NEONATAL CANDIDIASIS IN ELBW AND VLBW INFANTS IN A UK TERTIARY NICU – 6 YEAR REVIEW

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Introduction

The overall incidence of invasive fungal infection is 2.4/1000 neonatal unit admissions.⁽¹⁾ Extreme prematurity and Very Low Birth Weight (VLBW) babies are at a higher risk of invasive fungal infection. Apart from being immune-compromised, the invasive procedures and therapies make them more susceptible to fungal infections during the first few weeks of life.

Aim

We aim to identify the frequency of risk factors and the outcomes associated with invasive candidiasis.

Method

Retrospective review of neonates <1500 g with positive blood culture for candida over 8 years (2009 - 2017). Data was obtained from case notes and electronic database. A universal policy of antifungal prophylaxis for VLBW in neonatal intensive care admissions was only introduced halfway through the study period.

Results

Median gestational age was 25 weeks (23-29 weeks). Median birth weight was 750g (600-1460g). Median day of candidiasis was on day 17 of life. 9/12 (75%) were identified to have *Candida albicans*. Other identified species included *Candida parapsilosis*.

Risk factors (Table-1)

8/12 (67%) were on broad-spectrum antibiotics when identified to have candidiasis. 6/12 (50%) had no antifungal prophylaxis. 9/12 (75%) were colonised prior to positive blood culture. 10/12 infants (83%) had central lines.

Mortality

6/12 (50%) neonates with candidiasis died. Of them, five deaths were directly related to invasive candidiasis.

Table 1- Risk factors associated with Invasive candidiasis

Risk factors associated with Candidiasis	N (%)
Total number on broad spectrum antibiotics	8 (67%)
No fungal prophylaxis	6 (50%)
CVL	10 (83%)
Skin colonization	9 (75%)
Surgery	5 (42%)
Invasive Ventilation	6 (50%)
H2-Receptor Antagonist	4 (33%)
Median antibiotic exposure days (Range 2-33 days)	15 days

Fig 1. Timing of Invasive candidiasis (age in days)

One died later on but before discharge due to other co- morbidities. Of those neonates who died all 6 had platelet counts <100 *10⁹/l.

Conclusion

Candida albicans was the commonest cause of invasive candidiasis. 11/12 (92%) presented as late onset sepsis. The mortality rate is 50% in this cohort. The end organ involvement with neonatal candidaemia is low (< 20%) but the associated mortality is 100%.

Table 2 - Results of the Imaging modalities used to identify end organ involvement

	Cranial US scan	Abdominal US scan	Echocardiogram	Ophthalmology
1	Abnormal	Not done	PFO/ASD	Normal
2	Abnormal	Normal	PDA	Normal
3	Abnormal	Not done	PDA	Abnormal (ROP)
4	Abnormal	Not done	PDA, Hepatic vein thrombus	Not done
5	Abnormal	Not done	PDA	Abnormal (ROP)
6	Fungal balls	Normal	Normal	Normal
7	Abnormal	Normal	VSD	Normal
8	Abnormal	Not done	MR, PDA	Not done
9	Abnormal	Normal	PDA	Not done
10	Abnormal	Normal	PDA	Abnormal (ROP)
11	Abnormal	Normal	Not done	Not done
12	Normal	Nephro-calcinosis	PDA/PFO	Abnormal (ROP)

[Reference-1] C. Oeser, *et al.* Neonatal invasive fungal infection in England 2004–2010 Neonatal Infection Surveillance Network. Clinical Microbiology and Infection 2014 European Society of Clinical Microbiology and Infectious Diseases.