GLAUCOMA (primary angle closure) (PACG)

Aetiology

• Obstruction of aqueous outflow due to functional iridocorneal adhesion (pupil block) leading to closure of the anterior chamber (AC) angle by peripheral iris.

Physiological

• Reduction in ambient illumination. As iris dilator contracts:
  - iris moves back increasing apposition with lens
  - peripheral iris becomes more flaccid

Drug-induced

• Adrenergic agents e.g. phenylephrine
• Drugs with anti-cholinergic effects e.g. tricyclic antidepressants

Predisposing Factors

Anatomical (may be inherited)

• Associated with:
  - sex (F:M ratio 4:1)
  - race (eg Asian)
  - short axial length (hypermetropia)
  - shallow AC (F>M)
  - increasing age (AC becomes shallower as lens grows)
  - small corneal diameter

Symptoms

Acute PACG (50% give history of previous intermittent attacks)

• Rapid progressive impairment of vision of one or both eyes
- Ocular and periocular pain which can be severe
- Nausea and vomiting
- Ocular redness

**Intermittent PACG** (sub-acute, milder attacks, spontaneous resolution, affecting one or both eyes)
- Episodes lasting 1-2h of blurring of vision associated with haloes around lights
- Broken by physiological miosis: exposure to bright light or sleep
- Eye ache or frontal headache

### Signs

#### Acute PACG
- Limbal and conjunctival vessels dilated, producing ciliary flush
- Pupil fixed, semi-dilated, vertically elliptical
- Corneal oedema
- Shallow AC with peripheral irido-corneal contact (if angle can be visualised)
- High intraocular pressure (40-80mmHg)
- AC flare and cells
- Optic disc oedematous and hyperaemic
- Grey/white anterior sub-capsular lenticular opacities (Glaukomflecken) and iris spiralling: diagnostic of previous attacks

#### Intermittent PACG
- Eye appears normal between attacks except for narrow angle and shallow anterior chamber

### Differential Diagnosis
- Neovascular glaucoma
- Phacolytic glaucoma
- Acute anterior uveitis
- Cilio-lenticular block (malignant glaucoma)

### Management by Optometrist

#### Non-pharmacological
- None
Pharmacological

Acute PACG

- Commence first aid treatment with a drop of pilocarpine 2% in blue eyes and 4% in brown eyes, followed by a single dose of oral acetazolamide (Diamox) 500mg. Then refer as an emergency to Ophthalmologist

Intermittent PACG

- Do not treat, but refer urgently to Ophthalmologist

Management category

Acute PACG

- A2: first aid measures and urgent referral to Ophthalmologist

Intermittent PACG

- A1: immediate referral to Ophthalmologist; no intervention

Possible Management by Ophthalmologist

- Depends on breaking the pupil block
- Medical
  - miotics (eg g pilocarpine 2-4%)
  - systemic agents (eg acetazolamide, glycerol)
  - topical antihypertensives (eg g timolol, g latanoprost)
- Urgent interventions
  - corneal indentation with gonioscopy lens or cotton bud
  - laser iridoplasty
- When acute episode is controlled, further attacks can be prevented by laser iridotomy or lens extraction

Evidence Base

- Clinical consensus
  (Oxford Centre for Evidence-based Medicine Level of Evidence = 5)