Fungal Endophthalmitis: a real problem in Asia

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Introduction

Endophthalmitis: inflammation of intraocular cavities, mostly caused by micro-organisms

non-infectious may be associated with toxic agents

endogenous (hematology spread) & exogenous (trauma/surgery)

Rare, but sight threatening
Table 1. Common microorganisms in postoperative endophthalmitis

<table>
<thead>
<tr>
<th>Prevalence (%)*</th>
<th>Bacterial species</th>
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</thead>
<tbody>
<tr>
<td>33 - 77%</td>
<td>CNS (coagulase-negative staphylococci)</td>
</tr>
<tr>
<td>10 - 21%</td>
<td>Staphylococcus aureus</td>
</tr>
<tr>
<td>9 - 19%</td>
<td>BHS (β-haemolytic streptococci), S. pneumoniae, δ-haemolytic streptococci including S. mitis and S. salivarius</td>
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<tr>
<td>6 - 22%</td>
<td>Gram-negative bacteria including Ps. aeruginosa</td>
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<tr>
<td>up to 8%</td>
<td>Fungi (Candida sp., Aspergillus sp., Fusarium sp.)</td>
</tr>
</tbody>
</table>

* Commonly cited prevalence may vary with geographic regions
Endogenous *Candida* endophthalmitis (ECE)

- Severely ill patient with invasive *Candida* infection, which can spread to the retina (eye), ultimately causes endophthalmitis
- Difficult to diagnose/asses since most of the patient is severely ill or moribund
- Retinal symptoms, retinal detachment, scarring, loss of sight
Exogenous endophthalmitis

- Rarely immunocompromised
- Post trauma/surgery that introduce the fungus to the eye
- Post surgical: *Candida* spp.
- Post trauma/post keratitis: mold, e.g. *Fusarium, Aspergillus, Paecylomyces*, etc

Klotz et al. CMR. 2000
Question: Endophthalmitis consists of: (select all that apply)

A. Endogenous which associated with invasive candidiasis
B. Exogenous which associated with invasive candidiasis
C. Endogenous which associated with trauma/surgery
D. Exogenous usually associated with *Aspergillus* infection
E. None of the above is correct
Endophthalmitis is consisting of... (select all that apply)

- A. Endogenous which associated with invasive... 51%
- B. Exogenous which associated with invasive candidiasis 12%
- C. Endogenous which associated with trauma/surgery 14%
- D. Exogenous usually associated with Aspergillus infection 12%
- E. None of the above is correct 12%

Total Results: 43
Endophthalmitis in Asia

• India reported cases related with:
  – Intra venous administration of contaminated dextrose (Gupta et al. Retina 2000)
  – 2756 cases; 4.1%, causes consisting of various mould & yeast (Chakrabarti et al. Retina 2008)
  – *C. truncatum* as the cause of keratitis & endophthalmitis (Shivaprakash et al. JCM 2011)

• Thailand:
  – 6.6% out of 420 cases - *C. albicans, F. solani, Aspergillus, Curvularia* (Bphoonibunchoo et al. Clin ophthalmol 2013)
Endophthalmitis in Asia

• Japan:
  – 12 years; 46 patients, \textit{C. albicans} (Tanaka et al Retina 2001)
  – A case caused by \textit{P. boydii} (Acta Ophthalmol 2009)

• China:
  – A case caused by \textit{P. verucosa} (Sun et al. Med Mycol ‘10)

• Vietnam:
  – exogenous endophthalmitis 16% (Tran et al. Klin Monbl Augenheilkd ‘03)
Endophthalmitis in Asia

• Singapore:
  – Case of *C. parapsilosis* endophthalmitis after endothelial keratoplasty (Chew et al. Cornea 2010)

• Malaysia:
  – A case of fusariosis in a leukemia child after platelet transfusion (Kah et al. BMC Ophtlamol 2011)
Endophthalmitis in Asia

• Indonesia:
  – A case of *Aspergillus* endophthalmitis in a woman with SLE who uses steroid regularly (Setyohadi et al. 2010)
  – A case of mucor- endophthalmitis in a girl with renal tubular acidosis (Irawan et al 2016)
  – Cipto Mangunkusumo hospital: 121 cases & 6 cases are caused by fungi (Susiyanti M 2016)
    • 1 case is caused by *C. tropicalis*
    • 3 cases by *Aspergillus* spp.
    • 1 case by *Paecilomyces*
    • 1 case *Mycellia sterillia*
    • Associated with post cataract surgery
Endophthalmitis in Asia

• Prevalence of endogenous candida endophthalmitis in patients with candidemia is 28 & 45%.

• In Asia, where the prevalence of candidemia is high the possibility of endogenous Candida endophthalmitis is also high

• Exogenous endophthalmitis, is associated with medical procedure such as surgery of the eye

Take-home question

The data on endophthalmitis in Asia is rare. To provide the data, what improvement would you like to implement in your hospital/laboratory?
Conclusion

• Endophthalmitis is a sight threatening disease, considered as rare
• Hidden problems associated with systemic fungal infection in Asia & the reality of the limited supply of health care
• Modern medical procedures (e.g. surgery) can be risk factors
• In area with high prevalence of candidemia, endophthalmitis must be considered
THANK YOU FOR LISTENING