Bacterial and fungal corneal ulcer/ Suppurative keratitis

Dept. Of Ophthalmology

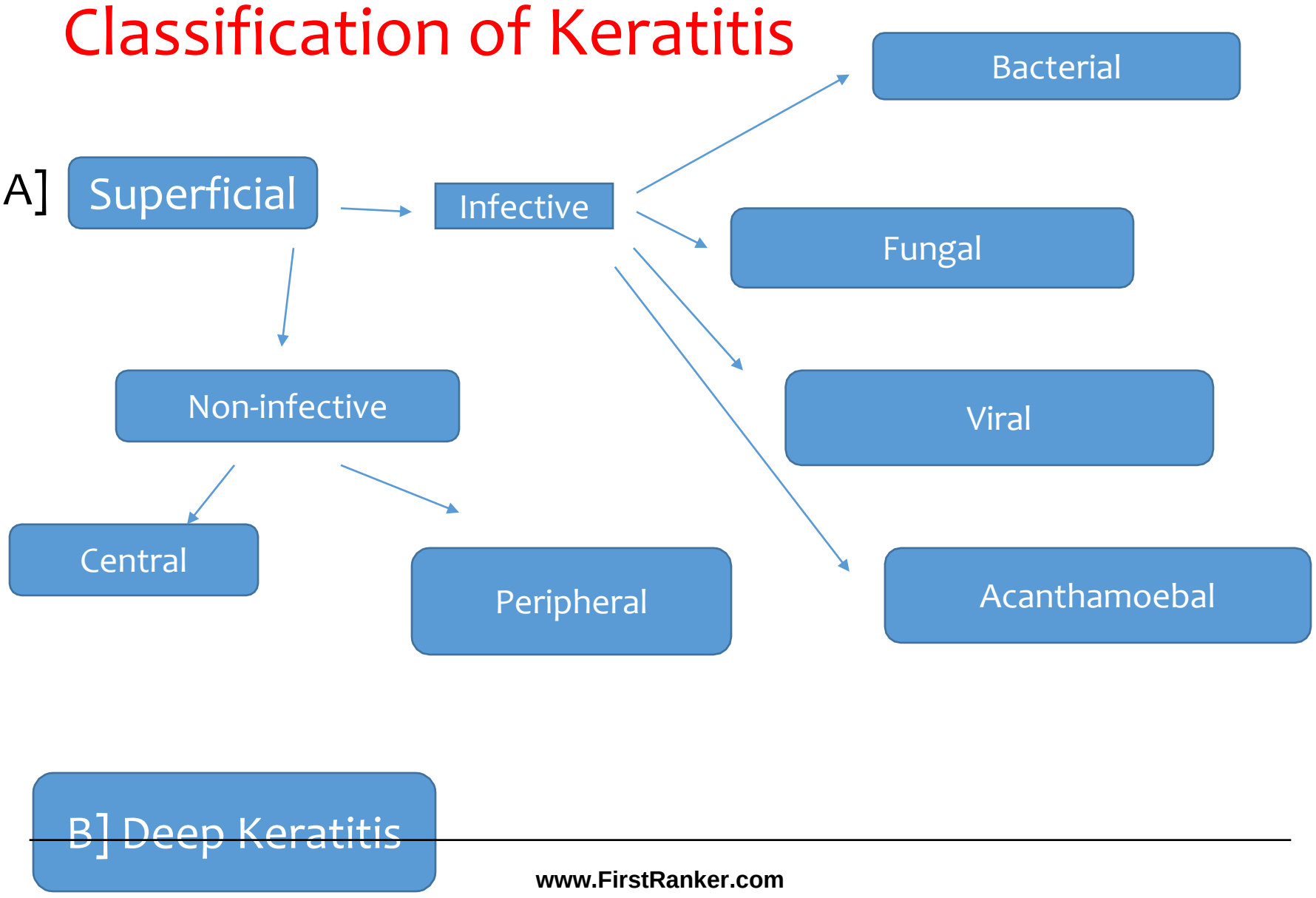
- Keratitis-Inflammation of cornea
- Corneal ulcer- Loss of corneal epithelium with inflammation of surrounding tissue and stroma and suppuration, with or without hypopyon

CORNEAL ULCER

- One the common cause of blindness

- Included in National Programme for Control of Blindness

Classification of Keratitis



Causative Organisms

Infections are almost always exogenous

Causative organism

- (**BACTERIAL**):

  S. aureus, S. epidermidis, S. pneumoniae, Pseudomonas aeruginosa.

  Uncommon: Neisseria gonorrhoeae, E. Coli

- **FUNGAL** *: Aspergillus and Fusarium sp.(most common), Candida sp*

Predisposing factors

- Trauma: e.g. Contact lenses, trichiasis, surgery

  (in fungal typical history of trauma with vegetable matter, mostly in harvesting season)

- Topical steroids
- Lagophthalmos : e.g. Facial nerve palsy

Predisposing factors

- Neurotrophic keratitis resulting from viral infections and lesions of ophthalmic division of Trigeminal nerve
- Dry eye syndrome
- Deficiency states (Vit. A) and metabolic diseases (DM)
- Poor local hygiene and local infection (chronic dacryocystitis)

Pathophysiology of ulcer

Progressive infiltration	• Lymphocytes infiltrates in epithelium • Necrosis
Active ulceration	• Greyish infiltration with circumcorneal hyperaemia • Hypopyon and descemetocele
Regression	• Phagocytosis • Ulcers begin to heal
Cicatrization	• Epithelium covers the ulcers • Scars and opacities formation

Stages of corneal ulcer

Fig. 5.2. Pathology of corneal ulcer : A, stage of progressive infiltration; B, stage of active ulceration; C, stage of regression; D, stage of cicatrization.

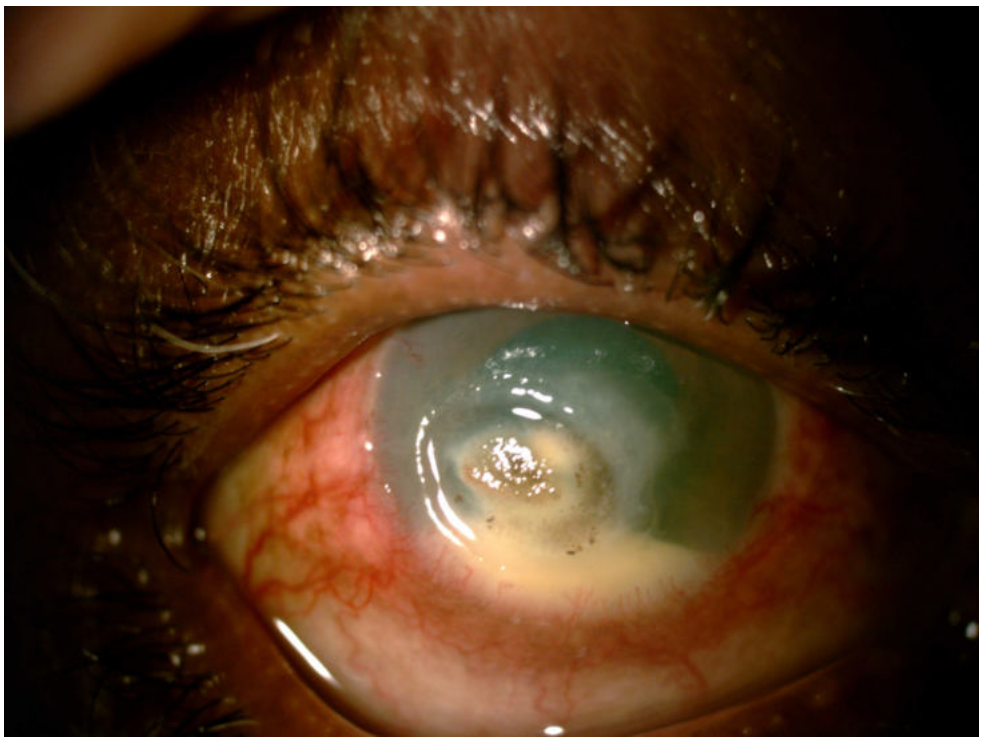
Assessment of Corneal ulcer

- History, general, and systemic examination
- Visual acuity: may be low
- Eye and Ocular adnexa: Eye lid , lacrimal sac
- Conjunctiva: circumcorneal congestion, chemosis
- Corneal ulcer: size, site ,surface, margin, slough, corneal sensation, thinning , satellite lesions
- Anterior chamber: Cells, flare, hypopyon
- Pupil

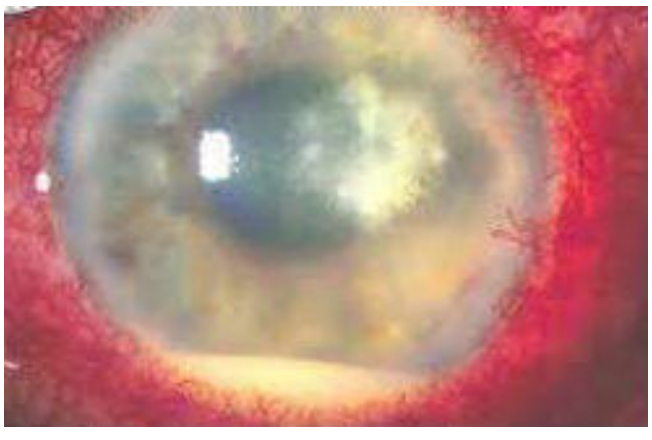
Clinical Features of Corneal ulcer

SYMPTOMS:

1. Pain/Foreign body sensation
2. photophobia
3. DV/Blurred vision
4. Discharge/Watering
5. Redness
6. White spot on Cornea



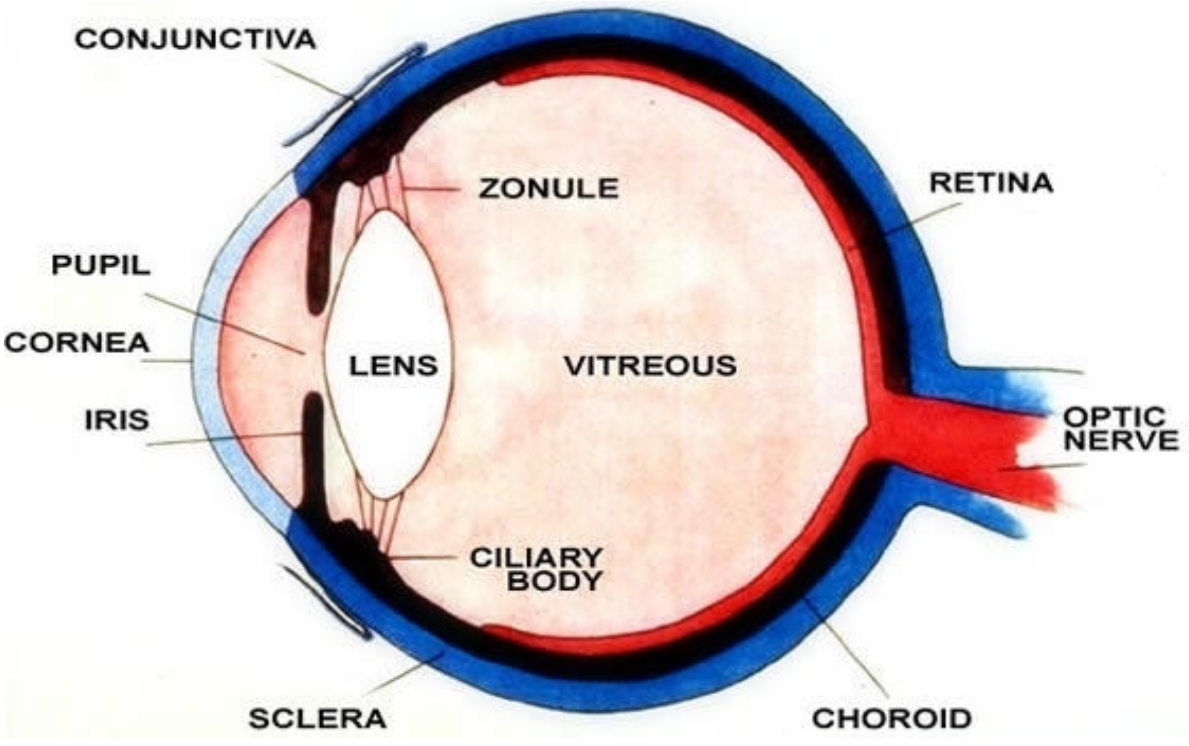
Clinical Features of Corneal ulcer



Signs:

1. Bleparospasm
2. Lid edema
3. Ciliary congestion of conjunctiva
4. Ulcer with greyish-white necrotic slough
5. Hypopyon+-

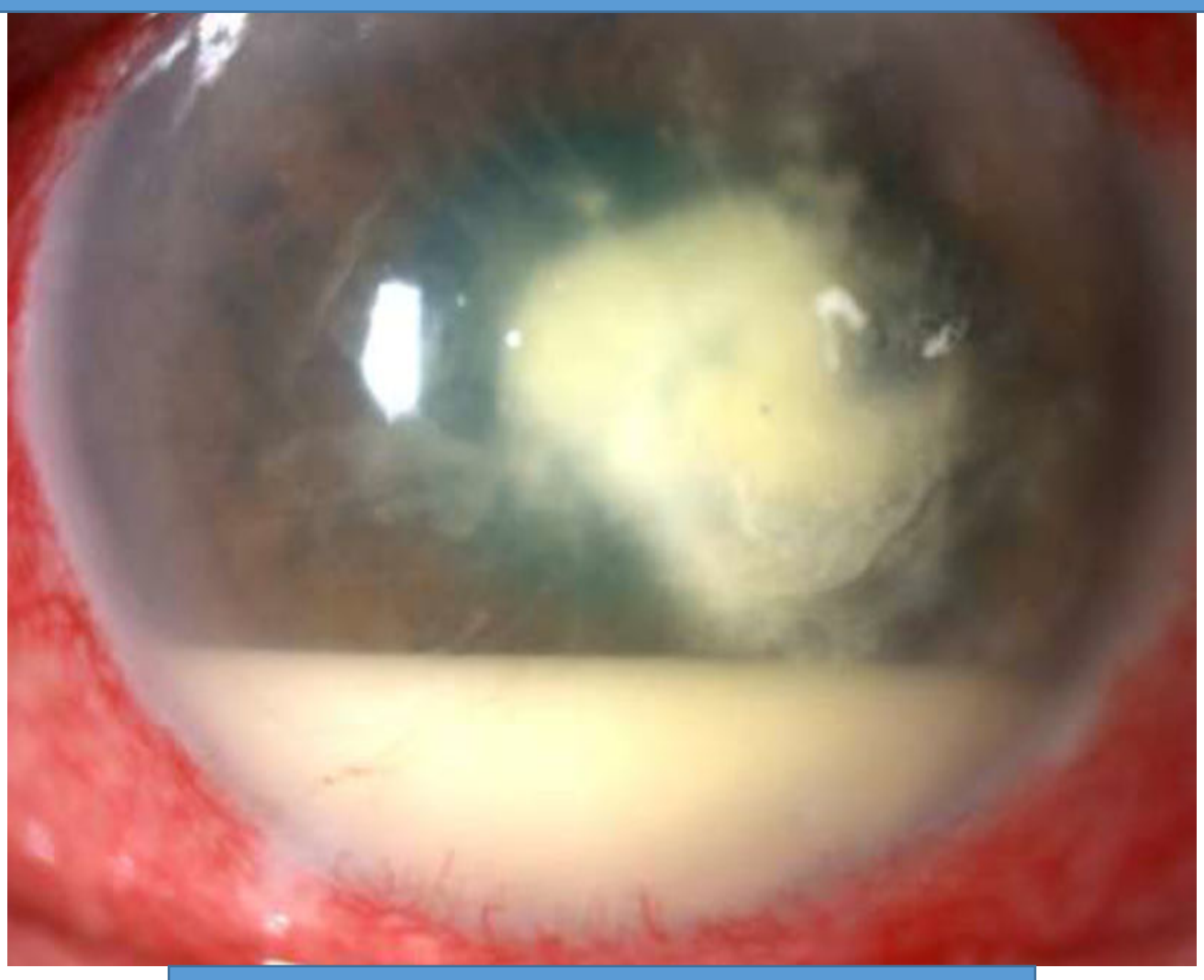
Symptoms in Mycotic Corneal Ulcer are less prominent than an equal size Bacterial ulcer



signs

SIGNS	BACTERIAL	FUNGAL
Lids	Swelling of lids	Might be present
Blepharospasm	present	present
Conjunctival chemosis and hyperemia	Present+++	Present++
Ciliary congestion	+++	+++
Ulcer	Greyish-white circumscribed infiltrate, Yellowish-white oval/ irregular area of ulcer. Stromal edema	Elevated rolled out margins **Satellite lesion** Dense suppuration Endothelial palque
Hypopyon	Hypopyon (sterile, whitish, mobile	Hypopyon(infected,immobile,yellowish), common
Complications	Corneal perforation ,endophthalmitis	Endophthalmitis

Symptoms are less as compared to signs



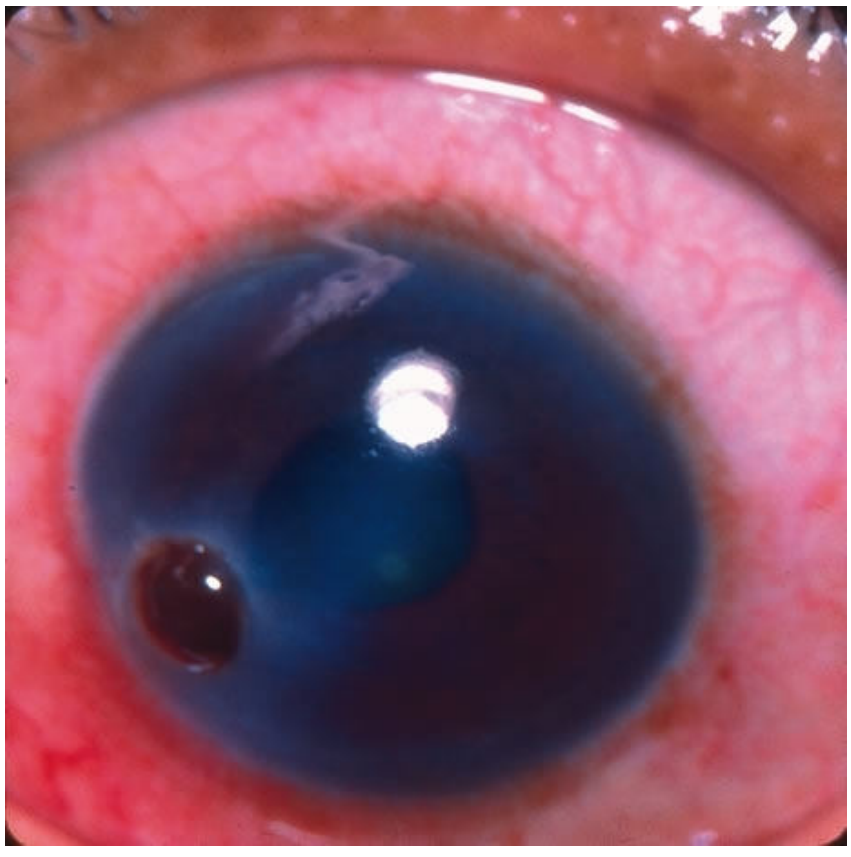
FUNGAL CORNEAL ULCER

Differential Diagnosis of ulcer

- Acute conjunctivitis
- Acute iridocyclitis
- Acute congestive glaucoma
- Corneal Opacity

Complications of Corneal Ulcer

I. Descematocele



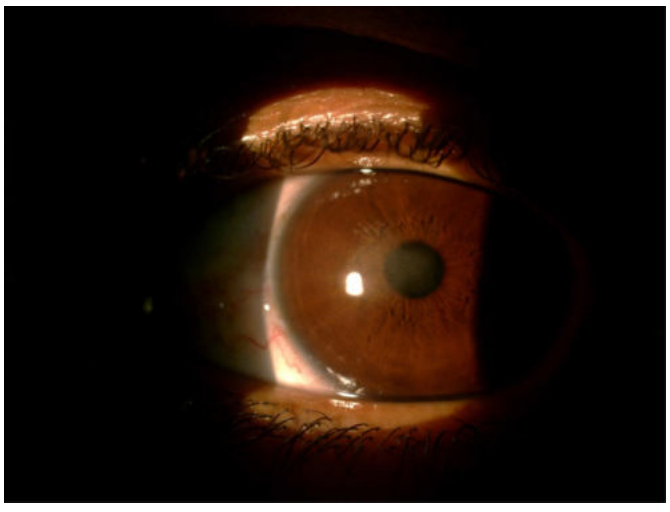
II. Perforation and its complications : Anterior synechia , Iris prolapse, expulsion of lens and vitreous, Intraocular hemorrhage,

iii. Endophthalmitis / panophthalmitis

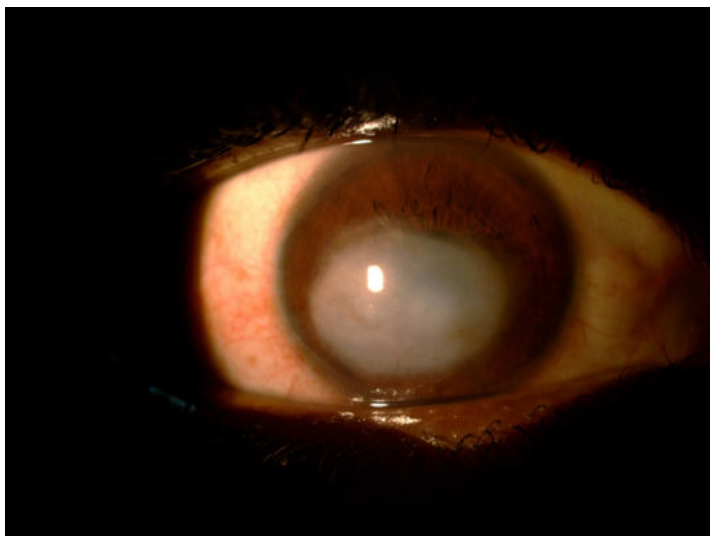
iv. Secondary glaucoma

v. Anterior capsular cataract

vi. Staphyloma formation



VII. Corneal opacity



Microbiological Investigations

- The majority are managed without smears or cultures.
- Scraping done: from ulcer margins and base of ulcer
- Examination of Smear stained with Gram stain, Giemsa stain, KOH mount for fungi.
- Culture on blood agar, chocolate agar, thioglycollate broth, and Sabouraud's dextrose agar

Management

Principles:

- Control of infection
- Symptomatic relief
- Prevention of complications

Control of Infection(for bacterial ulcer)

- **Topical antibiotics**

  Fluoroquinolone eye drop:

- Cipro/ ofloxacin
- moxifloxacin(0.5%) drop.
- Gatifloxacin 0.3 % drop.

Alternatives

- *Fortified cephazolin eye drop*
- *Fortified tobramycin eye drop*
- *Fortified vancomycin eye drop*

Antimicrobials for Fungal corneal ulcer

- **Topical antifungal drops:**
- - Natamycin 5 % 1 hourly by day and 2 hourly by night for 6 weeks to 6 months
- - Amphotericin B 0.15/ 0.3 % frequent instillation
- **Oral antifungal agents**; Ketoconazole 200-600 mg/ day .Fluconazole 200-400mg/ day
- **Scrapping done to help removal of slough and penetration of the drug**
- Along with antibiotics support to prevent secondary bacterial infections

Treatment

- Cycloplegics : Atropine 1 % eye drop t.i.d.
- Hot fomentation
- Systemic analgesics : Anti-inflammatory drugs such as paracetamol & ibuprofen
- Removal of local predisposing factor
- Vitamins (A, B-complex & C)

Treatment (Non Healing Corneal Ulcer)

- Debridement of ulcer
- Chemical Cuterization
- Cyano acrylate glue
- Therapeutic penetrating keratoplasty
- Treatment of complications: perforation, secondary glaucoma

Outcome of corneal ulcer

- Healing with out opacity
- Healing with opacity
- Staphyloma
- Secondary glaucoma
- Cataract
- Phthisis bulbi

Source

- Text-Kanski, Parson's, Samar Basak, Pradeep Sharma
- Photographs- above , Archives & Website