Title:

Preventing blindness from glaucoma; risk-stratified screening may be more significant than technological advances.

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Blindness, glaucoma, screening.
In 1982 Grant & Burke wrote a paper intriguingly titled ‘Why do some people go blind from glaucoma?’\(^1\) It came up with a number of important findings one of which was that approximately 30% of those who go blind from this disease are blind, in both eyes, at presentation. Blindness being defined as an acuity of less than 20/200 (<6/60 metric Snellen) in the better eye, or a residual visual field of less than 10 degrees. While the painless and asymptomatic nature of open angle glaucoma might be a partial explanation for late presentation one would have thought that the normally slow rate of progression, allied with the need for patients to seek ophthalmic care for their presbyopia (the average age of a glaucoma patient is around 65 years when the need for optical correction for presbyopia is practically universal) would have led to the detection and referral of these cases at a much earlier stage of the disease. What was even more surprising was their observation that most of the blind patients were aware of their decreasing vision for months, or even years, prior to seeking medical advice.

In a more recent report by Sinclair,\(^2\) who investigated the number of blind registrations from glaucoma in Fife between 1990 and 1999, a significant number of cases were again found to have moderate to advanced visual field loss, with 23% being eligible for blind registration, at their first appointment.

We have recently undertaken a review of all glaucoma referrals and blind or partial sight registrations at Manchester Royal Eye Hospital, during 2003. Thirty nine cases of blindness (approximately 10% of the total) were found to be due to open angle glaucoma and, as can be seen from figure 1, 28% were registered blind within 3 years of first presentation.

A further finding of the Manchester study was the relatively low percentage of blind/partially sighted glaucoma cases whose referral was initiated by optometrists, 42%
versus 90% nationally for all suspect glaucoma cases. This might be indicative of situational barriers to access such as perceived costs associated with getting an eye examination. Laidlaw has already shown that the imposition of sight test fees had a deleterious effect upon the number of glaucoma referrals to Bristol Eye Hospital.

It is widely believed that an important risk factor for blindness from glaucoma is the existence of significant visual field loss. While this finding may, in part, be the result of workup bias, i.e. those with more rapidly progressing disease are more likely to present with significant visual field loss, it suggests that early detection leads to a better long term outcome. It is this belief that has led to the widespread search for new technologies, e.g. confocal optic nerve head imaging, birefringent measures of the retinal nerve fibre layer and ocular coherence tomography. Many of these new technologies are promoted on the basis of being able to detect glaucoma before the patient has a reproducible visual field defect with conventional technologies.

It is clear that new technologies are not required to detect the extensive visual field loss that many of those who progress to blindness have at first presentation. It is also well documented, from a series of epidemiological studies, that the more widespread use of existing technologies will improve early detection. In the North London trial 6 75% of cases with ‘definite’ glaucoma were new cases and these were detected with a simple combination of tests (suprathreshold perimetry, tonometry and slit lamp examination of anterior eye and optic nerve head) that are readily available at most optometric practices.

The findings of the Manchester study confirm earlier work that late presentation is a common occurrence in those who become blind from glaucoma. Breaking down barriers to access, targeted screening and a campaign to inform patients about the importance of regular eye examinations might have a much more significant effect upon the number of patients going blind from this disease than the current concentration of effort into the development of more sensitive technologies.

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1 Grant WM, Burke JF. Why do some people go blind from glaucoma? Ophthalmology 1982;89:991-998
3 Laidlaw DAH, Bloom PA, Hughes AO, Sparrow JM, Marmion VI. The sight test fee: effect on ophthalmology referrals and rate of glaucoma detection. BMJ 1994;309:634-636.