

# The management of acute angle-closure glaucoma

JOHN F. SALMON

Although the management of acute angle-closure glaucoma is comprehensively covered in the major textbooks of glaucoma and the results of treatment have been extensively reported in the past, there is still considerable variation in how individual ophthalmology departments treat such patients. Once the diagnosis of acute glaucoma has been made, the principles of management are to control the intraocular pressure medically, to reduce ocular inflammation with topical corticosteroids and to reverse the angle closure with pilocarpine. The definitive treatment is to then undertake a laser iridotomy, to relieve the pupillary block and open the angle.

In this issue of *Eye* the effectiveness of a protocol for the management of acute glaucoma is reviewed by Choong *et al.*<sup>1</sup> After a clinical audit was undertaken which revealed that a diverse selection of drug regimes were being used in one unit, clear and unequivocal guidelines for the management of these patients were adopted. Using a stepwise approach the intraocular pressure was controlled in all patients with acute glaucoma within 7 hours of presentation. There are three important aspects of the protocol that should be amplified: the use of supine positioning, the delayed use of pilocarpine and glycerine and the potential to be misled by the use of hyperosmolar substances.

It has been recognised for many years that in the prone position there is forward movement of the lens-iris diaphragm, which will tend to occlude an anatomically predisposed angle.<sup>2</sup> It therefore makes sense to place a patient with acute glaucoma in a supine position (particularly after the use of hyperosmolar substances) so that the lens can fall backwards slightly, thereby mechanically helping to relieve the angle closure.

Pilocarpine results in miosis, which improves the outflow facility by relieving pupillary block and by pulling the peripheral iris from the anterior chamber angle. At the same time it may cause shallowing of the anterior chamber, particularly when a 4% concentration is used (a side-effect that may precipitate acute pupillary block glaucoma if 4% pilocarpine is used prophylactically in the fellow eye).<sup>3</sup> Pilocarpine is ineffective when

instilled into an eye with high intraocular pressure and can cause systemic intoxication when used in excess, resulting in sweating, salivation, lacrimation, nausea, vomiting and diarrhoea.<sup>4,5</sup> It follows that once the intraocular pressure has been reduced medically only a single drop of pilocarpine 1% or 2% should be used.<sup>4,6</sup>

By delaying the introduction of oral glycerol for at least an hour, a significant number of patients are spared the potential side-effects associated with this drug. After the use of hyperosmolar substances the intraocular pressure may drop despite the presence of a persistently occluded angle, only to rise precipitously the following day. Once the intraocular pressure has been controlled and prior to undertaking a laser iridotomy, it is important to re-evaluate the angle by *repeating the gonioscopic examination*. If the angle is still closed then factors other than (or in addition to) pupillary block could be playing a role (for example: a large lens, an anterior subluxed lens, plateau iris configuration or ciliary block) and specific treatment to deal with these conditions should be instituted. One should still proceed to undertake a laser peripheral iridotomy, but mechanical measures to open the angle can be tried and, in particular, peripheral iridoplasty, where a ring of contraction burns are placed on the peripheral iris using the argon laser, has been reported to be an efficient and effective option.<sup>7</sup>

Choong *et al.*'s paper confirms the finding of most follow-up studies of patients with acute glaucoma that many eyes treated with peripheral iridectomy will eventually require medication to control chronic pressure elevation and that some will need filtering surgery.<sup>8,9</sup> Because of the ease and safety of laser iridotomy and the difficulty in predicting which patients will not be controlled after laser iridotomy, a stepwise approach should be adopted introducing topical medication before incisional surgery is undertaken.<sup>10</sup> Early treatment with trabeculectomy should only be considered when the intraocular pressure cannot be controlled on presentation. Previous studies have reported that there is an increased risk of malignant (ciliary block) glaucoma under these circumstances.<sup>11</sup>

John F. Salmon, MD, FRCS,  
FRCOphth ✉  
Oxford Eye Hospital  
Radcliffe Infirmary NHS  
Trust  
Oxford OX2 6HE, UK  
Tel: +44 (0)1865 224360  
Fax: +44 (0)1865 224013

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