

Definition, etiopathogenesis, clinical manifestations, nonpharmacological and pharmacological management of the diseases associated with Ophthalmology

Conjunctivitis (Bacterial and Viral)

Definition:

- Conjunctivitis, commonly known as "pink eye", is an inflammation of the conjunctiva—the transparent mucous membrane covering the sclera and inner eyelids.
- It may be caused by bacteria, viruses, allergens, or irritants.

Etiopathogenesis:

A. Bacterial Conjunctivitis:

- Caused by:
 - *Staphylococcus aureus* (common in adults)
 - *Streptococcus pneumoniae*, *Haemophilus influenzae* (common in children)
 - *Neisseria gonorrhoeae* (hyperacute, sight-threatening)
 - *Chlamydia trachomatis* (inclusion conjunctivitis, trachoma)
- Spread by direct contact, contaminated hands, towels, cosmetics

B. Viral Conjunctivitis:

- Caused mostly by adenoviruses (serotypes 3, 7, 8, 19, 37)
- Extremely contagious
- Often associated with upper respiratory tract infections
- Transmitted through respiratory secretions, hand-eye contact, swimming pools

Clinical Manifestations:

Bacterial Conjunctivitis:

- Redness (hyperemia)
- Purulent or mucopurulent discharge
- Eyelids stuck together on waking
- Grittiness or foreign body sensation
- Usually begins in one eye and spreads to the other

Viral Conjunctivitis:

- Redness and watery discharge
- Burning, irritation
- Follicles in the conjunctiva (small bumps)
- Preauricular lymphadenopathy (tender lymph node in front of ear)
- Usually bilateral from the start or rapidly becomes bilateral

Complications:

- Corneal involvement (keratitis)
- Scarring (especially with Chlamydia or Gonococcal infections)

Non-Pharmacological Management:

- Hand hygiene is critical
- Avoid touching or rubbing eyes
- Avoid sharing towels, cosmetics
- Use cold compresses for comfort (especially in viral conjunctivitis)
- Temporary isolation in viral cases to prevent spread

Pharmacological Management:

Bacterial Conjunctivitis:

- Topical antibiotics:
- **Broad-spectrum:** Erythromycin, tobramycin, ofloxacin, chloramphenicol
- **Gonococcal:** IM ceftriaxone + topical antibiotics
- **Chlamydial:** Oral azithromycin or doxycycline

Viral Conjunctivitis:

- Mostly self-limiting (resolves in 1–2 weeks)
- Lubricant eye drops (artificial tears) for symptom relief
- Cold compresses
- Topical steroids only if prescribed by an ophthalmologist for severe inflammation (risk of complications)

Glaucoma

Definition:

- Glaucoma is a group of eye diseases that cause progressive optic nerve damage, usually associated with increased intraocular pressure (IOP), leading to irreversible vision loss.

Etiopathogenesis:

Types:



1. Primary Open-Angle Glaucoma (POAG):

- Most common
- Gradual blockage of aqueous humor outflow through trabecular meshwork
- Risk factors: age >40, family history, myopia, diabetes

2. Angle-Closure Glaucoma (ACG):

- Sudden blockage of drainage angle → rapid rise in IOP
- Often in hyperopic (far-sighted) individuals
- Triggered by pupil dilation (e.g., dark rooms, stress, medications)

3. Secondary Glaucoma:

- Due to trauma, steroids, uveitis, or neovascularization

4. Congenital Glaucoma:

- Present at birth due to developmental defect

Pathophysiology:

- Imbalance between production and drainage of aqueous humor
- Increased IOP compresses optic nerve → **axonal death**, **optic disc cupping**, and **visual field loss**

Clinical Manifestations:

Open-Angle Glaucoma:

- Usually, asymptomatic initially
- Gradual peripheral vision loss (tunnel vision)

- Optic disc cupping on fundus exam
- Increased IOP (>21 mmHg)

Angle-Closure Glaucoma (acute):

- Sudden eye pain
- Blurred vision with halos around lights
- Red eye
- Nausea, vomiting
- Mid-dilated, fixed pupil
- Hard eyeball on palpation (emergency)

Non-Pharmacological Management:

- **Regular screening** (especially after age 40)
- **Avoid mydriatic agents** (e.g., atropine) in susceptible individuals
- Protective eyewear in trauma-prone occupations
- Lifestyle: exercise, avoid smoking, manage systemic conditions (diabetes, HTN)

Surgical options:

- **Laser trabeculoplasty** (open-angle)
- **Laser iridotomy** (acute angle-closure)
- **Trabeculectomy** or **glaucoma drainage implants** for refractory cases

Pharmacological Management:

Medications to ↓ IOP:

1. Prostaglandin analogs (first-line):

- Latanoprost, bimatoprost
- ↑ uveoscleral outflow

2. Beta-blockers:

- Timolol, betaxolol
- ↓ aqueous production

3. Alpha-2 agonists:

- Brimonidine
- ↓ production and ↑ outflow



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