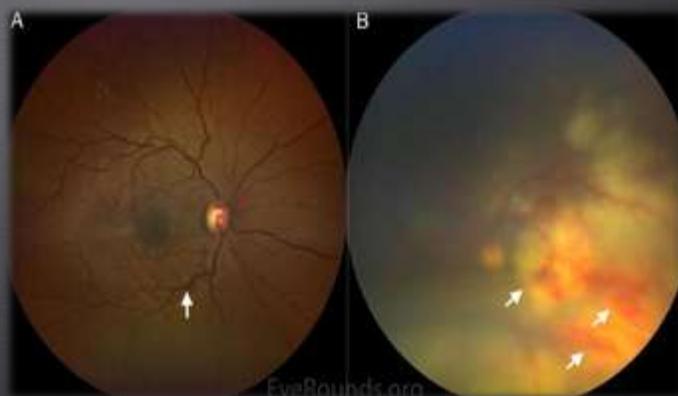


# ENDOGENOUS ENDOPHTHALMITIS

Abdussalam Abdullatif, MD  
Associate Professor  
Cairo University

## CASE # 1

- 50 yrs old Male
- Diminution of vision in left eye



## CASE # 2

- 60 yrs old Male
- Redness of the eye



## CASE # 3

- 25 yrs old Male
- Blurring of vision in the left eye





- Retinitis
- Perivascular hge with infiltration
- AC reaction & Hypopyon,
- Vitreous haze,
- Vitreous exudates



## DIFFERENTIAL DIAGNOSIS

- **Viral retinitis**
  - **Toxoplasmosis**
  - **Syphilis**
  - **Tuberculosis**
  - **Endophthalmitis**
- Viral and toxo Ab
  - VDRL, RPR
  - CXR, Quantiferon Gold
  - No H/O trauma, ocular surgery



## *History*

- **Recent hospitalization**
- **Diabetes mellitus**
- **Urinary tract infection, liver abscess, infective endocarditis**
- **Immunosuppression (malignancy, and HIV)**
- **Intravenous drug abuse**
- **Indwelling catheters**



## *History*

- **The first manifestation of an underlying occult systemic focus of infection**

## The diagnosis of EE requires

a high index of suspicion with presence of one of the above mentioned systemic risk factors and/or presence of characteristic ocular findings

## ENDOGENOUS ENDOPHTHALMITIS

- Originates from sources within the body
- Infectious extraocular focus can be found in 90%
- Bacterial causes 50% while funga 50%

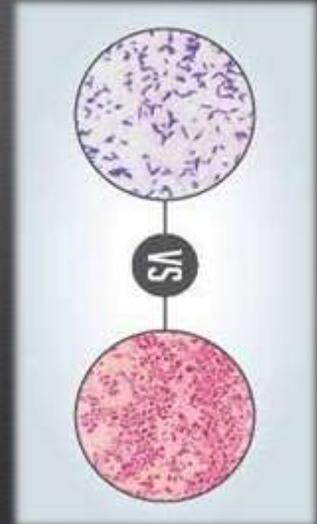
## ENDOGENOUS ENDOPHTHALMITIS

### ➤ GRAM-POSITIVE ORGANISMS:

- Streptococcus species ... endocarditis
- Staphylococcus Aureus ... skin infection
- Bacillus species ... IV drugs users
- Nocardia species ... immunocompromised patients

### ➤ GRAM-NEGATIVE ORGANISMS:

- Escherichia Coli ... urinary tract infection
- Neisseria Meningitidis and Haemophilus Influenzae ... meningitis
- Klebsiella species ... liver abscess



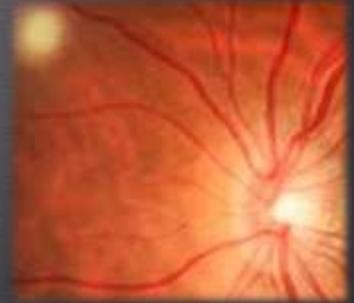
## ENDOGENOUS ENDOPHTHALMITIS

### FUNGAL SPECIES

- **YEAST:** Candida albican
- **MOLD:** Aspergillus flavus, fusarium

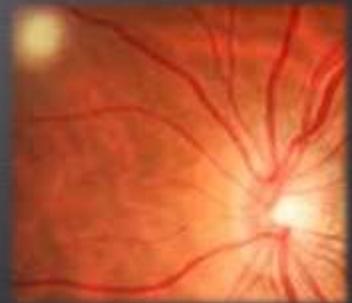
### *“Pathophysiology”*

- Bacteremia or fungemia
- Organism reaches the eye through the posterior segment vasculature.
- Right eye is more commonly involved due to the more direct route through the right carotid artery



### *“Pathophysiology”*

- Septic embolus that enters the posterior segment vasculature
- Nidus for dissemination of the organism into the surrounding tissues after crossing the blood ocular barrier
- Microbial proliferation and inflammatory reactions within these tissues



**UNLIKE EXOGENOUS ... TOXINS**

## VITREOUS INVOLVEMENT

The hallmark of EE.

**Candida:** fluffy white retinal lesions extending into the vitreous

**Aspergillus:** yellow/ white lesions which can be focal or diffuse

## DIAGNOSIS

vitreous aspiration and diagnostic vitrectomy

Vitrectomy has a higher diagnostic yield for culture (92 %) compared to a vitreous aspirate (44 %)

## Culture and histological examination

## Real-time polymerase chain reaction (RT-PCR)

Excellent sensitivity as well as specificity

## Next Generation Sequencing

Blood culture: on three consecutive days using sterile precautions  
third cases

## MANAGEMENT

**EMERGENCY** ... prompt diagnosis and meticulous management are required to safeguard vision.

The treatment is governed by:

- Stage of the disease,
- Offending microorganism,
- Mode and route of infection,
- Systemic status of the patient.

## MANAGEMENT SYSTEMIC THERAPY

- Once infection EE is suspected, a blood sample for culture and sensitivity should be obtained, and systemic antibiotics should be initiated.
- Modified according to C&S

## MANAGEMENT LOCAL THERAPY

- Once infection EE is suspected, a sample for culture and sensitivity should be obtained, and intravitreal antibiotics should be initiated.
- Early intravitreal antibiotics should be initiated within 24 hours of presentation to have a better and favorable outcome.

## MANAGEMENT OF BACTERIAL EE

- **Gram-positive bacteria :**  
Vancomycin 1mg/0.1 ml and cefazolin 2.25 mg/0.1 ml
- **Gram-negative bacteria**  
2.25 mg/0.1 ml ceftazidime or 0.4 mg/0.1 ml amikacin

## MANAGEMENT OF FUNGAL EE

- Candida, Aspergillus

Voriconazole: 50–200  $\mu\text{g}/0.1\text{ ml}$

Amphotericin B: 5  $\mu\text{g}/0.1\text{ ml}$

- Fusarium:

Voriconazole: 50–200  $\mu\text{g}/0.1\text{ ml}$

## MANAGEMENT OF LOCAL THERAPY

- Vitrectomy may be strongly considered as a treatment option if there is no response to systemic or local therapy within 24–48 h of presentation or if the patient has possible worsening.
- Early vitrectomy has been reported to cause a reduced incidence of retinal detachment and has a better globe salvage rate.

## MANAGEMENT OF STERIODS

- Currently, no clear guidelines exist regarding the use of corticosteroids in endophthalmitis.
- Inflammation, although essential in combating invading organisms, may end up damaging retinal structures.
- Steroids have multiple anti-inflammatory effects: decrease in leucocyte recruitment, attenuating production of various inflammatory cytokines and stabilizing membrane barriers including blood-retinal barrier

**EE IS AN OPHTHALMOLOGICAL  
EMERGENCY THAT REQUIRES  
PROMPT DIAGNOSIS AND MANAGEMENT.**

*Thank you for your attention*