UNIVERSITATEA DE STAT DE MEDICINĂ ȘI FARMACIE
„NICOLAE TESTEMIȚANU” DIN REPUBLICA MOLDOVA

Catedra Oftalmologie

CORNEAL DISEASES of the EYE

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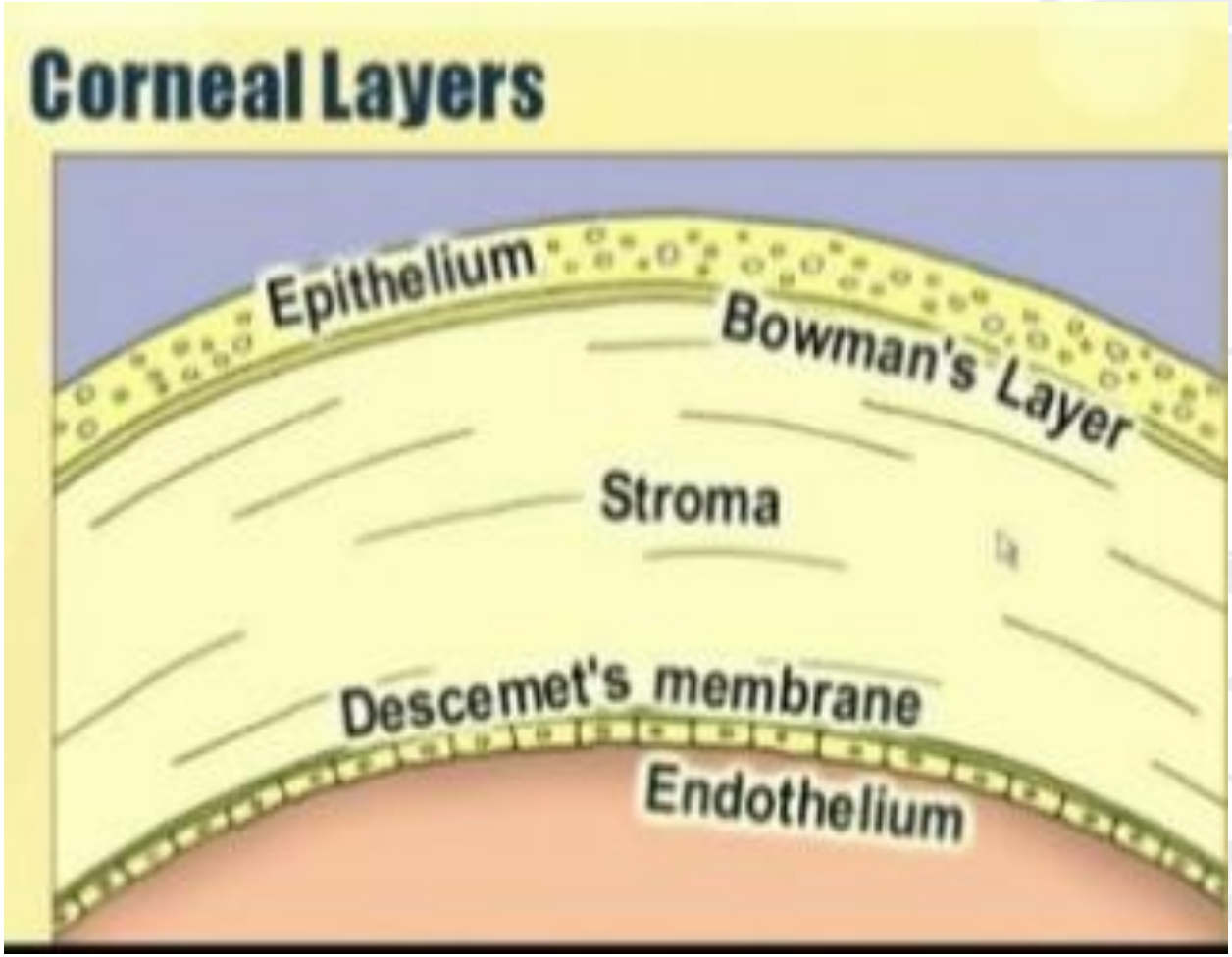
AIM

- This lecture will introduce you to the study of the main diseases of the cornea, their ethiology, signs, diagnostic tools and management

Introduction



Which layer never regenerate?

Blood supply

Central cornea is avascular

Corneoscleral limbus is generously supplied by anterior conjunctival branches of the anterior ciliary arteries

Aqueous humor, tears and oxigen provides nutrients

Nerve Supply

- Branches of the ophthalmic division of trigeminal nerve and are solely sensory
- Most are concentrated in the anterior stroma beneath the Bowman zone and send branches forward into epithelium
- ***Descemet membrane and endothelium are not innervated***

CORNEAL INFECTIONS

1. Bacterial keratitis
2. Viral
3. Fungal

1. Supperficial
2. interstitial

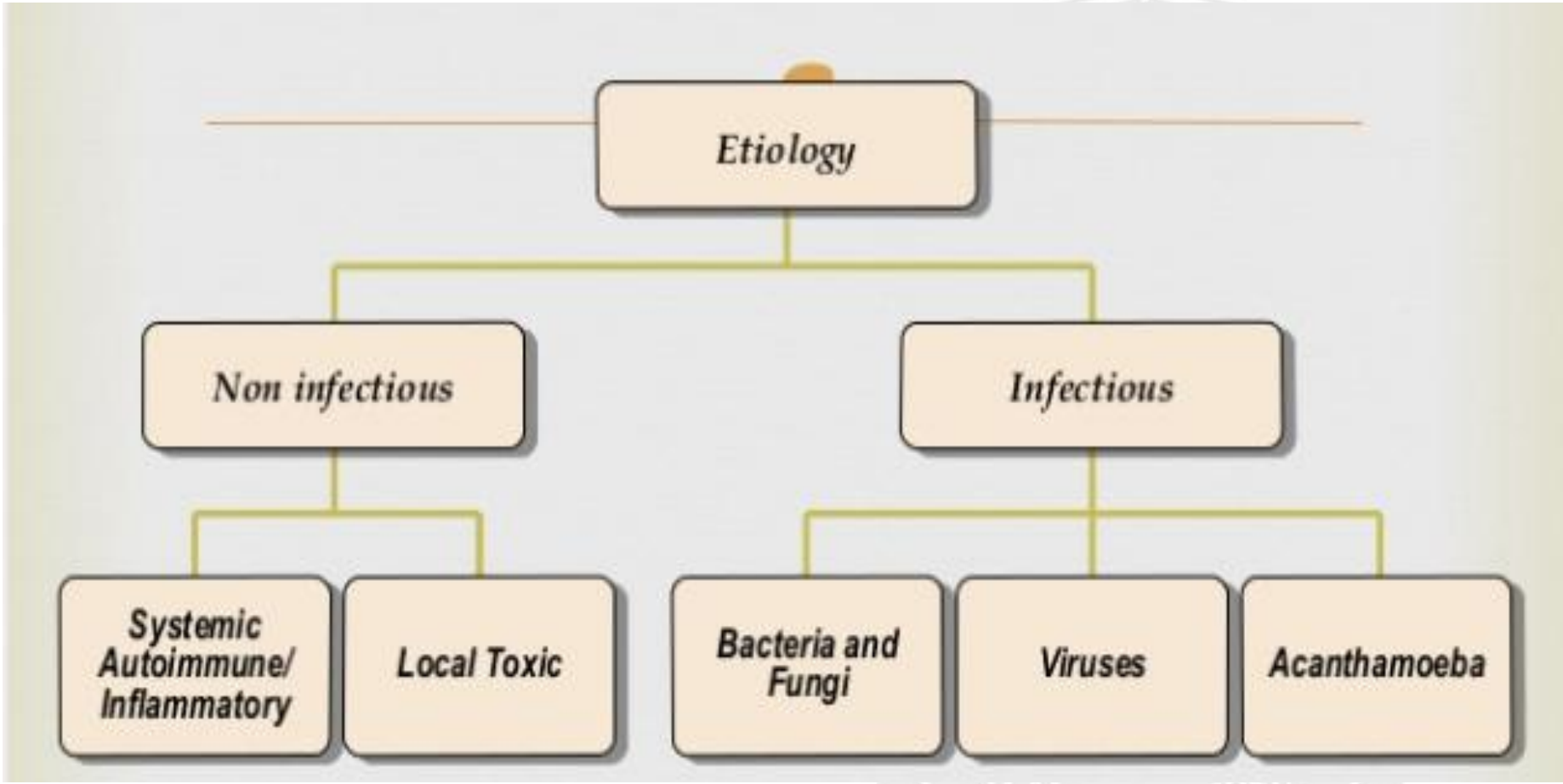
Corneal ulcers

Def: Corneal ulcers are defect in the corneal epithelium .with or without stromal infiltration

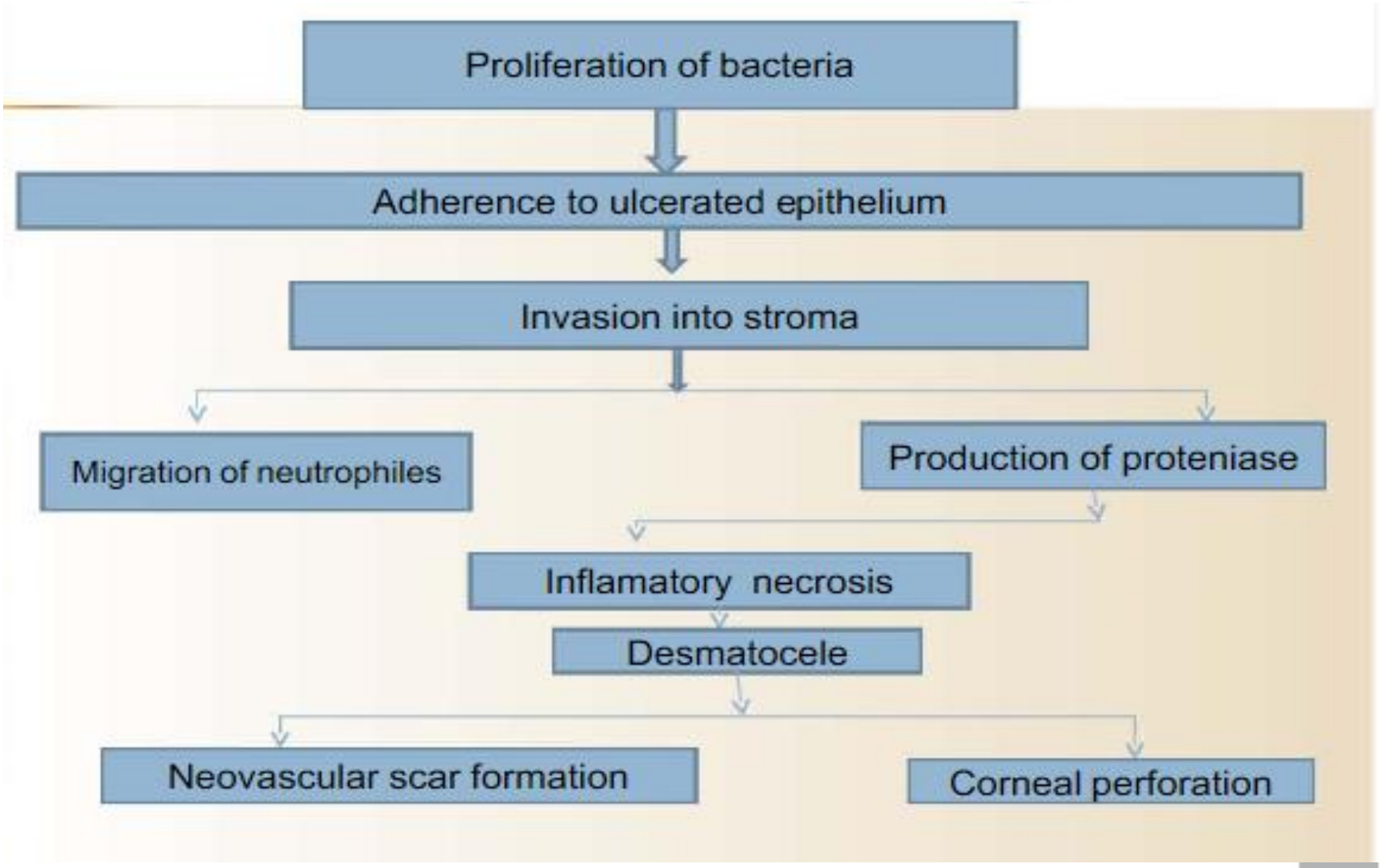
:Types

A) Infectious ulcerative keratitis

B) Non infectious ulcerative keratitis


Etiology
Non infectious
Infectious
Systemic Autoimmune/ Inflammatory
Local Toxic
Bacteria and Fungi
Viruses
Acanthamoeba

PATHOGENESIS



Corneal Ulcer

Predisposing factors

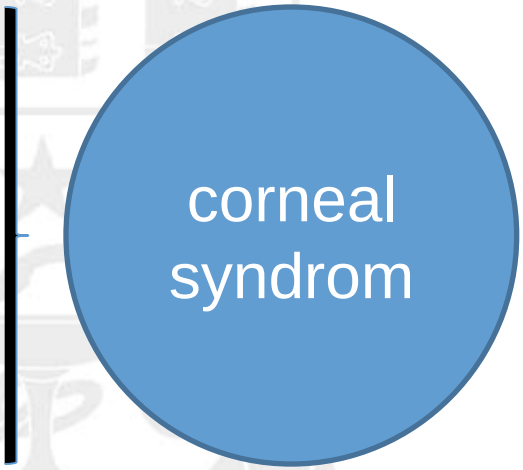
- Minor eye trauma
- Contact lens wear
- Eyelid abnomalities (entropion, trichiasis, lagophtalmos, etc)

✓ Bacterial ulcer - most commonly due to contact lens wear (streptococcus pneumoniea, staphyloc. Aureus, epidermidis, etc)

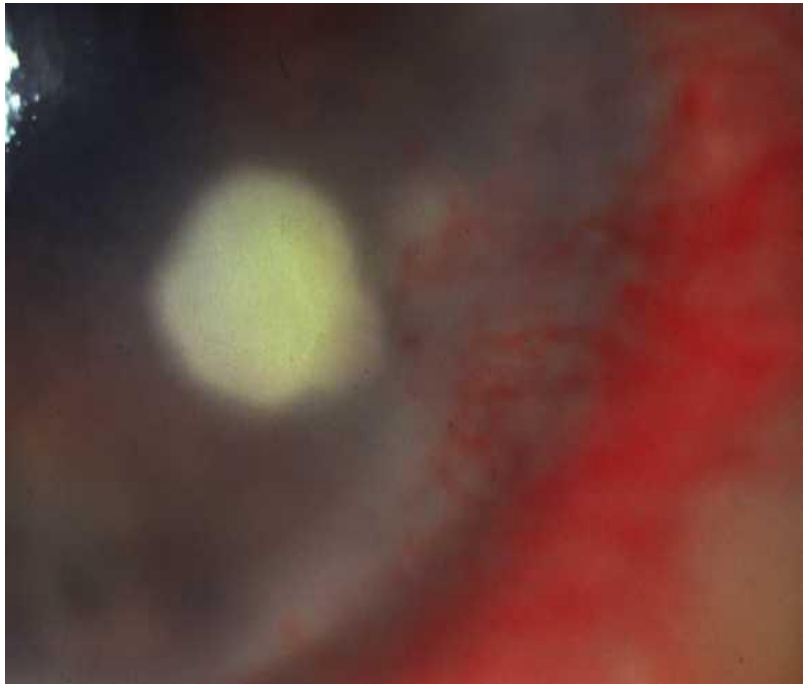
✓ Fungal ulcers – most common due to trauma with vegetable material

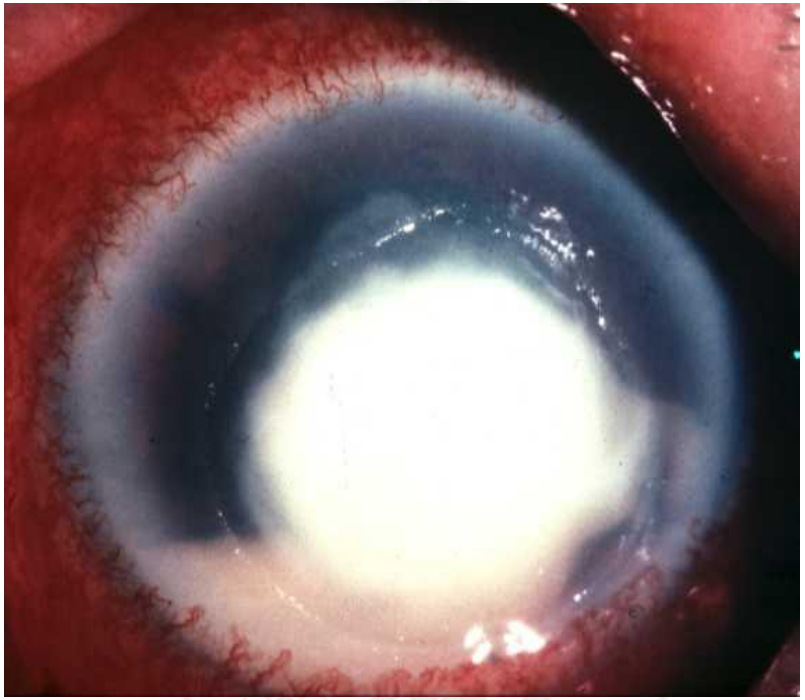
Symptoms

- Progressive redness of the eye,
- Swollen eyelids,
- Blurry vision
- Foreing body sensation and eye pain
- Photophobia
- Lacrimation
- Blepharospasm



Corneal Ulceration

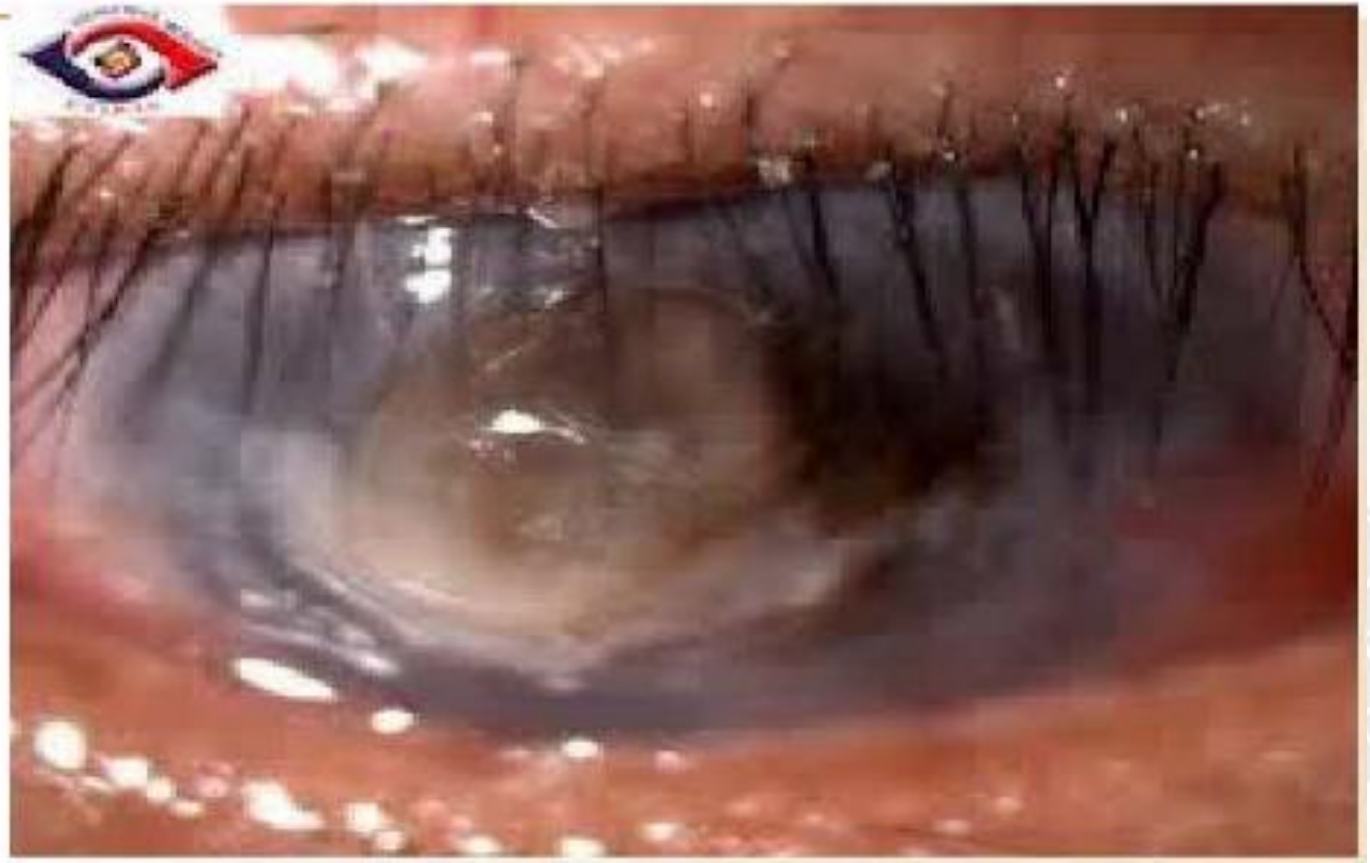




- A corneal ulcer begins as a corneal epithelial defect
- Expanding oval, yellow-white, dense stromal infiltrate

- Stromal suppuration and necrosis to form an excavated ulcer
- Hypopion (pus in anterior chamber), corneal perforationwith iris prolapse, panophtalmitis and destruction of the eye can occur

5.Corneal perforation and endophthalmitis in neglected cases

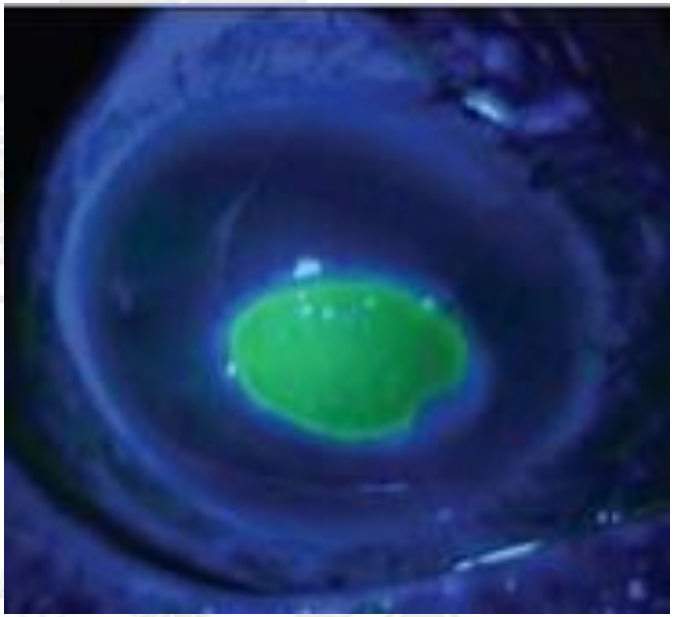


Diagnosis

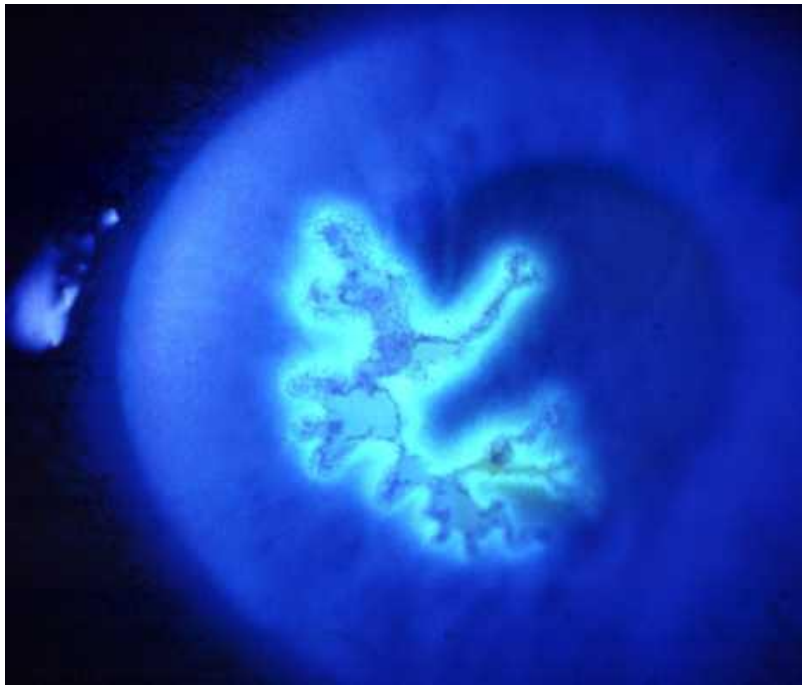
Treatment

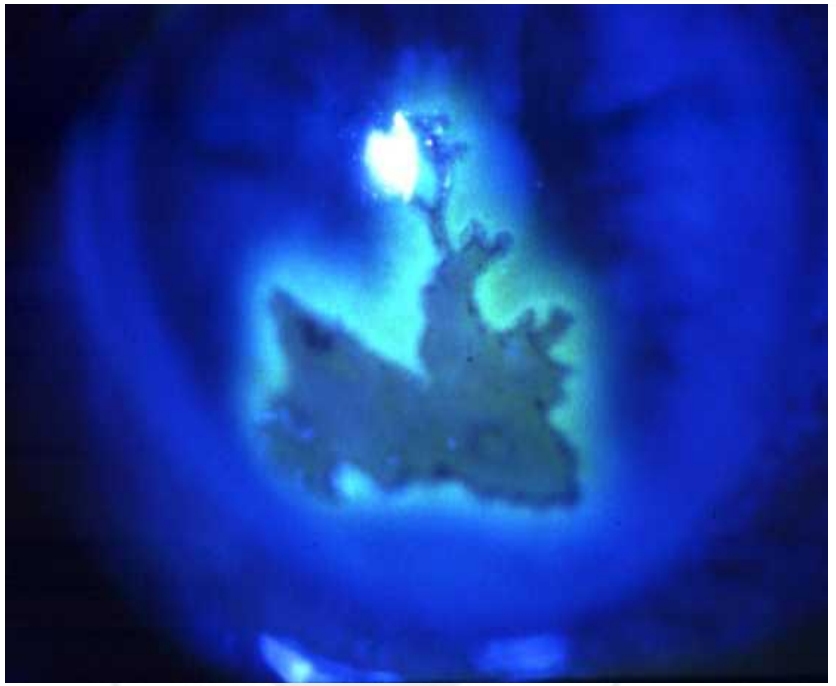
- Empiric topic broad-spectrum antibiotic therapy
- More specific antimicrobial therapy derected at the cause
- Moxifloxacin, tobramycin, cefazolin… (bactirial)
- Natacyn, Amphotericin B, Fluconazol…. (fungal)
- All ulcers, to reudce the formation of posterior synechiae – mydriatic (scopolamine, mezaton etc) and local medication for increase the regeneration of the cornea.

Slit-lamp examination with fluorescein



Herpes simplex epithelial keratitis





- SIGNS: redness, corneal clouding, dendritic ulcer
- Stains with fluorescein

- May enlarge to become geographic

Recurrent infection

- the virus travels to nerve terminals in the corneal eithelium: corneal hypoestesia
- *Symptoms:* corneal syndrom , blurring of vision.

TREATMENT

- **Antivirals:**
- **Topical: Aciclovir 3% ointment x 5 daily (Ganciclovir)**

Interstitial Keratitis

- non-suppurative inflamation characterized by celular infiltration and vascularisation of the corneal stroma with minimum primary involvemend of the epithelium and endothelium

Herpes simplex disciform keratitis

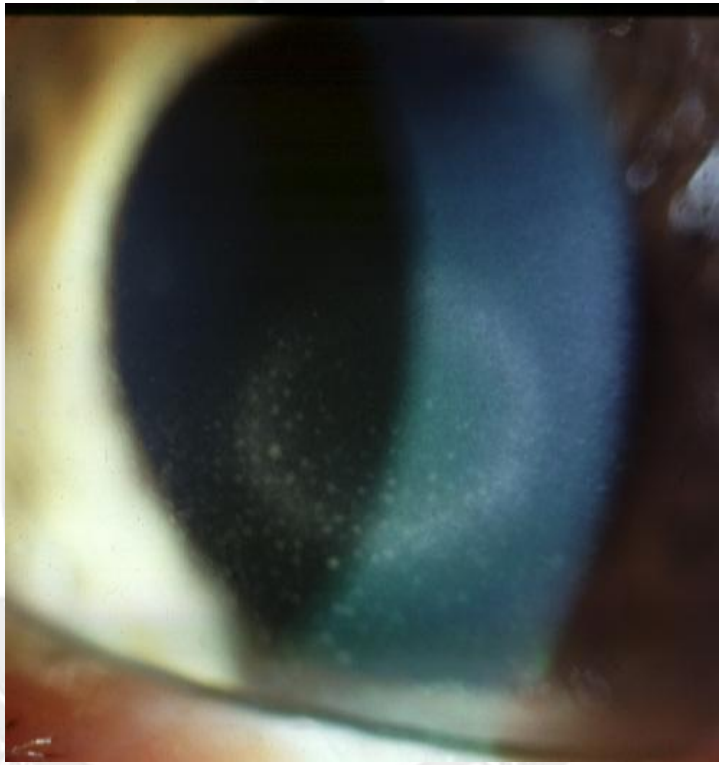
Signs

- Central epithelial and stromal oedema
- Folds in Descemet membrane

Treatment

✓topical steroids with antiviral cover

Associations



Small keratic precipitates

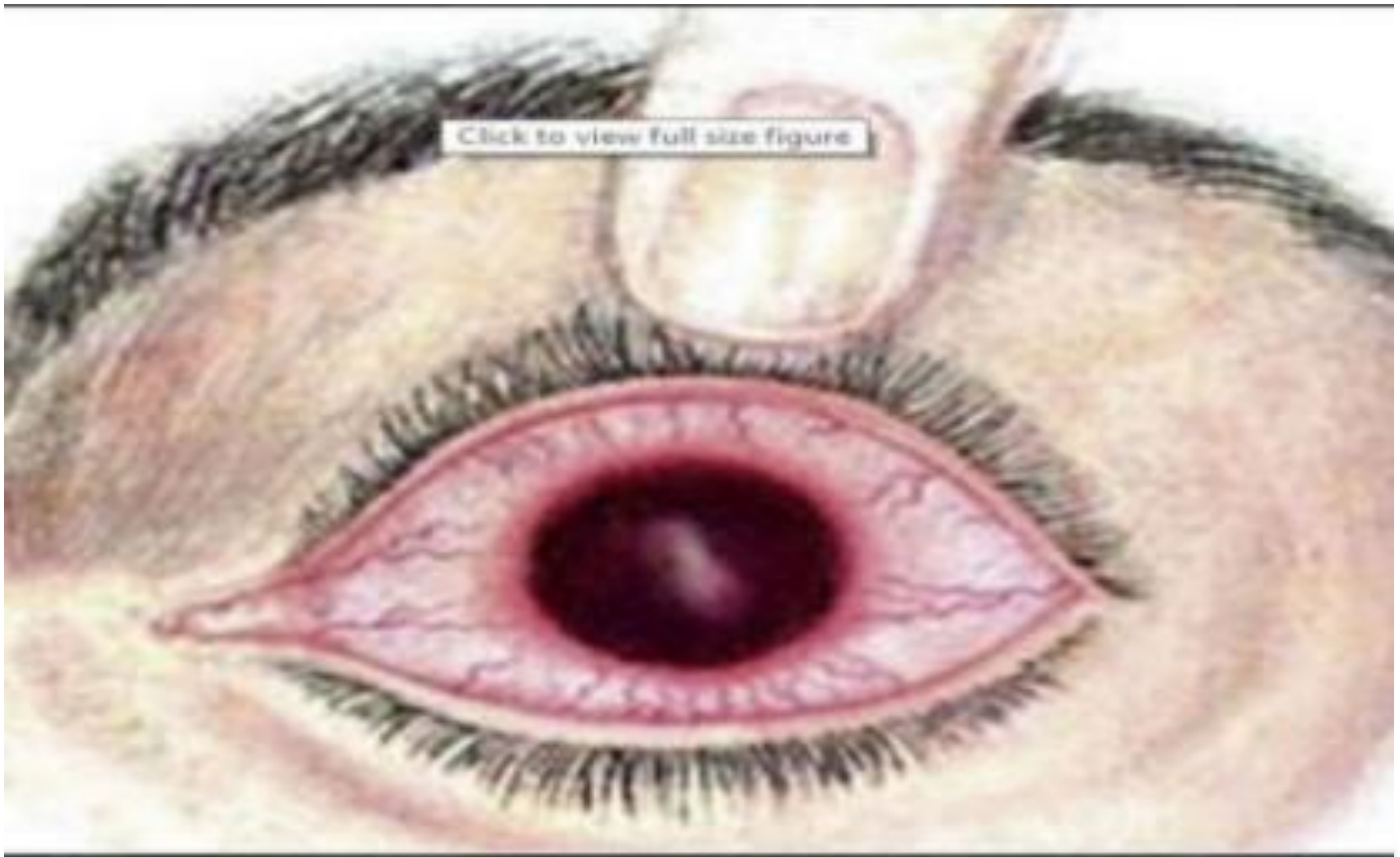
Interstitial syfilitic keratitis

- Treponema Pallidumis
- Usually bilateral
- 3 stages in the development:

➢ **Infiltration** (corneal stromal edema may result from the inflammation, resulting in the ground-glass cornea.)

➢ **Neovascularization** (typically, the neovascularization begins at the corneal limbus and may occur in the level, although it most commonly is seen in the deeper stromal layers.)

➢ **Regression** (during which scarring of the corneal stromal occur. The superficial vessels resorb, and the deeper vessels may constrict, resulting in the ghost vessels that are seen as a late finding of syphilitic interstitial keratitis)



Early stage of syphilitic keratitis.
Acute stromal keratitis with 'cherry-red' limbal congestion

Intersitial Lues Keratitis

- Congenital interstitial keratitis, which accounts for approximately 90% of cases, commonly appears at age 6-12 years.
- Acquired interstitial keratitis generally manifests in the third to fifth decades of life.

- **Treatment of syphilis**

  Patients with ocular syphilis should be treated the same as patients with neurosyphilis: includes antibiotic therapy.

Interstitial tuberculosis keratitis

- Usually unilateral
- The pathogenesis seems to be an immune reaction to tuberculous antigens within the cornea.
- Phlyctenulosis –allergic response. Typically are seen in children.

Tuberculosis keratitis

- 1) tuberculosis-allergic superficial keratitis (flyctenulotic)
- 2) Tubercuclosis-hematogenous deep keratitis
  - Deep diffuse
  - sclerotizing
  - keratoiridocyclitis

CONCLUSION

CORNEAL DISEASE IN THE ED				
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	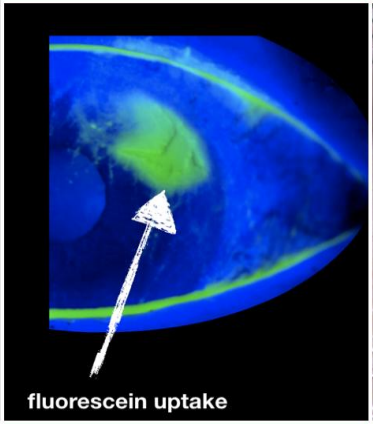	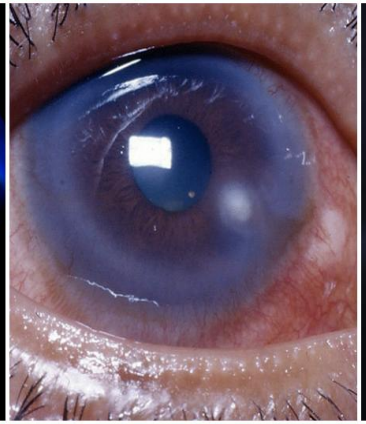	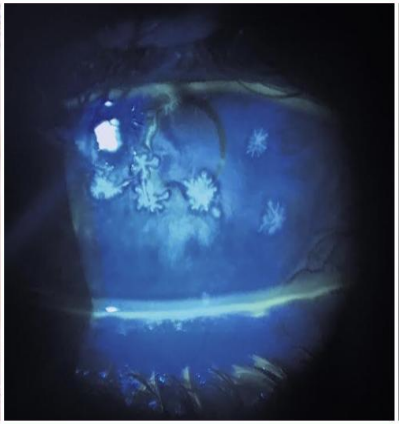	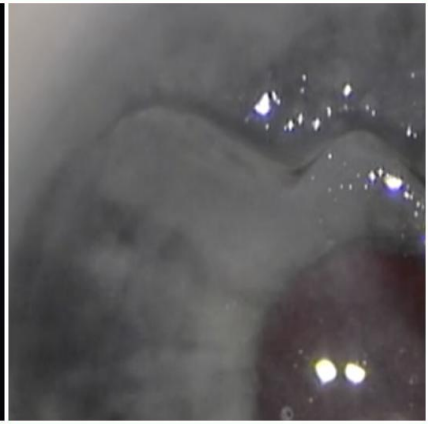
TREATMENT	**Analgesia** (NSAIDs - oral and/or ophthalmic drops) Topical antibiotics if contact lenses (ciprofloxacin, ofloxacin, tobramycin)	ciprofloxacin or ofloxacin ophthalmic drops 1 drop every hour	Oral acyclovir Conjunctival involvement: topical trifluridine 1 drop 9 x/day	**Small** - analgesia, topical antibiotics **Large but partial** - evaluated in OR for possible closure vs cycloplegics **Full thickness** - treat as globe rupture
OPHTHO FOLLOW UP	Large or over central axis - within 24-48 hours	Within 12-24 hours	Within 24-48 hours	Emergent if full thickness or large but partial thickness

CORNEAL ECTASIA – KERATOCONUS

- a progressive non-inflammatory, bilateral asymmetric

- onset - around puberty

- conical cornea
- central or paracentral stromal thinning
- apical protrusion
- irregular astigmatism

Symptoms

1. Reduce visual Acuity
2. Frequent changes in spectacle prescription
3. Glare
4. Ghost images
5. Monocular Diplopia

Bibliography

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