



Identifying the Glaucoma Suspect

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Abstract

Factors to be considered in identifying patients who require additional investigation as glaucoma suspects are discussed. This includes intraocular pressure, anterior chamber, and optic disc features.

Abrégé

Ce travail est un exposé des facteurs à surveiller dans le dépistage d'un patient soupçonné de souffrir du glaucome. Il est question de la tension intraoculaire, la chambre antérieure et de l'apparence de la papille de Mariotte.

Glaucoma has traditionally been considered as a disease process associated with an increase in intraocular pressure leading to damage of nerve fibre bundles with associated field loss.^{1a} This concept is being reconsidered in light of recent studies monitoring patients with chronically elevated intraocular pressures who fail to develop optic nerve changes or visual field defects.^{1b,2} Although most glaucoma patients do, in fact, have an elevated intraocular pressure, most patients with an elevated pressure do not have glaucoma. Only a small number (i.e. 5% to 6%) of patients with ocular hypertension will go on to develop glaucoma.³ Conversely, a normal intraocular pressure does not eliminate the possibility of open angle glaucoma being present.^{4a}

Since intraocular pressure alone may not be a reliable indicator of the presence of glaucoma (except when highly elevated), the examiner must consider other factors in order to identify the glaucoma suspect. My purpose is to review the principal factors, including intraocular pressure, which identify the patient for whom additional investigation is indicated. It is not within the scope of this presentation to discuss specific methods of followup investigation, or by whom these procedures can be performed.

Intraocular pressure

Investigators have identified the mean intraocular pressure to be approximately 16 mm Hg by applanation.^{5,6} Intraocular pressures elevated 2 standard deviations above the mean (i.e. 21 mm Hg) would be found in about 2.5% of the population, and those 3 standard deviations (i.e. 24 mm Hg) would be found in about 0.14%.⁷ Therefore, pressures of 20 mm Hg or below are considered statistically normal, those between 21 and 24 mm Hg are borderline, and pressures greater than 24 mm Hg are considered statistically abnormal.⁸ Although patients with pressures of 21 mm Hg or greater are not necessarily physiologically abnormal, it remains that most patients with glaucoma do have intraocular pressures greater than 21 mm Hg.^{4b} Differences of pressure between the two eyes can be considered significant when they are greater than 2 standard deviations from the mean difference (i.e. 4.1 mm Hg).⁹ This difference, irrespective of the absolute pressure, indicates that the eye with higher pressure is hypertensive.¹⁰ Therefore, it is advisable that patients exhibiting applanation pressures of 21 mm Hg or greater, or a difference of 4 mm Hg between eyes, should be regarded with suspicion.

Optic disc

Excavation of the optic nervehead with associated field defect is a recognized sign in glaucomatous eyes.^{4c} In normal eyes the vertical and horizontal cup/disc ratio is highly correlated, and in most normal eyes the cupping is small. Only 15% to 16% of eyes with intraocular pressures under 20 mm Hg have a cup/disc ratio greater than 0.3.¹¹ Roy¹² has indicated a cup/disc ratio of 0.4 as significant and Cockburn^{13a} has stated that a 0.5 ratio should arouse suspicion. Vertical ovalness of the optic disc cupping is also a reliable parameter in the assessment of the disc for predicting field defects.¹⁴

In normal eyes, the cup/disc ratio of each eye is equal. Differences between eyes of 0.2 occur in only 0.5% of the population.^{13b,15a} Also of significance are eccentricities of cupping, irregularity of the nerve rim, and pallor of the disc.^{15b} Disc hemorrhages have a high significance in optic nerve disease, particularly in glaucoma.¹⁶

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Thus, further assessment is indicated in patients with cup/disc ratios of 0.5 or greater, asymmetry of 0.2 in cup/disc ratio between eyes, vertically oval cupping, cupping encroaching the disc margin, notching or undercutting of the rim, disc pallor, or disc hemorrhage.

Anterior chamber

There is an increased risk of glaucoma in patients with pigmentary dispersion syndrome.^{13c} This consists of heavy pigment deposits on the corneal endothelium (Krukenberg's spindle), iris atrophy and pigment accumulation in the trabecular meshwork. A large proportion of patients with Krukenberg's spindles also exhibit pressures greater than 22 mm Hg.¹⁷

There is a correlation between the shallowness of the anterior chamber and angle closure glaucoma.^{13d} The angle can be assessed using the Van Herick method using the biomicroscope.¹⁸ Cockburn has suggested that gonioscopic evaluation is indicated when the Van Herick method shows an anterior chamber depth to corneal thickness ratio of 0.3 or less.¹⁹

It would therefore be suggested that further assessment be performed in pigmentary dispersion syndrome or with a narrowed anterior chamber angle.

Other considerations

Subjective symptoms of pain in and around the eyes, blurred vision, and haloes may be suggestive of narrow angle glaucoma. Any of these symptoms should prompt further assessment. Patients who report a previous history of glaucoma should be assessed in greater detail unless presently under treatment. Those with a family history of glaucoma are at higher risk,^{20a} as are those with diabetes or coronary disease.^{20b} These factors should be considered when other aspects of the case are borderline.

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Errata

In our *Summary of C.O.E.T.F. Grants since 1980* (September, 1983), one of the studies was incorrectly identified, and we inadvertently omitted two of the authors' names from the funded study. The entry should have read as follows:

Dr. J. Jantzi, Dr. W. Jackson, Dr. K.M. Smith, Surrey, B.C. (\$4,000.00) for a study entitled the Incidence and Severity of Corneal Vascularization Induced by Soft Contact Lenses.

In the same summary, A grant of \$2,500.00 was identified as having been awarded to Drs. A. Devon and M. Long of Thunder Bay. While the C.O.E.T.F. Trustees did vote to approve the award as identified in the summary, that project was, in fact, not carried out as developed, and no C.O.E.T.F. grant was received by Drs. Devon and Long.

The editors apologize to the above optometrists for the erroneous attributions which were made in this summary.