called developed countries, including the UK, where people still present too late, with advanced optic nerve damage and a poor prognosis for a sighted lifetime.

Many questions remain about the effectiveness of glaucoma treatment, but the most urgent need for evidence is for the best management of both acute and chronic angle-closure glaucoma. Some studies are underway but more are needed. Laser trabeculoplasty has been shown to be cheap and sometimes effective in trials. The use of the Diode laser, as a means of deferring the need for surgery in poorer countries, needs

to be explored. In more affluent countries, a large trial is now needed to explore whether population-based screening for glaucoma can save sight.

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ABSTRACT

The number of people with glaucoma worldwide in 2010 and 2020

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Aim: To estimate the number of people with open-angle (OAG) and angle-closure glaucoma (ACG) in 2010 and 2020. **Methods:** A review of published data with use of prevalence models. Data from population-based studies of age-specific prevalence of OAG and ACG that satisfied standard definitions were used to construct prevalence models for OAG and ACG by age, sex, and ethnicity, weighting data proportional to sample size of each study. Models were combined with UN world population projections for 2010 and 2020 to derive the estimated number with glaucoma. **Results:** There will be 60.5 million people with OAG and ACG in 2010, increasing to 79.6 million by 2020, and of these, 74 per cent will have OAG. Women will comprise 55 per cent of OAG, 70 per cent of ACG, and 59 per cent of all glaucoma in 2010. Asians will represent 47 per cent of those with glaucoma and 87 per cent of those with ACG. Bilateral blindness will be present in 4.5 million people with OAG and 3.9 million people with ACG in 2010, rising to 5.9 and 5.3 million people in 2020, respectively. **Conclusions:** Glaucoma is the second leading cause of blindness worldwide, disproportionately affecting women and Asians.

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