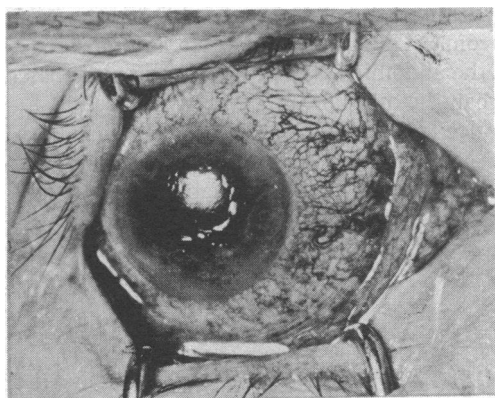


ABC of Ophthalmology

P A GARDINER

GLAUCOMA

A common disease



In the UK about 1% of people aged over 40 years and about 5% of those over 65 develop glaucoma; the proportion rises even higher among those of 80 or more. There is little difference between the sexes. Though there are congenital and juvenile forms, these are extremely rare outside families with known victims. After the age of 40 glaucoma should feature seriously in the list of possible diagnoses of eye disease.

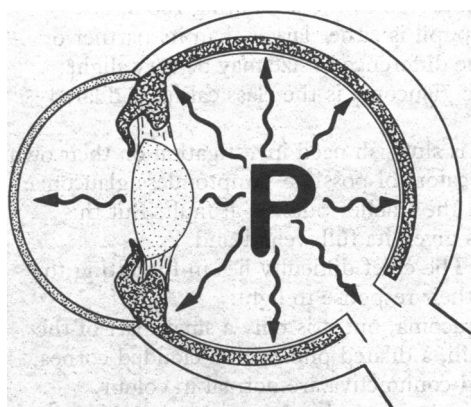
A blinding disease

1. Untreated glaucoma causes blindness
2. The earlier treatment is given the more vision that will be preserved
3. Traditional digital methods are inaccurate

If left untreated glaucoma is a blinding disease, and early diagnosis and treatment are therefore crucial. Treatment can control the disease and limit visual loss, and the earlier it is started the more vision will be preserved.

The intraocular pressure is usually higher than normal in glaucoma, though the relation between the increase in pressure and its effect on visual function is uncertain. Some eyes tolerate a high pressure, while others do not: there is a condition called low-tension glaucoma. The range of normal values is wide (16-22 mm Hg) with diurnal variations of 3-5 mm Hg. Figures of tension are therefore unreliable as absolute diagnostic or prognostic weapons even when measured by tonometry. Digital methods tend to be inaccurate even in practised hands.

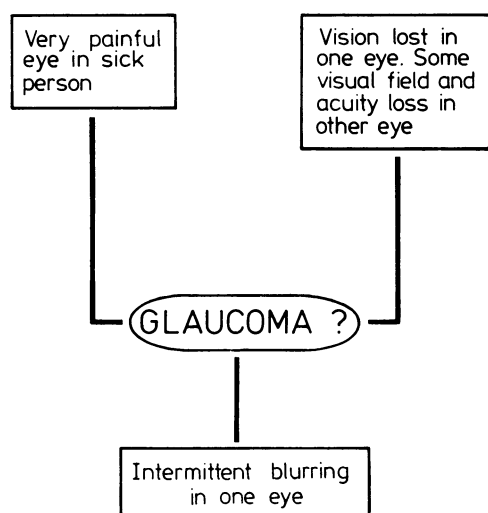
Loss of vision: quick or slow



The increased pressure interferes with the transparency of the cornea and with the function of the retina, blunting its conduction of impulses, ultimately to the point of extinction.

This loss of vision may occur suddenly over a few days. Or it may be such a slow process that it takes many years before any significant loss can be measured, and the patient may not be aware of the loss because the last function to go is visual acuity for detail.

Clinical presentation varies

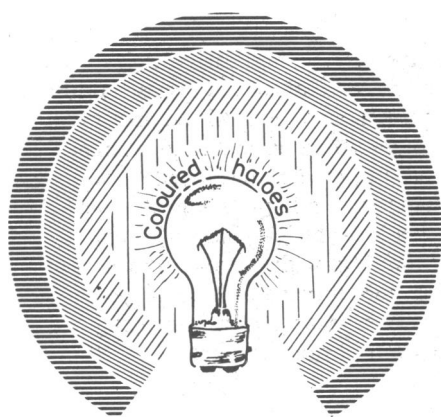


In ordinary clinical practice the problems are not those of measuring tension correctly but of being sure not to miss the signs that a sick person might be ill because of glaucoma. The condition varies considerably in presentation. The eye may be acutely painful and the patient very sick, or the eye may have been giving only mild intermittent trouble for weeks or months before the patient mentions it. Occasionally one eye may have failed completely and the other have lost much visual field or acuity before the patient seeks help.

Although the type of glaucoma—open angle or narrow angle—has a considerable effect on the type of treatment, in general practice it is rarely necessary to differentiate if an ophthalmologist's opinion is to be sought.

A patient aged over 40 who presents with headache, possibly very severe, may have acute or subacute glaucoma. The headache is often accompanied by nausea and vomiting. Indeed the abdominal symptoms may predominate. The fact that one eye is redder than the other or has severely reduced vision may not be reported or noticed. If it is noticed its presence may be thought to be mere coincidence. This may be a disastrous assumption: even an eye with previously normal sight may be irretrievably damaged in a few days if it is untreated. Alternatively the clinical episode might represent the final blow to an eye that had been quietly glaucomatous for some time.

Blurring and rainbows

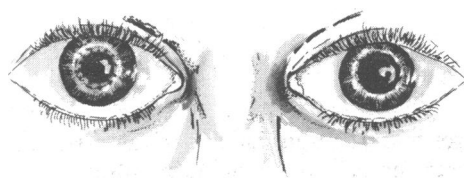


Although glaucoma can attack eyes that were previously normal there are two important early symptoms: blurring and rainbows round lights.

Blurring is intermittent but occurs at more or less regular intervals—sometimes at particular times of day. Attacks last from a few minutes to three-quarters of an hour and may be accompanied by headache, which is usually confined to the temporal area. The blurring, which may be only slight, affects both near and distant vision.

Patients should also be asked whether they see coloured haloes or rainbows around lights. Textbooks usually call this a halo, but a glaucomatous halo is invariably coloured. An unequivocal story of haloes around lights is evidence of glaucoma, irrespective of any other symptoms that might or might not be present.

Pupils unequal and sluggish

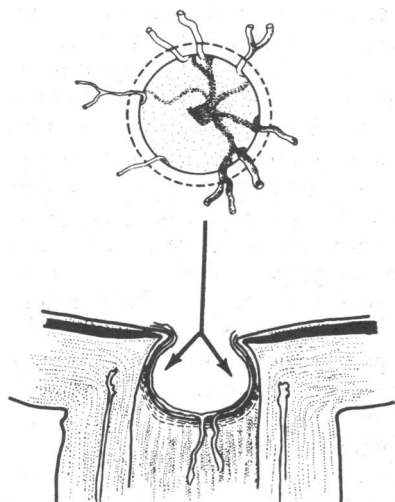


The state of the pupil is a valuable sign in the consulting room. Characteristically a glaucomatous pupil is either larger than its partner or more sluggish to light, or both. The difference in size may be very slight: only in the more acute or subacute glaucoma is the classical fixed dilated pupil found.

Both a large pupil and one that is sluggish need investigation on their own account, but they are reliable indicators of possible symptomless glaucoma. One difficulty lies in thinking that the smaller pupil is at fault. But this is not serious if pupil inequality is given its full weight and ophthalmological opinion sought. The chief difficulty lies in forgetting to look at the size of the pupils and their response to light.

Redness is common in acute glaucoma, but it is only a small part of the picture, which is dominated by pain, a dilated pupil and a clouded cornea. In chronic glaucoma the sclera and conjunctiva are normal in colour. Therefore neither the presence of redness nor its absence is a help.

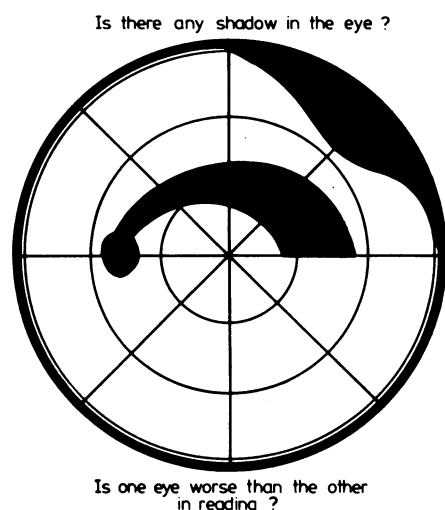
Well-defined optic discs: a late finding



The glaucomatous disc is well defined when fully developed. In its early stages, however, it is no more than a very sharp edge, often in only one sector, and it needs considerable experience to recognise it.

By the time full cupping has appeared the disease is far advanced. Full cupping is therefore not a sign to wait for before seeking a diagnosis.

Field defects and field loss

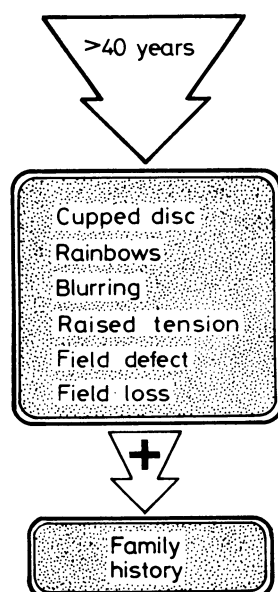


Field defects are hard to find in the early stages, except with special instruments. But the patient should be asked whether there appears to be a shadow in the eye and whether there is any difference in the ability to read very small print between one eye and the other with glasses. If this ability is tested many patients with glaucoma will produce evidence of a possible field defect.

The detection of field loss is the most important single measure in diagnosing glaucoma. At all stages of the disease the degree of field loss will show how seriously the disease is progressing and indeed whether it exists as any more than a potential threat to vision. The loss may be peripheral or central.

The most important loss is of any portion of the central field because this affects acuity. Central field loss may be an early sign. It may first express itself as letter missing in a line of small print, often described (if it is mentioned) merely as "difficulty with reading." The Amsler chart is particularly useful in elucidating central defects.

When to suspect glaucoma

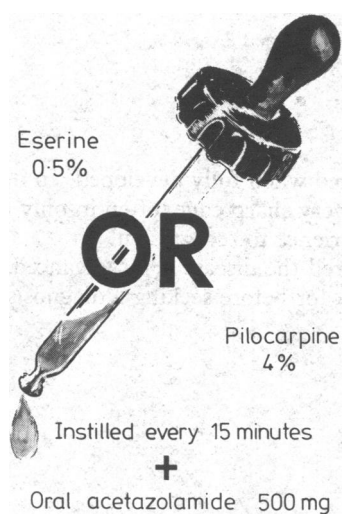


Any of these symptoms and signs should lead to the suspicion of glaucoma in anyone aged over 40, particularly if there is a family history of glaucoma.

Patients often do not know how to describe their relatives' eye conditions. But the fact that middle-aged or elderly relatives have visited hospital for their eyes and have used drops is evidence that they might have had glaucoma. If there is a family history extensive investigation is justified even if symptoms are only minor and confused.

Opinions differ about screening for glaucoma in people over 40 with a family history and about the frequency of observation in those suspected of having the condition. But people with suspicious symptoms (and their relatives) should be warned of the possible changes and told to look out for episodic blurring or coloured haloes.

Management



Management may be complex and protracted. Even so the GP can take simple measures to prevent unnecessary complications. Many patients have to use drops over many years to control the disease. Drops can be extremely effective, but their use must be uninterrupted. Two bottles of drops should always be issued at the same time. If only one is prescribed and then spilt patients tend to wait until their next visit to hospital before asking for more. Except immediately after operation, patients should not be deterred from using their only available drops by the fact that the time on the date stamp has expired: it is safer to use out-of-date drops than not to use any. They should also take their drops as usual when they are on holiday, and if they forget them they must seek help, however difficult this may be.

A GP who suspects glaucoma in a patient and finds it hard to arrange emergency admissions would be wise to instil a miotic. If there is no glaucoma this will do no harm, and if there is it may save sight and will confirm the diagnosis if the symptoms are greatly relieved.

The miotic (eserine 0.5% or pilocarpine 4%) should be instilled every 15 minutes for one hour into the eye with a dilated or sluggish pupil, and acetazolamide (500 mg) should also be given once by mouth. This procedure should be performed only in cases of acute glaucoma.

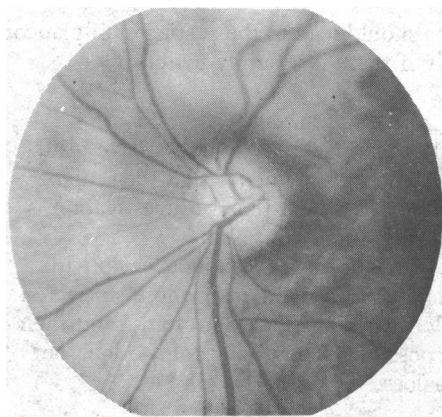
Precipitating factors: 56 drugs

Date Stamp Assistant's Quantity Assessment	No. of days treatment NB. Ensure dose is stated	NP	Pricing Office use only
Some of the drugs that may precipitate or aggravate glaucoma:			
Benzhexol Levodopa Dothiepin Imipramine Propantheline Betamethasone			
Signature of Doctor		Date	

There are 56 drugs in common use that may precipitate glaucoma or aggravate it. The commonest are those that have an action similar to that of atropine—for example, many gastrointestinal drugs—and those given to control tremor or rigidity, as in Parkinson's disease. Any reports from patients about treatment are likely to be garbled, and even if accurate an optician might not recognise the implications. Likewise, few ophthalmologists can identify pills and capsules from a description of their shape and colour. As well as being aware of the effects of treatment on eye conditions, GPs are well placed to give relevant details to ophthalmologists.

There is also a psychosomatic element in glaucoma. The blurring of vision that may occur in people under stress may be wrongly attributed to the stress. The blurring might instead be due to the glaucoma and the treatment for stress might actually precipitate attacks of glaucoma.

Conclusion



Glaucoma must be considered in any patient over 40 who has blurred vision. If the patient also sees coloured haloes round lights he almost certainly has glaucoma. The important signs are dilated and sluggish pupils.

The GP's difficulty is to know which patients he should refer to hospital for extensive investigation and which can rely on services outside hospital such as opticians and medical eye centres. Certainly all patients with typical symptoms should attend hospital. As with other ocular diseases, the threshold for referral must be much lower if the eye under suspicion is the better one.

The photograph of an eye suffering from acute glaucoma is reproduced from *An Atlas of Diseases of the Eye* by kind permission of Dr Peter Hansell and Churchill Livingstone Ltd; that of glaucomatous cupping is reproduced by permission of the Institute of Ophthalmology.