BrienHoldenVisionInstitute

GLAUCOMA

THINK

When you do ophthalmoscopy on a woman's right eye, you see that her optic disc and cup look different when compared with her left eye. How will you know if this is normal?

WHAT YOU WILL LEARN

When you have worked through this unit you should be able to:

- Describe the features of open angle glaucoma
- Describe the features of closed angle glaucoma
- Describe when to refer to an ophthalmologist or medical practitioner.

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OPEN ANGLE GLAUCOMA

WHAT IS IT?	• There are two main types of glaucoma – angle closure glaucoma and open angle glaucoma • In angle closure glaucoma, there is a rapid or sudden increase in pressure inside the eye, because the iris is pushed up against the angle of the eye where the aqueous is drained (the anterior chamber angle is blocked or 'closed') • In open angle glaucoma, there is a gradual increase in pressure inside the eye – even though the anterior chamber angle is open • The increase in pressure inside the eye damages the retina and the optic nerve • This can lead to serious loss of vision and even blindness if it is not treated early • Open angle glaucoma is the most common type of glaucoma, and is also sometimes called 'chronic glaucoma' • It is quite a dangerous condition, since it progresses gradually and therefore often goes unnoticed for years • Open angle glaucoma usually affects both eyes.
CAUSES	• Aqueous in the anterior chamber normally drains out of the anterior chamber angle of the eye (where the iris and cornea meet) • In open angle glaucoma, there is a gradual blockage of aqueous outflow, or an overproduction of aqueous in the eye – causing a gradual increase in pressure inside the eye • We do not yet fully understand why this occurs • If the pressure in the eye (intra-ocular pressure) gets too high, it causes damage to the optic nerve – which can lead to blindness.
RISK FACTORS	• Age – open angle glaucoma typically occurs in people over 50 years of age • Family history of glaucoma • Medical conditions – people with diabetes or high blood pressure have a greater risk of getting glaucoma • High myopia (near sightedness) • Medicines, especially steroid use, increase the risk of developing open angle glaucoma.
SYMPTOMS	• In its early stages, open angle glaucoma usually has no symptoms • It is painless and happens very slowly, so initially people are unaware that they have this problem with their eyes • Most people do not notice problems until quite a bit of visual loss has occurred – this makes it quite a dangerous condition • The outer (peripheral) field of vision is loss first • In later stages of glaucoma, people might complain of bumping into things, or that they cannot see in things in the periphery of their visual fields • Central vision is usually not lost until very late in the disease.

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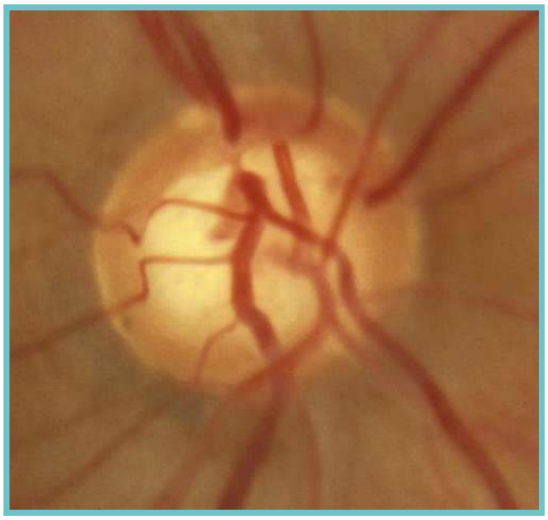
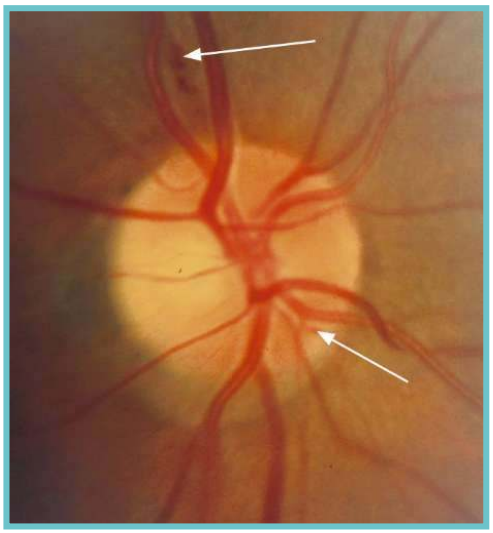
SIGNS	• C:D ratio of 0.5 or greater, or a difference of 0.2 or greater in C:D ratio between the two eyes • High pressures (greater than 20 mm Hg in either eye, or a difference of 2 mm Hg or greater between the two eyes) • Restricted confrontation fields • Optic nerve cupping (indentation of the optic disc) • Pale coloured optic nerve • Retinal haemorrhages in and around the optic disc (splinter or flame shaped).
WHAT DOES IT LOOK LIKE?	 ***Figure 28-1: C:D ratio > 0.6 because of glaucoma [photo courtesy of Richard Bourne: ICEH]***  ***Figure 28-2: Splinter haemorrhage in the retina as a result of glaucoma [photo courtesy of Richard Bourne: ICEH]***

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TREATMENT PLAN	• Open angle glaucoma has no symptoms in its early stages • Once the damage is done to the optic nerve, you cannot restore vision • There is no cure for glaucoma, but it can be controlled by lowering the pressure inside the eye – to prevent or delay further damage to the optic nerve • The intra-ocular pressure is usually lowered with the use of eye drops, and/or other medications, surgery or laser treatments • Chronic (open angle) glaucoma can only be detected by regular eye examinations, which include the measurement of intra-ocular pressure (tonometry) and examination of the optic disc and retina (ophthalmoscopy) • Vision loss and blindness can be prevented by early diagnosis and treatment of glaucoma.

REFERRAL CRITERIA	• Refer anyone with:
	  ○ C:D ratio of 0.5 or greater, or a difference of 0.2 or greater in C:D ratio between the two eyes
	  ○ High intra-ocular pressures (e.g. 20 mm Hg or above)
	  ○ Restricted visual fields (confrontation test)
	  ○ Anyone you suspect may have glaucoma due to risk factors such as a family history or diabetes.

- **If untreated, glaucoma can cause blindness**
- **It is important to refer anyone whom you think might have glaucoma.**

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ACUTE ANGLE CLOSURE GLAUCOMA

WHAT IS IT?	• A rapid or sudden increase in pressure inside the eye, because the iris is pushed up against the angle of the eye where the aqueous is drained • Usually happens at night when the light is dim and the pupil is bigger • Intra-ocular pressures as high as 50 or 60mmHg • Vision will be reduced in the affected eye • Further attacks will follow and more damage is done to the eye each time there is an attack. • Eventually the eye will become blind if it is not treated • Angle closure glaucoma is quite common in Asian eyes • People with hyperopia (far-sightedness) have shallow anterior chambers and are more at risk of angle closure.
CAUSES	• The increase in pressure inside the eye is caused by a blockage of the angle in the eye • When the angle is blocked the aqueous cannot flow out of the eye • The eye begins to ache because pressure builds up inside it • An angle closure attack can also be caused by dilation of the pupils during an eye examination • If angle closure glaucoma is not treated immediately, the increased pressure will damage the optic nerve; this can lead to blindness.
WHAT DO I ASK?	• Does your eye hurt? Did your eye hurt last night? • Does your eye hurt more in bright light? • Has your vision changed? • Do you feel nauseous or vomited recently? • Do you see halos (rings) around lights?
SYMPTOMS	• Severely painful eye • Headache • Nausea and vomiting • Blurred vision • Sees halos around lights (because the cornea is swollen) • Redness and tearing • Sensitive to light (photophobic) • Usually in one eye only.
SIGNS	A person who has an attack of acute angle closure glaucoma will have: • A very red eye • A cornea that is cloudy (the pupil and iris will not be easy to see) • The pupil in that eye is often bigger and not round when compared with the other eye • A pupil that does not react to light.

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WHAT DOES IT LOOK LIKE?	 ***Figure 28-3: An eye with acute angle closure glaucoma – red eye, cloudy cornea, irregularly shaped pupil.*** ***[photo courtesy of John DC Anderson – the International Centre for Eye Health]***
WHAT SHOULD I DO?	• Measure vision • Check pupil reactions • If possible, check the eye pressure with a tonometer or with your fingers. With the person's eyes closed, gently press on the eye with your fingers. An eye with acute angle closure will feel like a hard rock. • Look at the cornea with a slit lamp if possible.
REFERRAL CRITERIA	• Refer urgently to an ophthalmologist or medical practitioner for immediate treatment! • Acute glaucoma needs to be treated quickly because it is a serious problem which can damage the optic nerve and cause a loss of vision • Surgery needed to stop new attacks from happening.

PREVENTION OF ACUTE ANGLE CLOSURE GLAUCOMA:

- **If the eye is not treated, further attacks will follow and more damage is done to the eye each time there is an attack**
- **The eye will become blind if not treated**
- **If a person has an attack of acute glaucoma in one eye, there is a 50% chance that there will be an acute attack in the other eye within 5 years**

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SUMMARY – GLAUCOMA

GLAUCOMA

- Increased pressure inside the eye that damages the optic nerve
- Caused by a blockage of the drainage system of the eye
- Has two forms: Open Angle Glaucoma and Closed Angle Glaucoma
- In its early stages it has no symptoms and is painless
- Eventually, it can lead to peripheral vision loss and then to blindness
- Refer all people with a large C:D ratio, reduced field of vision or high intraocular pressures

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TEST YOURSELF QUESTIONS

1. **Name three signs of open angle glaucoma in the eye:**

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2. **Name two signs of closed angle glaucoma in the eye:**

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3. **You see a person with swelling of the optic nerve. How urgent is the referral and why?**

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4. **Name three risk factors for age related macular degeneration (ARMD):**

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5. **Name two retinal conditions caused or made worse by high blood pressure or diabetes:**

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6. **You refer a person because you noticed small clusters of pigment on the peripheral retina. Why should you refer the person's children also?**

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