

Acute angle closure glaucoma

Definition

Acute Angle Closure Glaucoma is a medical emergency which can lead to permanent vision loss within hours. The most common mechanism is pupillary block of aqueous flow through the pupil. The resistance causes the closure of the iridio-corneal angle and blocking the trabecular meshwork, resulting in a rapid increase in intraocular pressure and damage to the optic nerve.

Ophthalmology Registrar

Dect phone Mon to Fri- 72339

08:30 – 16:30 via switch all other times, Duty

Consultant in ED Dect phone – 77255

Diagnostic Criteria

At least 2 of the following symptoms:	At least 3 of the following signs:	Other signs and symptoms:
<ul style="list-style-type: none"> Ocular pain History of intermittent visual blurring Nausea or vomiting 	<ul style="list-style-type: none"> IOP > 21mmHg Corneal oedema Conjunctival injection Mid-dilated minimally reactive pupil 	<ul style="list-style-type: none"> Brow pain and headache Halos around lights Possible cloudy cornea Eye may feel rock hard

Immediate Management

- Lay patient SUPINE as much as possible
- AVOID eye patches, dim lighting and anything covering the eyes that may potentiate pupil dilation
- INFORM ED duty consultant immediately
- Inform Ophthalmology Registrar on call immediately PRIOR to commencing any medical management

a) Give

- IV Acetazolamide 500mg IV stat
- Topical Beta blocker (e.g. Timolol 0.5%), carbonic anhydrase inhibitor (e.g. Brinzolamide 1%/Dorzolamide 2%), and Alpha-2 agonist (e.g. Brimonidine 0.2%) 1 drop every 15 minutes x 3

b) Recheck IOP in 1hr - if still elevated > 40mmHg

- Repeat topical treatment above
- Give systemic osmotic agent if no contraindication
IV Mannitol 20% (1-2g/kg over 30-45 minutes)

Risk factors

- Age > 50
- South-east Asian ethnicity
- Hypermetropia (Long sighted)
- Family history

Precipitating factors

- Dim illumination
- Emotional stress
- Mydriasis (warning labels for "glaucoma")
- Anticholinergics, antihistamine, antidepressant, adrenergics, CNS stimulants, bronchodilators
- Usually happens as pupil is constricting slowly after dilation
- It is exceedingly rare for patients who have had cataract surgery to have angle closure.



Medication + Mechanism of action	Dosage	Contraindications	Common side effects
Acetazolamide • Carbonic anhydrase inhibitor (Glaumox) • Oral tabs 250mg • Intravenous 500mg ↓ Aqueous fluid production	Dose – IV/PO 500mg loading dose then 250mg PO QID (needs consideration of renal function)	Low K ⁺ /Na Renal or Hepatic disease Sulphonamide sensitivity Sickle Cell Disease	Electrolyte disturbance Thirst Dizziness Paraesthesia Confusion
Timolol 0.5% • Beta Blocker ↓ production ↑ outflow	Onset – 30mins Duration – 24hrs Dose – 1 drop BD	Asthma COPD Cardiac failure Heart Block	Eye irritation CVS + Resp effects
Brinzolamide 1% (Azopt) • Carbonic anhydrase inhibitor ↓ production	Dose – 1-2 drops BD	Severe renal disease Impaired hepatic function Sulphonamide hypersensitivity	Eye irritation Bitter taste Blurred vision
Pilocarpine 2% • Cholinergic (miotic) (Fridge in eye room) ** Do not prescribe initially. Give only after IOP < 40mmHg. May exacerbate certain types of angle closure. Must discuss with Ophthalmology Reg	↑ outflow Dose – 1 drop 15 minutely for 2 doses.	Iritis	Miosis Reduced visual acuity
Brimonidine 0.2% Timolol 0.5% (Combigan) • Selective alpha-2 adrenergic receptor agonist ↓ production ↑ outflow	Dose – 1-2 drops BD	Asthma COPD Cardiac failure Heart block	Eye irritation Blepharitis Lid retraction CVS + Respiratory effects
Mannitol 20% IV • Reduction of IOP-increase plasma osmolality and draws water out of body tissues	Dose – 1-2g/kg over 30-45 minutes	Severe heart failure Pulmonary odema Dehydration	Electrolyte imbalance Nausea + Vomiting Hypotension Tachycardia