PARS PLANA VITRECTOMY FOR ACUTE POST - CATARACT ENDOPHTHALMITIS
WHEN ?, AND HOW ?

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ENDOPHTHALMITIS VITRECTOMY STUDY GROUP(EVS) CONCLUSIONS :


“Patients who presented with hand motions or better vision did equally well whether they had immediate vitrectomy or immediate tap/biopsy”

“Patients who presented with vision of light perception only had much better visual results with immediate pars plana vitrectomy than with tap/biopsy”
Conclusions (Cont.) :

- “Routine immediate vitrectomy was of no additional benefit in patients who met EVS entry criteria and presented with hand motions or better vision”
- “However, immediate vitrectomy was of substantial benefit for those who presented with light perception only vision”.
- “In addition, systemic antibiotics provided no additional advantage to final visual outcome”

And

Just Core Vitrectomy, Was the Usual Procedure

Which was thought to be the safest due to:

- Poor visualization
- Retinal fragility
- Iatrogenic breaks
Things have changed
Since 1995 !!

NOW AVAILABLE :

- Good intra-vitreal illumination (xenon light)
- Wide angle visualization
- Triamcinolone Acetonide - assisted PPV
- Careful controlled posterior hyaloid detachment & removal of the sub-hyaloid exudate now possible.

At The Present Time, Our Policy is as Follows :

➢ When ?
   Once infection is surely diagnosed.

➢ How ?
   Triamcinolone-Acetonide – assisted PPV, with posterior hyaloid detachment and removal of the subhyaloid exudate providing:
   a clean total vitrectomy
### DIAGNOSIS

**Toxic Anterior Segment Syndrome (TASS) x Infec. Endophthalmitis**

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<tr>
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<th>TASS</th>
<th>Endophthalmitis</th>
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<tr>
<td><strong>Onset:</strong></td>
<td>12-24 hours</td>
<td>2-7 days usually</td>
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<tr>
<td><strong>Symptoms:</strong></td>
<td>Blurred vision</td>
<td>Pain &amp; blurred vision</td>
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<tr>
<td>Lid swelling</td>
<td>Usually not evident</td>
<td>Often present</td>
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<tr>
<td>Cornea</td>
<td>Edema 1+</td>
<td>Edema 2+</td>
</tr>
<tr>
<td>Ant. Chamber</td>
<td>- Cells 1-3+</td>
<td>- Cells 3+</td>
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<tr>
<td></td>
<td>- Fibrin 1-3+</td>
<td>- Fibrin variable</td>
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<tr>
<td></td>
<td>- Hypopyon 1+</td>
<td>- Hypopyon 3+</td>
</tr>
<tr>
<td>Vitritis</td>
<td>very rare</td>
<td>Always present</td>
</tr>
<tr>
<td>Steroids</td>
<td>Dramatic improvement</td>
<td>Equivocal</td>
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<tr>
<td>Pupil</td>
<td>Fixed &amp; dilated</td>
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**Diagnosis:**

Toxic Anterior Segment Syndrome (TASS) x Infec. Endophthalmitis

**Onset:**

12-24 hours

**Symptoms:**

- Blurred vision
- Pain & blurred vision
- Lid swelling: Usually not evident
- Edema 1+
- Ant. Chamber: Cells 1-3+
- Fibrin 1-3+
- Hypopyon 1+
- Cells 3+
- Fibrin variable
- Hypopyon 3+

**Vitritis:**

- very rare

**Steroids:**

Dramatic improvement

**Pupil:**

Fixed & dilated
IMMEDIATE PPV AND RADICAL APPROACH

Results:
Once diagnosed 8 cases were immediately treated with this technique, 7 cases were salvaged with visual acuities of 6/60 to 6/6 over time.

In no case had we any iatrogenic breaks or retinal detachment.

Post vitrectomy cystoid macular edema treated with intravitreal injection of Lucentis with favorable results.
Our Conclusion:

- **Immediate radical PPV** with careful posterior hyaloid (PH) detachment and total removal of the PH and the **subhyaloid exudate** is far superior to delayed intervention with only core vitrectomy.

  ➢ **It provides the highest rate of surgical success and the best visual outcome**
RAMY REDDY (From Delhi ,INDIA) ,

- **Independently** discovered this technique and applied it to 6 cases
- He presented his work during the last Afro-Asian congress in Kolkata January 21-24 2010
- He used silicone oil in 2 eyes “for fulminant and acute endophthalmitis”
- All his cases went well with good visual results (3/60 – 6/12)

PREVENTION OF POST-CATARACT ENDOPTHALMITIS

Intra-cameral injection of **1mg of cefuroxime** yielded an almost **five-fold reduction** in the rate of postoperative endophthalmitis compared with patient groups that did not receive the antibiotic

It not only reduces the incidence of post-cataract endophthalmitis but also seems to **partially protect the visual outcome** in affected eyes
**PREVENTION OF POST-CATARACT ENDOPHTHALMITIS**

Patients with *streptococcal infections* had strikingly worse **visual outcomes** and showed an earlier onset of disease than those with staphylococcal infection.

This drug remains the **only prophylactic intervention proven** to reduce rates of endophthalmitis after cataract surgery.

**Fluoroquinolones** have been promoted as a substitute for intracameral *cefuroxime*. Recent reports describing steadily increasing resistance of endophthalmitis isolates to **forth generation** fluoroquinolones.

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**Fungi**

*Of the thousands of fungi that cause plant diseases, only 100 species can cause disease in humans and animals*

- Superficial
- Subcutaneous
- Deep and systemic disease
Candida & Related Yeasts

• Candida albicans is an oval budding yeast that produces pseudomycelium

• Member of the normal flora of mucous membranes of respiratory, gastrointestinal and genital tracts

• Can produce systemic disease in debilitated and immunosuppressed patients & intravenous drug abusers

Candida & Related Yeasts (cont.)

When carried through the blood stream can cause miliary abscesses and sepsis in grossly debilitated hosts. e.g. in patients with lymphoma & debilitating diseases
Candida & Related Yeasts (cont.)

• Can gain dominance and be associated with pathologic conditions
  ➢ Blood stream invasion
  ➢ Thrombophlebitis
  ➢ Endocarditis
  ➢ Eye and other organ infection

• Introduced intravenously via tubing, needles and narcotic abuse

PREDISPOSING FACTORS

➢ Bacterial sepsis
➢ General debility and immunosuppression
➢ Hemodialysis
➢ Indwelling urinary and I.V. catheters
➢ Recent major surgery esp. on gastro-intestinal tract
➢ Prolonged administration of antibiotics and corticosteroids
➢ Postpartum women and newborns
➢ In young healthy women after surgically induced abortion
➢ Intravenous drug abuse
➢ AIDS
Candida Endophthalmitis

- Candida albicans is the most common pathogen causing fungal endophthalmitis and one of the most common of all endogenous infections of the eye.
- Long term parenteral hyperalimentation & hemodialysis are the major predisposing factors
- Of patients with candidemia 30% had clinical or autopsy evidence of ocular Candida infection
- Intravenous heroin abuse and AIDS have increasingly been recognized in the etiology
- Fungal endophthalmitis complicating drug addiction was first described 1971 by Sugar Mandell and Shalev

It is now a well characterized disorder that should be familiar to all ophthalmologists

Fungal Endophthalmitis Opportunistic

- Candida albicans causes yellow-white retinal lesions with overlying vitreous inflammatory cell response ➔ severe turbidity and fluff-balls. Candidiasis is the most common endogenous infection of the eye & at least two thirds of patients have bilateral disease.
- Aspergillosis - a group of mycoses that cause lesions similar to Candida - fluff -balls & yellow white retinal lesions. It is the second most common disseminated fungus infection. It is treated in the same way as Candida infection. It has been reported as a cause of endophthalmitis in immunosuppressed patients and intravenous drug abusers.
- Other endogenous intraocular fungal infection including cryptococcosis, coccidomycosis and histoplasmosis are much less common.
Characteristically 3 - 8 hours after the injection of brown street heroin, symptoms associated with candidemia occur. Acute symptoms are: headache, malaise, rigors and night sweats. Thereafter metastatic complications may supervene: tender nodules in scalp and hairy areas. The costo-chondrial junctions is sometimes similarly involved. Ocular symptoms are pain, photophobia and visual loss, retinocchoroiditis with overlying inflammatory cell response in the vitreous, producing white fluffy exudative lesions “puff balls”; when joined by opalescent strands are called “string of pearls”.

Candida Infection

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Candida Infection

Ocular:

- Intra-retinal hges, Roth spots, papillitis, scleritis, anterior uveitis, and iris abscesses
- Epipapillary abscess …… SIAM (2001) not reported before
- In the absence of effective treatment, retinal necrosis, vitreous organisation, tractional retinal detachment and phthisis commonly follow.
- Spontaneous resolution has been reported
- Re-infection can occur

Diagnosis of Ocular Infection by Candida Albicans is Made if:

A patient with signs typical of Candida endophthalmitis who also fulfills three or more of the following criteria:

1. A history of intravenous drug abuse
2. Systemic S & S consistent with candidaemia
3. Significant elevation of anticandidal serum antibody “IgG”
4. An elevated serum arabinitol concentration
5. Culture of Candida albicans from the vitreous
6. Culture of Candida albicans from scalp nodules
Case Report

- Young lady 25 years of age, O.D. 6/12 unaided OS is counting figures; patient gave a history of heroin addiction through intravenous administration
- Ocular pain and orbital discomfort
- Severe AC reaction with flare and cells
- Vitreous very cloudy, turbid & filamentous
- Very hazy view of the fundus with “puff balls” and a white mass on the optic disc (a miliary abscess…. SIAM 2001)
- No scalp nodules
- Tender costo-chondrial junction
- She did not receive any treatment
TREATMENT

➢ Topical atropine and steroids according to the degree of anterior uveitis
➢ Oral ketoconazole........................................ 400 mg/day
➢ Oral prednisolone ......................................... 60 mg/day
➢ I.V infusion of amphotericin B ............... 64 mg/day
➢ Intravit. injection of amphotericin B......... 5ug (safe & effective)
➢ Continuous infusion via a central catheter of 64 mg daily in 5% dextrose until a total dose of 1Gm

A combination of flucytosine and amphotericin B or of flucytosine & ketoconazole has been successful

TREATMENT

The optimal treatment of candida endophthalmitis remains controversial

Medical:

➢ Soluble amphotericin B
➢ i.v. 0.4 – 0.8 mg/kg/day alone or in combination with flucytosine 150mg/kg/day

➢ Oral ketoconazole
   200 – 400 mg/day

➢ Sporanox:itraconazole (a triazole derivative)
   200 mg twice daily ⇒ for 3 weeks to 7 months
Other drugs:

- Flucytosine: 150 mg/kg/day
- Miconazole: 2400 mg/day

Most patients with fungal endophthalmitis have systemic disease and require 1 gm of amphotericin B.

The drug is toxic:
- Anemia
- Electrolyte imbalance
- Renal dysfunction
- Hypotension
DRUG TREATMENT (cont.)

- The combination has been recommended to prevent the emergence of resistant Candidal organisms, it may also reduce or prevent the need for surgery.
- It is advisable to use the least toxic agents before recourse to amphotericin B
- By vitrectomy it is important to isolate the infecting organism to determine its drug sensitivity
- Intravenous amphotericin B has poor ocular penetration
- Progression of lesions in spite of medical treatment is an indication for vitrectomy to reduce the risk of sight-threatening complications

Treatment (cont.)

**Surgical :**

**Vitrectomy :**

- Only in patients with dense vitreous opacities
  - 5 – 10 ug of amphotericin B should be injected intravitreally at the end of the procedure
  - Systemic amphotericin B remains the mainstay of treatment
  - Systemic itraconazole “Sporanox” only was given.

  No intra-vitreal injection in our case ,with complete resolution
Resolution of the inflammatory process within the vitreous is accompanied by organisation and fibrosis causing varying degrees of macular traction and macular pucker or localised retinal detachment

**Role of Vitrectomy**

- Removes the scaffold for fibrosis
- Assists with diagnosis
- Reduces the infection burden in the vitreous
- Possibly enhances ocular penetration of drugs

*Risk to the patient’s eye not significant with better techniques and more experience*

Care of contamination of theatre equipment and staff with hepatitis-contaminated material
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PREVENTION

- Meticulous asepsis
- Gloves
- Betadine (povidone iodine)
- Opsite (sterile adhesive)
PREVENTION

- Asepsis: betadine (povidone iodine)
- Sterile plastic cover (Opsite)
- Antibioprophylaxis – high risk cases
- Subconjunctival injection?
PREVENTION

Antibioprophylaxis :-

- Subconjunctival injection?
- Intraocular injection?
- Post-operative antibiotic-steroids drops

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