DEFINITION

- Inflammation of the inner structures of eyeball, i.e, uveal tissue and retina associated pouring of exudates in the vitreous cavity ,anterior chamber and posterior chamber

ETIOLOGY

A . Infective endophthalmitis –

Modes of infection –

1. Exogenous infections –perforating injuries, perforation of infected corneal ulcers ,or as postoperative infections following intraocular operations
2. Endogenous or metastatic endophthalmitis – through blood stream from infected in the body such as caries teeth, septicaemia, puerperal sepsis
3. Secondary infections from surrounding structures- from orbital cellulitis, thrombophlebitis and infected corneal ulcers

CAUSATIVE ORGANISMS

- Bacterial endophthalmitis- staphylococcus epidermidis and s. aureus. Other causative bacteria include Streptococci, Pseudomonas, Pneumococci, Corynebacterium. Propionibacterium acnes and Actinomycetes- produce slow grade endophthalmitis
- Fungal endophthalmitis- occur after intraocular surgery or injury with vegetative matter such as thorn or wood stick. Organisms causing are Aspergillus, Fusarium, Candida.

TABLE 17.4 Common Organisms Causing Endophthalmitis

Exogenous endophthalmitis
Acute postoperative (one to several days after surgery)
Staphylococcus epidermidis
Staphylococcus aureus, *Streptococcus* spp.
Gram-negative bacteria (*Pseudomonas* spp., *Proteus* spp., *Haemophilus influenzae*, *Klebsiella* spp., *Escherichia coli*, *Bacillus* spp., *Enterobacter* spp.) and anaerobes
Delayed-onset postoperative (a week to a month or more after surgery)
Fungi: *Aspergillus*, *Fusarium*, *Candida*, *Cephalosporium*, *Penicillium*
Bacteria: *Propionibacterium acnes*, and any bacteria infecting a thin filtering bleb (often streptococci), vitreous wick or after partial suppression with antibiotics during or after surgery
Post-traumatic
Bacillus spp., *S. epidermidis*, fungi (often *Fusarium*), *streptococcus* spp. and others. Mixed flora are common
Endogenous endophthalmitis
Bacillus cereus (especially in intravenous drug abusers), streptococci, *Neisseria meningitides*, *Staphylococcus aureus*, *Haemophilus influenzae*) among bacteria, *Mucor* and *Candida* among fungi

NON INFECTIVE ENDOPHTHALMITIS

- IT IS STERILE. Caused by reaction to certain toxins/toxic substances

1. Postoperative sterile endophthalmitis –IOL, instruments, toxic anterior segment syndrome
2. Post traumatic sterile endophthalmitis–reaction to retained intraocular foreign body
3. Phacoanaphylactic endophthalmitis-
4. Intraocular tumour necrosis

CLINICAL FEATURES

- It is a catastrophic complication of intraocular surgery (0.1%)
- Source of infection- patients own periocular bacterial flora, contaminated solutions and instruments, environmental flora
- **Onset – acute or delayed**
- **Acute onset**- bacterial cause , between 1-7 days of operation
- **Delayed onset** – 1 week to month after surgery. Fungi are the most common cause. Propionibacterium also cause this.

SYMPTOMS

- Severe ocular pain
- Redness
- Lacrimation
- Photophobia
- Loss of vision

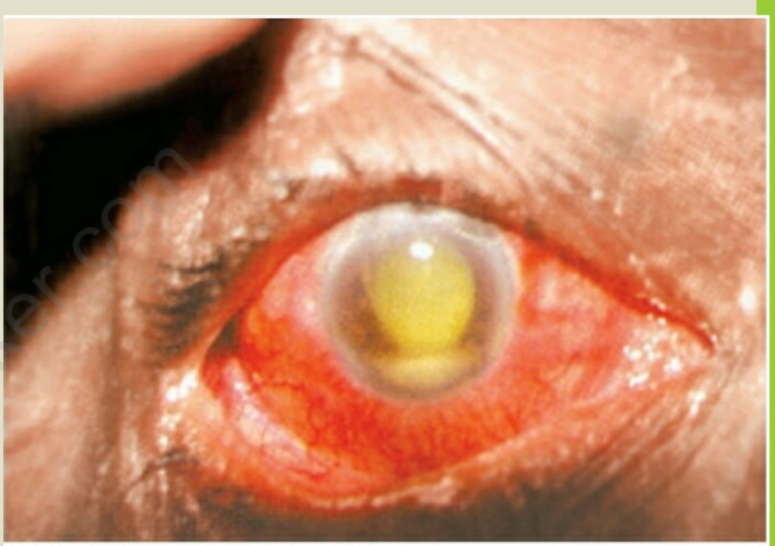


Fig. 8.18 *Postoperative acute endophthalmitis*

SIGNS

1.LIDS -red and swollen

2.Conjunctiva shows chemosis,marked CCC

3.Cornea is oedematous ,cloudy, ring infiltration may be formed

4.Edges of wound become yellow and necrotic wound may gape

5.Anterior chamber shows hypopion

6.Iris is oedematous and muddy

7.Pupil- yellow reflex d/t purulent exudation in the vitreous

- Vitreous exudation – with pus .yellowish white mass is seen through the fixed dilated pupil . (***amaurotic cat`s eye reflex)***
- Intraocular pressure- raised in early stages,later IOP will decrease shrinkage of the globe occurs

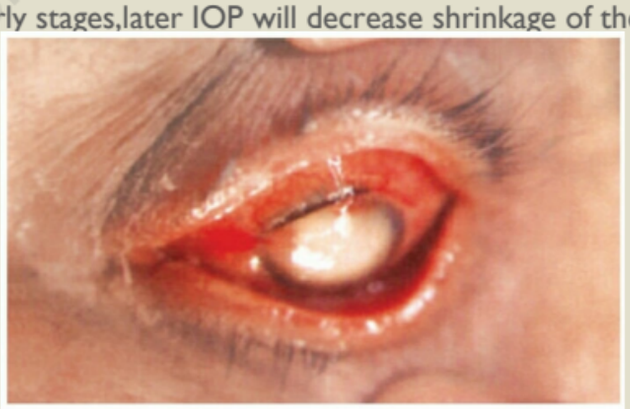
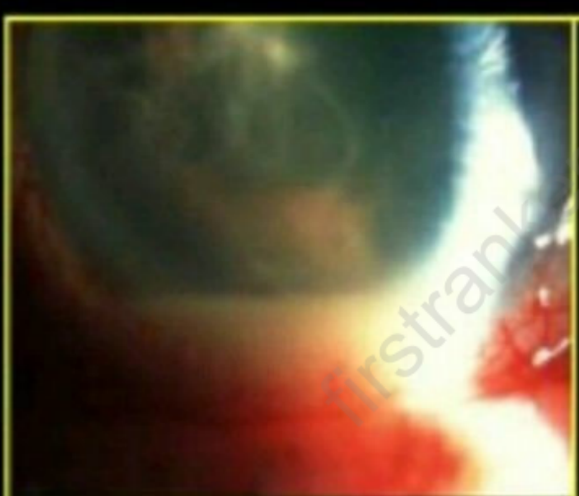
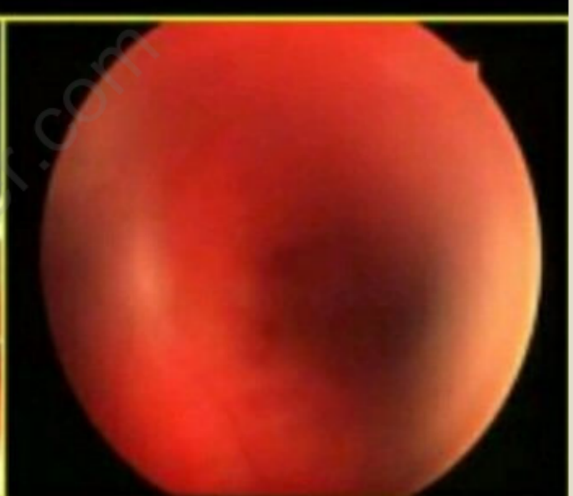


Fig. 8.19 *Severe postoperative endophthalmitis with wound gape*

Signs of severe endophthalmitis



- Pain and marked visual loss
- Corneal haze, fibrinous exudate and hypopyon



- Absent or poor red reflex
- Inability to visualize fundus with indirect ophthalmoscope

MANAGEMENT

- INVESTIGATIONS – detailed history , ocular examination and USG
- By demonstrating exudates in the vitreous
- Vitreous tap or biopsy is needs to be performed and aspirate examined by GRAM AND GIEMSA STAIN
- Bacterial and fungal cultures
- KOH mount for fungal elements
- CBC ,RBS,serum eletrolytes

TREATMENT

- Early diagnosis and vigorous therapy
- ***Antibiotic therapy –***

1. ***Intravitreal antibiotics and diagnostic tap*** should be performed aeap. Through transconjunctivally under topical anaesthesia from the area of pars plana. using a 23 guage needle (vitreous tap) followed by a intravitreal inj.of antibiotics using a 30 guage needle .it is the mainstay of trt.

Usually combination two antibiotics .

First choice –vancomycin 1mg in 1ml plus ceftazidime

Second choice –vancomycin 1mg in 0.1ml plus amikacin 0.4mg in 0.1 ml

- We can add dexamethasone 0.4 mg in 0.1 ml to limit postinflammatory responses
- If there is no improvement repeat inj after 48 hours acc to bacteriological examination

2. ***Topical concentrated antibiotics*** should be started immediately and used frequently

Vancomycin 50mg/ml or cefazolin 50mg/ml

Amikacin 20mg/ml or tobramycin 15mg/ml

3. ***Systemic antibiotics*** – have only a limited role . Ciprofloxacin ,vancomycin and ceftazidime, cefazolin and amikacin

- ***Steroid therapy-*** limit the tissue damage caused by infl process
- Intravitreal inj of dexamethasone 0.4mg in 0.1ml along with antibiotics
- Topical use of dexa(0.1%) or predacetate(1%)
- Systemic steroids- prednisolone

- ***Supportive therapy –***

1. Cycloplegics –preferably 1%atropine or 2%homatropine eyedrops TDS OR QID
2. Antiglaucoma drugs – oral acetazolamide or timolol

- ***Vitrectomy –*** if there is no improvement after intensive therapy for 48 to 72 hours