

# Adult Nursing II

## Glaucoma

Dr. Mohammed Jawad  
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# Glaucoma: Description

- A condition where congestion of the aqueous humour of the eye leads to increased intra-ocular pressure and damage to the optic nerve
- May be:
- Pernicious chronic
- Acute
- A leading cause of visual impairment and irreversible blindness

# Glaucoma: Etiology/ Risk Factors

- Family history
- African/ Asian race more at risk
- Older age
- Diabetes Mellitus
- Cardiovascular disease
- Patients with migraine
- Myopia, trauma, prolonged use of topical or systemic corticosteroids

# Aqueous Humour and Intraocular Pressure

- Aqueous humour flows between the iris and lens nourishing the cornea and lens
- 90% drains via trabecular meshwork into the canal of Schlemm and episcleral veins
- 10% drains into venous circulation of the ciliary body, choroid and sclera
- Aqueous humour production and drainage maintain intra-ocular pressure (IOP) between 10 and 21 mm Hg

# Glaucoma:

## Raised Intraocular Pressure

- Unimpeded drainage depends on an open angle (45%) between the iris and cornea
- Reduction of this angle leads to build up of intra-ocular pressure → glaucoma causing damage to retina and optic nerve

# Glaucoma: Classification

- Chronic open-angle glaucoma (COAG)
- Acute angle-closure (pupillary block) glaucoma

# Chronic Glaucoma (COAG)

# Chronic Glaucoma: Pathophysiology

- Usually bilateral
- Structural changes in aqueous outflow (narrowed but open angle) →
- Silent gradual chronic increase in IOP or impaired bloodflow →
- Optic nerve damage and visual loss:
- Direct pressure damage or indirect ischaemic compression of microcirculation



# Chronic Glaucoma: Clinical Manifestations

- Gradual onset affecting both eyes. Patient may be unaware until visual impairment
- Blurred vision
- “Halo” around lights
- Difficulty with focus
- Difficulty adjusting to low lighting
- Loss of peripheral vision → “tunnel vision”
- Aching/ discomfort in eyes.
- Headache

# Chronic Glaucoma: Diagnosis

- Patient history
- Tonometry (measurement of IOP)
- Ophthalmoscopy to inspect retina and optic nerve : pallor (↓ blood supply) and cupping (bending of vessels) diagnostic
- Gonioscopy: (slit-lamp) measuring filtration angle of anterior chamber
- Perimetry to assess visual fields (localised areas of loss “scotomas”)

# Chronic Glaucoma: Management

- Medical
- Laser surgery
- Surgery

# Chronic Glaucoma: Medical Management

- Aim to control IOP and prevent further optic nerve damage
- Topical (eye drops) and maybe systemic medications to lower IOP
- Miotic drops: constrict pupil allowing a wider outflow of aqueous humour
- $\beta$ -blockers and adrenergic agonists: reduce aqueous production primarily

# Chronic Glaucoma: Laser Treatment and Surgery

- Laser surgery (trabeculoplasty):
- Burns part of the trabecular meshwork
- Widens the canal of Schlemm increasing outflow
- Surgery (trabeculectomy): removal of part of trabecular meshwork creating a fistula for drainage from anterior chamber into sub-conjunctival space (implanted drainage shunt may be used)

# Acute Angle-Closure (Pupillary Block) Glaucoma

# Acute Glaucoma: Pathophysiology

- Forward shift of peripheral iris towards trabecula
- Causes complete or partial closure of the angle →
- Obstruction of outflow of aqueous humour
- Abrupt rise of intra-ocular pressure (IOP)

# Acute Glaucoma: Clinical Manifestations

- Acute onset: ocular emergency
- Severe peri-ocular pain one eye
- Conjunctival hyperaemia and congestion
- Nausea, vomiting, bradycardia, sweating
- Rapid visual deterioration:
- Severe increase in IOP, corneal oedema
- Reduced central vision
- Pupil semi-dilated, oval, unreactive to light



# Acute Glaucoma: Diagnosis

- Ocular emergency (spontaneous attack)
- Patient history and clinical picture
- Tonometry: severe elevation IOP
  
- Ophthalmoscopy
- Gonioscopy
- Perimetry

# Acute Glaucoma: Management

- Acute emergency
- Topical (eye drops):
- Hyperosmotics (Diamox) ↓ IOP
- Miotics (Pilocarpine) contract ciliary body constricting pupil → open trabecular mesh
- $\beta$  - blockers: reduce aqueous production
- Laser iridotomy: releases aqueous ↓ IOP
- Other eye treated to prevent further attack

# Glaucoma: Nursing Considerations

- Patient education about condition:
- Importance of punctuality with eye drops. Check patient or relative instilling correctly
- Importance of regular follow-up
- Post-laser: Monitor for transient rise of IOP (closure of iridotomy), haemorrhage, uveitis and blurring
- Awareness of life-style aids where vision severely impaired. Emotional support