

## Prevention of endophthalmitis in a tertiary Care hospital

<sup>1</sup>Dr.D. UdayaKumar M.S., <sup>2</sup>Dr.M. Nirmala M.S., <sup>3</sup>Dr. K. Saketa,

<sup>4</sup>Dr. Ishaq Mohammad

<sup>1</sup>Professor of ophthalmology, GMC/GGH, Guntur; <sup>2</sup>Asst Professor of ophthalmology, GMC/GGH, Guntur;

<sup>3</sup>Post Graduate; <sup>4</sup>Post Graduate.

**Abstract:-** Study of 100 cataract cases done during a period of 2 years i.e.2013 to 2015. We have observed that post-operative endophthalmitis can be prevented by strict sterilization procedure and complete pre-operative evaluation excluding any source of infection and systemic manifestations like diabetes mellitus and hypertension. Aseptic theatre pre-operative frequent antibiotic instillation and complete asepsis during surgery.

TYPE OF STUDY: Retrospective study.

PLACE OF STUDY: Government general hospital, GMC, Guntur.

AIM: Review of cases done in GGH Guntur during the period of 2013-2015

MATERIALS AND METHODS: It is a retrospective study done in a tertiary care hospital attached to a medical college in Guntur, Andhra Pradesh, India. The study is done regarding the prevention of endophthalmitis in patients who underwent intraocular surgeries within the span of 2yrs from January 2013 to January 2015. The study included male & female out patients attending ophthalmology between the ages of 5yrs and old ages.

### INCLUSION CRITERIA:

- All the patients who are operated for intra ocular surgeries during the period of 2013-2015.
- Complicated cataract
- EECE with PCIOL
- SICS with PCIOL
- Congenital cataract
- Closed globe injuries
- Secondary IOL implantation
- Glaucoma filtering surgeries

### EXCLUSION CRITERIA:

- Infection with open globe injuries
- Traumatic cataract
- Uncontrolled iridocyclitis
- Uncontrolled glaucoma with medical management
- Immunosuppressive diseases like HIV

PLANS FOR STATISTICAL ANALYSIS: to find out the possible complications and avoid them with good visual outcome.

## I. Introduction:

Endophthalmitis is the inflammation of the eye ball i.e.; uveal tissue and retina associated with pouring of exudates into vitreous, anterior chamber and posterior chamber.

### Etiology:

1. Infective
2. Non infective

### Infective Endophthalmitis:

1. Exogenous infection: following penetrating injuries, perforation of infected corneal ulcer, **post operative** following intra ocular infections.
2. Endogenous or Metastatic endophthalmitis: rarely through the blood stream from some infected focus in the body such as caries teeth generalized septicemia and puerperal sepsis.
3. Secondary infection from surrounding structures extension of infection from the orbital cellulitis, thrombophlebitis and corneal ulcers.

### Organisms:

- Most common organism is staphylococcus aureus, staphylococcus epidermidis.
- Gram negative organisms are Pseudomonas aeruginosa, Proteus and Coliform species.

- Fungal endophthalmitis is caused by Aspergillus, Fusarium, Candida.
- Gram positive organisms like Propionobacterium and actinomyces produce slow grade ophthalmitis.

**Non-Reactive or Sterile Endophthalmitis:**

1. Post-operative sterile endophthalmitis: occur as toxic reactions to chemicals adherent to IOL or chemicals adherent to instruments
2. Post traumatic sterile endophthalmitis: toxic reaction to retained intra ocular foreign body. E.g.: pure copper
3. Intra ocular tumor necrosis may present as sterile endophthalmitis (MASQUERADE SYNDROME)
4. Phacoanaphylactic endophthalmitis may be induced by lens proteins in patients with Morgagnian cataract

**Risks of Endophthalmitis:**

- Wound abnormalities
- Prolonged surgeries
- Contaminated irrigation solutions

**Precautions:**

- Careful preoperative evaluation and correction of pre existing risk factors.
- Application of topical povidine iodine 5% solution prior to surgery has been shown to be effective.
- Variation in the surgical techniques, scrupulous asepsis, and use of pre-operative, intraoperative and post-operative antibiotics affect the incidence rates.

**Sources of Infection:**

- Air borne bacteria
- Contaminated solutions and medications
- Tissue sources including surgeons' hands, patients eye lids and conjunctiva
- Object sources including instruments, drapes, sutures.

**Precautions:**

- Careful examination of eye prior to the intra ocular procedures for signs of blepharitis, conjunctivitis, dacryocystitis etc.
- Any of these conditions if found are to be adequately treated before intra ocular surgery.
- When there is a contaminated wound such as a traumatic injury intra cameral antibiotics reduce the incidence of endophthalmitis in some developing countries.

**Diagnosis:**

The signs and symptoms of bacterial endophthalmitis after cataract extraction are generally present between 48 - 72 hrs after operation

**Symptoms:**

- ocular or brow pain
- diminished vision
- headache associated with drowsiness

**Signs:**

- Oedema of upper eyelid,
- marked conjunctival reaction with hyperemia and intense chemosis,
- corneal oedema, keratic precipitates,
- hypopyon,
- vitreous debris and decreased, yellowish or absent retinal reflex
- In cases with deep infections vitreous cavity is filled with exudates and pus. Yellowish white mass is seen in through fixed dilated pupil. This sign is called AMAUROTIC CAT'S EYE REFLEX.
- IOP is raised in early stages in severe cases, ciliary processes are destroyed resulting in shrinkage of globe.
- Bacterial endophthalmitis progresses rapidly and may destroy the eye within 24-72 hrs of onset of symptoms.
- Fungal endophthalmitis is characteristically indolent for few days to weeks from the onset of symptoms

**Laboratory Investigations:**

- Lid margin and conjunctival cultures on blood agar, enriched chocolate agar, thioglycolate agar and sabourauds dextrose medium
- Culture of conjunctival flap or corneal wound on the same media
- Smears of exudates from infected areas on glass slides for Geimsa and Gram staining and KOH for fungal examination
- Anterior chamber and vitreous paracentesis for cultures and smears

**Treatment:**

**Antibiotic Therapy:**

1. Intra vitreal antibiotics: and diagnostic tap: it should be made as early as possible.
    - It is performed transconjunctivally under topical anesthesia from the area of pars plana (4-5mm from the limbus).
    - the vitreous tap is made using 2-3 gauge needle followed by tuberculin syringe and 30 gauge needle usually a combination of two antibiotics one effective against gram positive coagulase negative staphylococcus and the other against gram negative bacilli.
    - 1<sup>st</sup> choice: vancomycin 1 mg in 0.1ml plus ceftazidime 2.25 mg in 0.1 ml.
    - 2<sup>nd</sup> choice: vancomycin 1mg in 0.1ml plus amikacin 0.4 mg in 0.1ml.
    - 3<sup>rd</sup> choice: vancomycin 1 mg in 0.1 ml plus gentamicin 0.2 mg in 0.1 ml.
  - The aspirated fluid sample should be used for bacterial culture and smear examination.
  2. Sub conjunctival injection: antibiotic should be given daily for 5-7 days to maintain therapeutic intra ocular concentrations.
    - 1<sup>st</sup> choice: vancomycin 25 mg in 0.5 ml plus ceftazidime 100 mg in 0.5 ml.
    - 2<sup>nd</sup> choice: vancomycin 25 mg in 0.5 ml plus ceftriaxone 125 mg in 0.5 ml
  3. Topical concentrated antibiotics: started immediately and used frequently every 30 minutes to 1 hr to begin with combination of 2 drugs.
    - Vancomycin 50mg/ml or cefazoline 50 mg/ml plus amikacin 20 mg/ml or tobramycin 15mg/ml.
  4. Systemic antibiotics:
    - I.V. ciprofloxacin 200mg B.D. for 3-4 days followed by orally 500mg for 6-7 days.
    - Vancomycin 1gm IV. B.D. and ceftazidime 2gm I.V
    - Cefazoline 1.5 gm I.V. 6<sup>th</sup> hourly and amikacin 1gm I.V. – 3 times/day.
- STEROID THERAPY:**
- Intravitreal infection of dexamethasone 0.4 mg in 0.1ml
  - Subconjunctival injection of dexamethasone 4mg in 1ml O.D. for 5-7 days.
  - Topical dexamethasone or prednisolone acetate 1% is used frequently.
  - Systemic steroids: oral corticosteroids should preferably be started after 24 hrs of intensive antibiotic therapy.
  - A daily therapy regime with 60 mg prednisolone to be followed by 50,40, 30 20 and 10 mg for 2 days each may be adapted.

**Supportive Therapy:**

- Cycloplegics
- Anti glaucoma drugs
- Vitrectomy (if the patient does not improve with the above intensive therapy for 48-72 hrs, visual acuity is reduced to PL+, vitrectomy is performed)



**II. Conclusion:**

- As endophthalmitis is a dreadful, vision threatening complication, meticulous care has to be taken in pre operatively, intra operatively and post operatively regarding asepsis.

**References:**

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