

GLAUCOMA SCREENING

By

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Principle :

It is a screening search for an unrecognised disease by a rapidly applied test, more on the initiative of the doctor and not because patient seeks treatment. This helps in separating the healthy from the unhealthy, at the time of examination. It is done with the idea of nipping the disease in the bud. This has been an approved and accepted procedure and surveys were conducted in Lebanon & Israel. G day or Glaucoma day was conducted in United States of America as a routine. In Briton, Oxford was surveyed this way. At Government Erskin Hospital, Madurai all patients over 40 years who attended the eye department, were screened and the conclusion drawn is that 1 in 10 patients over the age of 40 years had glaucoma and 1 in 100 patients were blinded by it.

Type of Screening :

The types of screening available for detection of glaucoma are (1) Screening of the population (2) Prescriptive screening (3) Mass screening and (4) Selective screening.

The type of screening adopted for glaucoma is selective screening of the male and female population over the age of 40 years who run the risk of the disease.

Purpose of screening :

Glaucoma is a disease of unknown etiology with minimal symptoms. There is no known method of preventing it by

immunisation or otherwise. It is now considered to be genetically determined and hence the future of prevention lies in the hands of genetists. Early detection and institution of treatment at an early pathologic rise of intraocular pressure prevents tissue damage with attendant irrecoverable loss of vision.

Method of Detection :

This must be studied under the headings (1) who to be examined (2) how to be examined (3) who to examine (4) criteria for examination.

Who to be Examined :

All persons of both sexes over 40 in a population has to be examined. It is done for people who attend the eye department of an institution or the people attending an eye camp. These are the people with some ocular complaint and hence they do not reflect actual incidence of the disease in the population. Proper screening must be done by taking a census of the locality, making a list of the people over 40 years, inform and instruct them over the importance of the examination and bring them to the place of examination and study them. This examination is not reliable in patients with asymmetrical corneal curvature, corneal leucoma and staphylomas of the cornea. The findings are also unreliable in patients with miotic therapy and in those with antiglaucoma surgery within 3 weeks of operation. But now the National Society of Prevention of Blindness suggests screening for anybody over 35 years.

How to Examine:

Patient should be placed supine. The cornea should be anaesthetised with 4% Xylocaine one drop in each eye. This smarts the eye for about 2 minutes and hence the examination has to be done after that period. If done earlier patient screws the eyes and results are vitiated. The eye is opened by the left hand of the examiner taking care not to exert pressure on the eyeball. No speculum should be used and a small palpebral aperture is another point to be remembered. The patient should be asked to look straight up and not at close range to prevent the effects of accommodation. The tonometer that is more reliable and less expensive is the Schiotz weighted Tonometer. Since in this the calibration below 5 is unreliable, the next weight should be added and the scale reading brought between 5 to 15 for recording purposes. Two such readings should be taken in each eye.

Who to Examine:

It is preferable if an ophthalmologist examines the patients. Since it is not possible, in Mass Screening, a trained Tonometrist is a good substitute. Medical students, Refractionists and staff nurses can be trained for this purpose. The Medical Officer in charge of screening should supervise the work and occasionally test verify the readings for reliability. He should also verify whether the instrument shows the Zero mark in the test block before and after the screenings. Suspicious cases of raised tension should be rechecked and studied by the ophthalmologist.

Rate of Screening.

50 to 60 persons can be examined in an hour if the patients were previously

anaesthetised and led to the Tonometrist and another clerical help records the findings.

Critical Reading:

Various authors have used various Schlotz readings as critical reading suspicious of glaucoma. Leydlecker (1961) takes 20 mm. of Hg Schiotz as critical level. Packer and his colleagues (1965) use 21 mm. Ross (1968) Bendor Samuel et al (1960) Havener et al (1960), Tanbenhaus and Mccornick (1961) used 25 mm. as critical level. Power (1957) used 28 mm. as critical level of glaucoma.

This study is likely to miss cases of Low Tension glaucoma.

We take as our critical level 20.6 mm. of Mercury or any reading of schiotz scale of 4 or less and investigate the cases.

There is another factor also playing a part in glaucoma. Some eyes can tolerate an high Intraocular pressure and will not go into a stage of glaucoma. Thus 21 mm. of mercury Schiotz was found in 1 in. 400 normal persons and 25.8 of mercury was normal Intraocular pressure in 1 in. 4000 normal persons.

Method of Management:

To treat as 'pre-glaucoma' is a matter of controversy. On one hand the patient has to be subjected to an unpleasant and economically tiring treatment for the life time of the patient. On the other, it is well known that once optic nerve damage has occurred the visual loss is not halted by our treatment. The difficulty lies in diagnosis of early glaucoma. Laniz et al (1963) classification is an indication of cur doubt.

But we prefer to treat the cases of glaucoma with miotics. The resultant disadvantages are decreased vision in a population associated with cataract and a second group requiring addition lenses, for ciliary spasm produced by miotics.

In some, since they cannot afford miotic treatment, a surgical procedure is adopted. This in turn, runs its own risk of increasing the incidence of cataract, malignant glaucoma and

secondary complications of antiglaucoma surgery..

We have not also studied what is the normal Intraocular pressure in our population. That should be studied just before we decide the critical level of glaucoma. We have seen a number of patients with an intraocular pressure of 10 and 12 mm. Schiøtz with full vision and fields and showing no evidence of low intraocular pressure.

Efficiency of Screening Test.

CLASSIFICATION OF APPARENTLY WELL POPULATION.

Screening Result.	True disease.	Persons without disease.
Positive Report.	Obvious glaucoma persons with positive test.	No glaucoma but with positive test. (false positive)
Negative Result.	Obvious glaucoma with negative test.	No glaucoma with negative test.
Total	Total positive with glaucoma.	Persons without glaucoma.

This efficiency chart indicates that the single criterion of critical level alone cannot make one diagnose glaucoma but it should be followed by either provocative tests in the absence of fields or the presence of field changes of glaucomatous type or a typical early glaucoma Fundus should be present in addition. So atleast two out of the three criteria should be fulfilled before diagnosing a case of glaucoma.

Statistical Conclusions :

A mere numerical data consisting of persons over the critical level of glaucoma of a group of people examined

cannot indicate the true incidence of the disease. These programmes reach only a small proportion of the most susceptible group. The data of people examined and diagnosed by private physicians are also not available. Hence a glaucoma screening programme should consist of the ophthalmologists of the place who should willingly cooperate and take part not only in the screening programme but also provide the necessary data from their own clinical files.

The sensitivity of the test depends on the ratio of all the diseased persons

with positive results to all diseased persons in the population. The specificity of test depends on the ratio of all normal persons with negative results to all the normal persons in the population.

Some might argue that the estimated number of glaucoma are higher and the rate of occurrence is lower. Complete referrals, adequate representation of age groups, sex, race and socio economic factors and other data should be available for a precise estimation of the incidence of this disease.

Conclusion :

The ophthalmologist in a place should form a glaucoma committee with one who has worked in the field of glaucoma for sometime as a co-ordinator. They have to study and decide the normal Intraocular pressure of the population around them taking into consideration the age, sex, the social habits etc., Then they should screen all the population of the area with the help of social service organisations and decide the critical intraocular pressure which is to be considered as glaucoma and formulate a standard method of treatment of these patients in their own interest and in the interest of their patients.

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