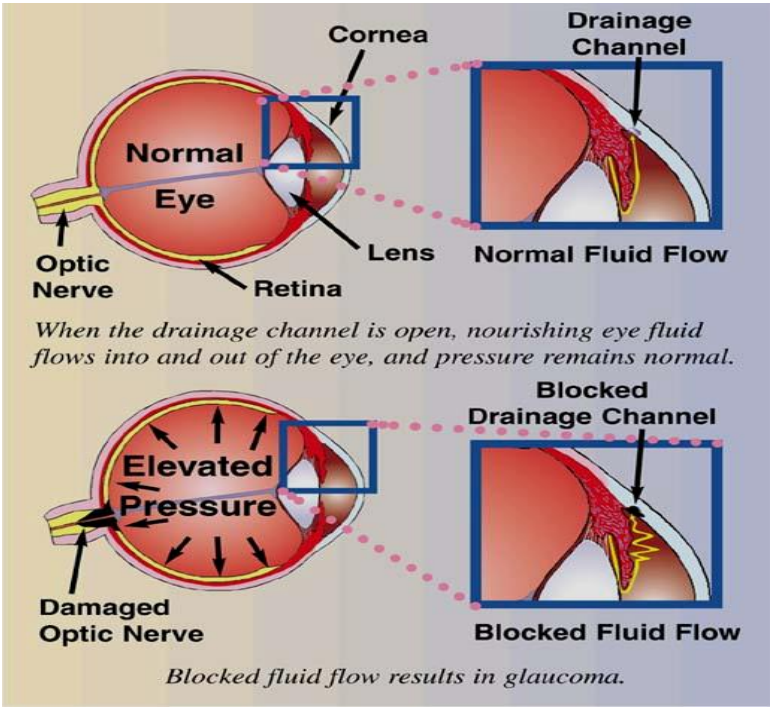
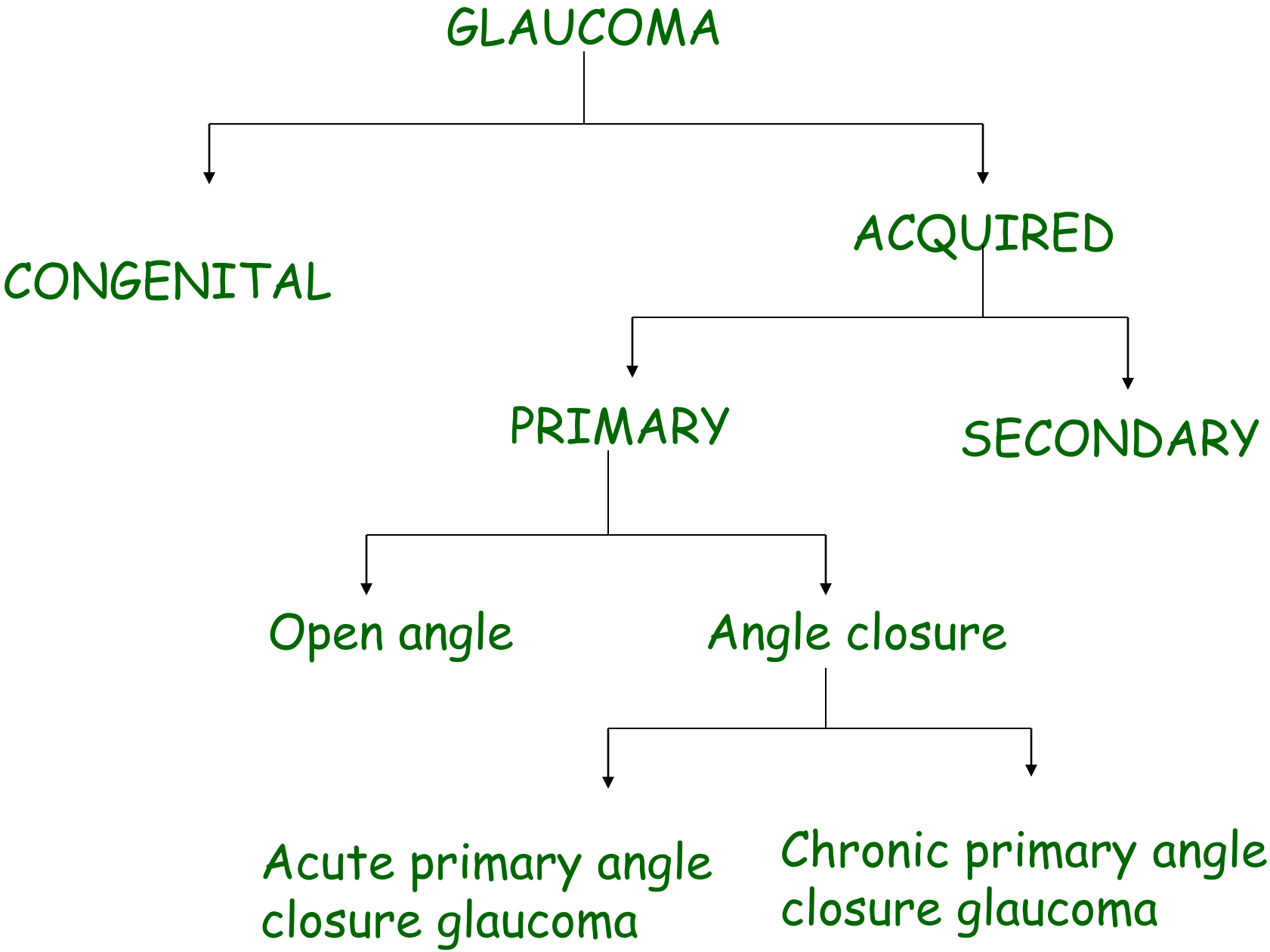
CHRONIC ANGLE CLOSURE GLAUCOMA

INTRODUCTION

- Glaucoma is the second leading cause of blindness worldwide.
- It is defined as a group of disease that have in common a characteristic optic neuropathy with associated visual field loss for which elevated IOP is one of primary risk factors.
- The blindness caused by glaucoma is irreversible.
- Glaucoma is sometimes called the “silent blinder”, because many people are unaware that they have the disease.



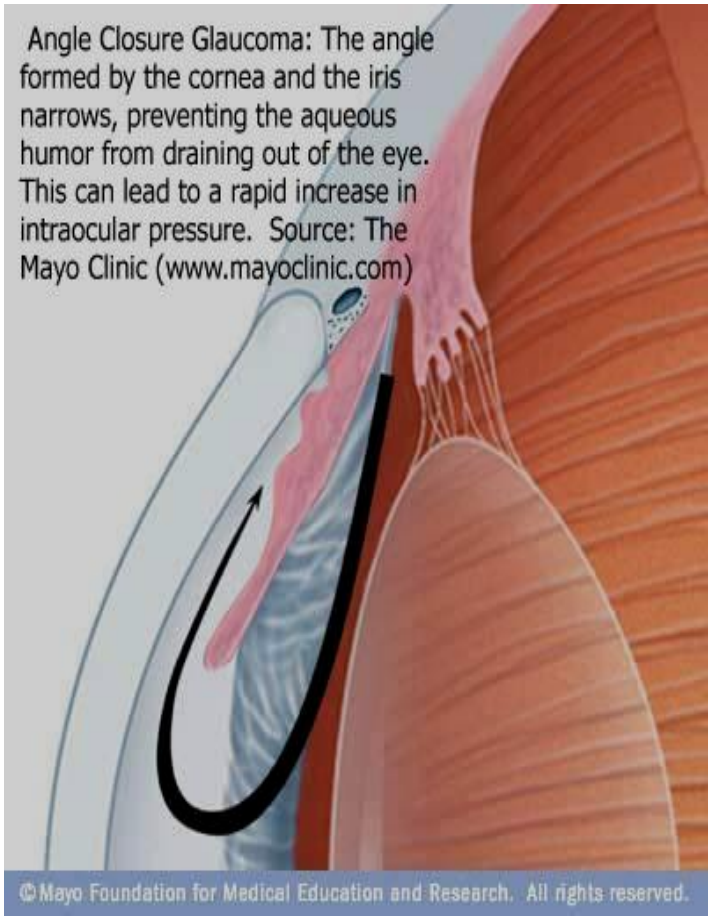
Types Of Glaucoma



ANGLE CLOSURE GLAUCOMA (ACG)

- Angle closure is a disorder of ocular anatomy characterized by closure of the drainage angle by appositional or synechial approximation of the iris against the trabecular meshwork, blocking its access to aqueous humor.

- Symptoms of acute angle closure are severe ocular pain and redness, decreased vision, colored halos around lights, headache, nausea, and vomiting. Intraocular pressure (IOP) elevation followed by the development of glaucomatous optic neuropathy.



PRIMARY ANGLE CLOSURE GLAUCOMA

- Primary angle closure includes those that are caused by pupillary block, angle crowding (from plateau iris configuration or anterior lens position) or a combination of both.

- It has been estimated that 67 million people worldwide are affected with a primary glaucoma and that one-third have PACG.

- A prevalence study reported PACG as occurring more frequently in Italy than in the rest of the European population (0.6-- 0.1%). In China alone an estimated 3.5 million people are afflicted with the disease, and 28 million are estimated to have occludable drainage angles.

- PACG is more visually destructive than POAG, and it is responsible for the majority of the bilateral glaucoma-related blindness.

MECHANISMS

- The mechanisms responsible for angle closure are divided into 4 categories:

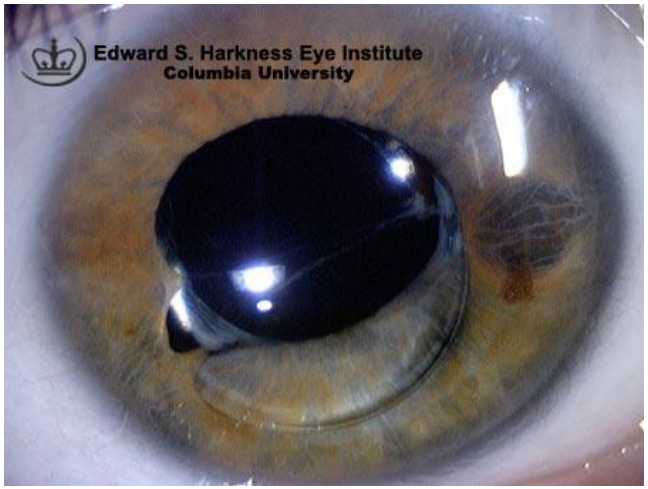
- ✓ Pupillary block,
- ✓ Anterior nonpupillary block including plateau iris and peripheral iris crowding (or prominent last iris roll),
- ✓ Lens-related, and
- ✓ Factors behind the lens.

- Pupillary block:

- The prevalent theory concerning the etiology of pupillary-block glaucoma is based on the pressure gradient created between the anterior and posterior chambers.

- This pressure gradient is created by the sequestration of aqueous humor in the posterior chamber because of its inability to pass through the pupil.

- This situation eventually results in a convexity of the iris.



Pupillary Block

- PLATEAU IRIS CONFIGURATION

- The concept of the plateau iris was first published by Shaffer, referring to an eye that does not have a very shallow anterior chamber, but a critically narrow angle.

- Plateau iris configuration refers to the preoperative findings of anterior chamber of normal depth with a flat iris plane by direct examination with the slit-lamp, but an extremely narrow or closed angle by gonioscopic examination.

- Plateau iris syndrome refers to the clinical picture of either spontaneous or mydriasis induced angle closure despite a patent iridectomy in an eye with a plateau iris configuration.

- Because an element of pupillary block can exist in eyes with plateau iris configuration, angle closure on the basis of this configuration cannot be diagnosed until any component of pupillary block has been relieved by iridotomy

- LENS BLOCK

- Levene proposed the possibility of a lens-block mechanism in the development of some angle-closure glaucoma.

- Mechanisms may be interrelated. For example, changes in the lens are also related to pupillary block.

- Ocular biometry in PACG patients revealed increased anteroposterior thickness of a lens and forward lens positioning.

- These have been regarded as the anatomical factors that increase relative pupillary block.”

- CILIARY BLOCK (AQUEOUS MISDIRECTION)

- Malignant glaucoma was classically described as occurring postsurgery.

- It has been further defined to include many different cases of angle-closure glaucoma unresponsive to traditional miotic treatment, most of which include some aspect of aqueous location within the vitreous.

- Aqueous misdirection has been thought to be a principal mechanism in malignant glaucoma.

- MULTIMECHANISM GLAUCOMA

- Ritch et al suggested the term multi mechanism or mixed-mechanism angle-closure glaucoma.

- In multi mechanism glaucoma, some element of pupillary block contributes to eyes with lens related glaucoma, malignant glaucoma, and plateau iris.

BLOCKS AT LEVEL OF TRABECULAR MESHWORK

- APPOSITIONAL AND SYNECHIAL CLOSURE:
- According to the mechanisms, contact between the iris and trabecular wall occurs and causes obstruction to the outflow.
- Appositional and synechial closure are two types of contact between the iris and trabecular meshwork.
- Appositional closure: It is closure of the anterior chamber without peripheral anterior synechias
- Synechial angle-closure*:* It is the closure of the anterior chamber angle by peripheral anterior synechias

CHRONIC ANGLE-CLOSURE GLAUCOMA

- Chronic angle-closure glaucoma (CACG) refers to an eye in which portions of the anterior chamber angle are closed permanently by peripheral anterior synechia (PAS).

- A prolonged acute attack or a series of Subacute attacks could lead to progressive PAS formation.

- More precisely the term CACG is used to denote eyes in which chronic appositional closure without PAS has led to elevated intraocular pressure (IOP) or in which appositional closure with the formation of PAS has occurred in the presence of normal IOP

CAUSES

- Causes of CACG include:
- PAS Formation
- Plateau Iris
- Combined Mechanism Glaucoma
- Mixed Mechanism Glaucoma
- Miotic-induced Glaucoma.

SIGNS AND SYMPTOMS

- Patients with chronic PACG are typically older and symptomatic.
- Women are more commonly affected than men.
- Patients of Asian descent are more most predisposed to CACG.

CONTD….

- The depth of shallow anterior chamber is deeper in CACG.
- There is characteristic glaucomatous damage to optic disc and visual field.
- The distinguishing characteristic of CACG is absence of visible anterior chamber angle structures.
- Other features of CACG include smaller corneal diameter, short axial length, shallower anterior chamber, thicker lens, swelling of ciliary process and anterior rotation of ciliary body.

DIAGNOSIS

- The tests include:
- Gonioscopy (use of a special lens to see the outflow channels of the angle)
- Intraocular pressure measurement by tonometry
- Optic nerve imaging (photographs of the interior of the eye)
- Pupillary reflex response
- Refraction
- Retinal examination
- Slit lamp examination
- Visual acuity
- Visual field measurement

MANAGEMENT

- Laser iridotomy is indicated for all stages of CACG. Iridotomy will open those areas of the angle not involved by PAS and prevent further synechial closure.

- Miotic treatment may enhance the development of CACG in the absence of an iridotomy.

- If the angle remains appositionally closed or spontaneously occludable after laser iridotomy, argon laser peripheral iridoplasty (ALPI) is indicated to prevent progressive damage to the angle or further appositional and/or synechial closure of the angle.

CONTD…

- The level of IOP and the extent of glaucomatous damage determine the need for continued medical treatment after iridotomy.
- Repeated gonioscopy is necessary. The need for further surgery cannot be predicted from the level of initial IOP or the gonioscopic changes.
- Argon laser Trabeculoplasty (ALT) has been reported both to be successful and unsuccessful after iridotomy in combined mechanism glaucoma.
- If the pressure remains uncontrolled and glaucomatous damage develops, filtration surgery is indicated.

CONTD….

- Goniosynechialysis is a surgical procedure designed to physically strip PAS from the angle wall and to restore trabecular meshwork function.

A paracentesis track is made into the anterior chamber, and the chamber is allowed to shallow slightly

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Massage is performed at the limbus to force aqueous from the posterior chamber into the anterior chamber

↓

A Viscoelastic agent is injected, and the angle is visualized with direct gonioscope

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An irrigating cyclodialysis spatula is used to separate a small segment of PAS with an anterior to posterior movement.

CONTD…

- Other surgical options for medically uncontrolled CACG may include:

- Cataract extraction by phacoemulsification with or without trabeculectomy

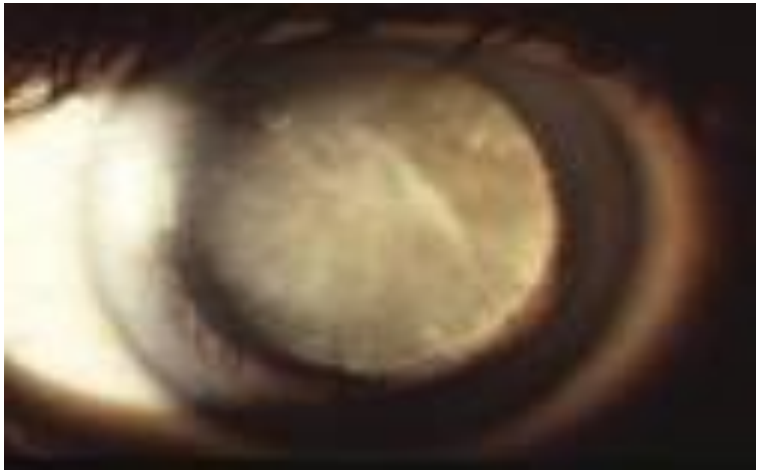
- Transscleral cyclophotocoagulation

CONTD…

- The goal of medical therapy is to reduce morbidity and to prevent complications.
- The medications recommended are:
- Beta Blockers
- Miotics
- Alpha 2 Adrenergic Agonists
- Prostaglandins
- Cholinergics

COMPLICATIONS

- Cataracts can occur with use of steroid and laser.



PRODUCTS WITH CIPLA

- Prostaglandins:
- 9 PM Eye Drops: Latanoprost 0.005%

- Alpha 2 Adrenergic Agonists:
- BRIMODIN Eye Drops: Brimonidine Tartrate 0.2%

COMBINATION PRODUCTS

- BRIMOCOM Eye Drops: Brimonidine Tartrate 0.2% and Timolol Maleate 0.5%
- BRIMODIN-P Eye Drops: Brimonidine Tartrate 0.15% and OxychloroComplex 0.005%
- LATIM Eye Drops: Latanoprost 0.005% and Timolol 0.5%

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