The Role of Screening for Fungal Endogenous Endophthalmitis in Fungaemia at University Hospital Southampton from 2014-2020

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Background

Fungus Endogenous endophthalmitis (FEE) is a disease caused by the haematogenous spread of fungus into the eye, causing inflammation of the vitreous and aqueous humours.

Causative organisms vary geographically but the most common cause of EFE across the literature is Candida albicans.

FFE is very rare, with a low incidence rate across the literature.

The 2020 guidelines from the Royal College of Ophthalmologists and the Intensive Care Society state that ophthalmological review of patients with a positive blood culture should be done on a case-by-case basis. However, during the peak of COVID, on-call ophthalmologists were asked to examine fungaemia patients based purely on blood culture.

Aim and Objectives:

Primary Objective: Role of screening for fungal endogenous endophthalmitis in candida patients
Secondary outcome: Ophthalmic outcome in patients with positive clinical findings

Methods

It was a retrospective study of all fungemia patients between 01/01/2014 till 31/12/2020 seen at University Hospital Southampton.

The study was approved by Trust Research Committee as Service Improvement Project.

The only inclusion criterion was a positive diagnosis of Fungaemia from blood culture, identified from the microbiology database.

A standardised data collection form (65 data points) was designed to collect all relevant medical and ophthalmic details: patient demographics, source of referral, systemic risk factors, systemic interventions, ophthalmic signs and intervention and ophthalmic outcome.

The patients and clinical findings were then searched for in three databases: Ophthalmology EMR (Medisoft), EMR used across Critical care specialities (Metavision) and inhouse EMR used across the Trust (CHARTS).

Results

151 patients were identified with fungaemia during the study period.

79 (52%) were screened for endogenous fungal endophthalmitis, remaining did not have any screening.

2 were diagnosed with endogenous fungal endophthalmitis, giving a case positivity of 1.32% and both patients grew candida.

Ophthalmic outcome: 1 patient responded with systemic treatment and no ophthalmic interventions. 2nd patient had a bilateral intravitreal tap and injection. 1 eye of the patient developed retinal detachment and phthisis, the other responded well to treatment.

Demographic	Value
Age	50.1
Male	57.0%
Female	43.0%
Ethnicity	
British	89.0%
White	5.30%
Black	0.662%
Asian	0.662%
Mixed white	0.662%
Other	1.99%
N/A	1.99%

Risk Factor	Percentage
Intravenous Drug Abuse	1.32%
Recent Hospitalisation	62.9%
Diabetes Mellitus	17.9%
Systemic Surgery	36.4%
Cancer	28.5%
Total Parenteral Nutrition	19.9%
Anaemia	13.2%
Gastrointestinal Disease	21.2%
End-stage Liver Disease	1.99%
Respiratory Disease	6.62%

Recommendations

1. Our results reinforce the changes in guidelines from 2017 to 2020.
2. Increase awareness of the guideline changes to ICU doctors
3. We recommend screening of fungal culture-positive patients is done as an EXCEPTION on a case by case basis:

a) No examination: Awake and asymptomatic

b) May need examination: Awake and symptomatic, Unable to report symptoms

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

References

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2) Breazzano MP, Day HR, Tanaka S, Cherney EF, Stemberg P, Donahue SP, Bond JB. Utility of ophthalmologic screening for patients with candida bloodstream infections: a systematic review. JAMA Ophthalmol 2019 137:698-710