Candidaemia and the Eye – To Screen or Not to Screen?

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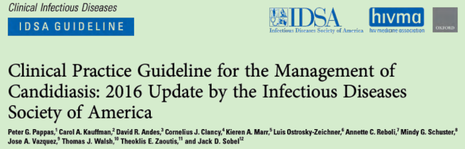
CANDIDA ENDOPHTHALMITIS

Candida endophthalmitis is classically defined clinically and histologically as a characteristic "chorioretinal lesion *with vitreous extension* and overlying vitreous haze". This is in contrast to **candida chorioretinitis** which is considered to be a precursor encompassing retinal and choroidal infiltration but *lacking frank vitreous involvement.*

The presumed mechanism of ocular involvement is through bloodstream seeding. Symptoms may include blurring of vision, photosensitivity and floaters. Signs include conjunctival injection, corneal haze, hypopyon, vitreous haze, cells, other opacities, retinal hemorrhages, exudates, cotton wool spots, vascular sheathing, and areas of retinal whitening. Systemic antifungal treatment is the intervention of choice. However, occasionally patients may undergo surgical intervention with debulking and intravitreal antifungal injection.

Why do we screen everyone?

Due to a unilateral decision taken by Infectious Disease Society of America without ophthalmology input and based off old categorising of candida endophthalmitis. Advises an eye screening examination, "preferably performed by an ophthalmologist" for all (even asymptomatic) patients with candidemia.



Issues with current screening?

Modern criteria for diagnosis of candida endophthalmitis have existed since 1994 but rationale for screening based off older method of categorising the disease. What actually is the incidence of candida endophthalmitis when assessed using these modern criteria? Is there actually a need for ophthalmology input? What are patient outcomes after screening for candidaemia? Do we ever intervene? Is there a danger we're doing more harm than good with interventions?

AUDIT AT ST VINCENT'S HOSPITAL

A retrospective chart review was carried out of all patients who had candida blood stream infections over a one-year period (2018). Data on patient demographics and clinical status, candida species, antifungal treatment, ophthalmology consultation and ocular findings.

Results:

- 79 positive blood cultures for candida in 38 patients in 2018. Data was available for 34/38 patients (89%). Mean patient age was 67.
- 66.7% patients were treated with fluconazole, 23.3% with an echinocandin, and 10% with amphotericin B.
- Ophthalmology consulted on 55.9% (19/34) of the patients. Of the patients not seen, 8 patients died prior to consult, a consult was never requested on 5 patients, and for 2 patients a consult was requested but they were not seen.
- Patients who were seen by ophthalmology were consulted on average 10.7 days after their positive culture.
- 26.3% of patients seen were sedated and intubated in ICU. The remainder were alert.
- None of the patients were noted to have new visual symptoms. 68% patients had a completely normal ocular exam. 32% patients had unrelated ocular findings e.g., cataract, diabetic retinopathy, AMD.

AUDIT FINDINGS

- No cases of endophthalmitis or chorioretinitis.
- The majority of patients with candidaemia were treated with an azole antifungal which has better ocular penetration compared to older antifungals.
- Similar to recent studies, our audit shows that the need for routine ophthalmic screening of all patients with candida blood stream infections may not be justified.
- Selective screening of patients on a case-by-case basis may be more suitable.

ISSUES

Most patients with systemic candidaemia captured by routine ophthalmologic screening will have no associated ocular findings, and those who do will respond adequately without changing management.

Current evidence does not support a routine ophthalmologic consultation following laboratory findings of systemic *Candida* septicaemia

Ophthalmologic consultation is reasonable for anyone with a clinical rationale including signs or symptoms concerning for an ocular infection

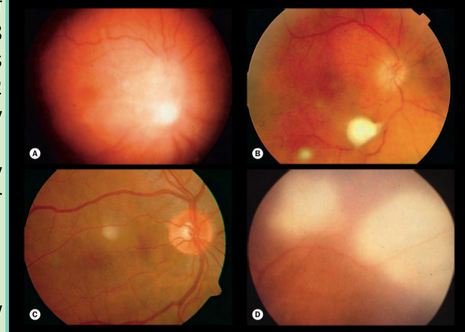


Fig 1. Candida Endophthalmitis. A. Severe vitritis. B. 'Cotton ball' colonies. C. Focal Chorioretinitis. D. Retinal necrosis.

ROYAL COLLEGE OF OPHTHALMOLOGY GUIDELINES

Evidence has emerged that the prevalence of eye involvement and intraocular disease requiring or amenable to treatment, or requiring extra intraocular treatment or vitrectomy, is very low and **routine screening of all culture positive patients is not indicated.**

The ROYAL COLLEGE of OPHTHALMOLOGISTS

No examination:
- o Awake and asymptomatic

May need examination:
- o Awake and symptomatic
- o Unable to report symptoms

Must be examined:
- o Very abnormal eye appearance
  e.g. hypopyon, cloudy pupil, possible ocular perforation etc.

RCOphth recommend screening of fungal culture positive patients is done as an exception on a **case-by-case basis**, taking into account risks for that patient, symptoms and abnormal appearance of the eye taking these principles into account:

AMERICAN ACADEMY OF OPHTHALMOLOGY GUIDELINES

AMERICAN ACADEMY OF OPHTHALMOLOGY

Patients with candidemia generally have comorbidities that can explain intraocular findings:
anaemia, hypertension, and thrombocytopenia, among many other conditions simultaneously as critically ill patients.

Such abnormal, non-specific retinal features include Roth spots or other haemorrhages, and cotton wool spots, and do not require ophthalmologic intervention.

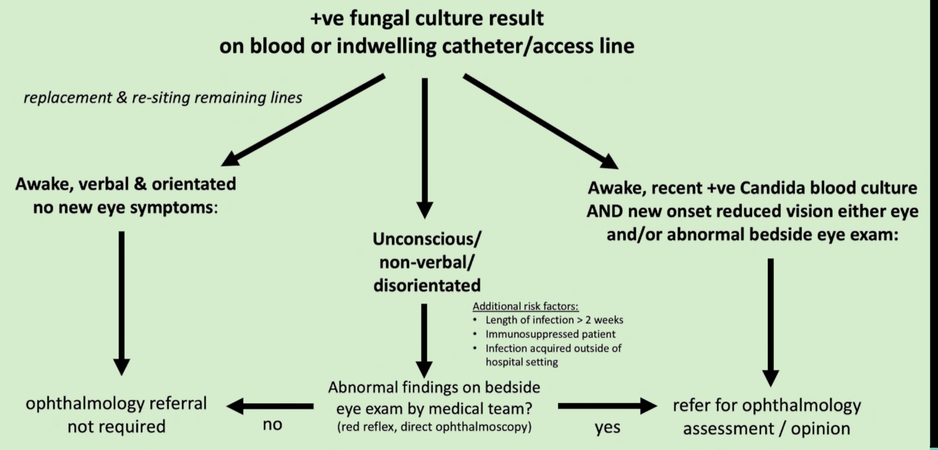
Furthermore, cotton wool spots can be **challenging to distinguish** clinically from a deeper chorioretinitis.

- Histopathologic analysis in many of these cases is necessary for distinction but impractical outside of autopsy.
- **Lack of specificity for these lesions without established criteria for intervention.**

AAO **does not recommend** a routine ophthalmologic consultation following laboratory findings of systemic Candida septicemia calling it a *"low-value care practice".*

However, a consultation is reasonable for a patient with signs or symptoms suggestive of ocular infection.

Proposed New Ocular Screening Guidelines in Candidaemia



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