ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 02, 2024

Original Research Article

To estimate the incidence of fungal sepsis in late onset sepsis in VLBW Babies admitted in department of Paediatrics

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Abstract

Background & Methods: The aim of the study is to estimate the incidence of fungal sepsis in late onset sepsis in VLBW Babies admitted in department of Paediatrics. Neonates weighing < 1.5 kg admitted, a hospital based prospective study was conducted in neonatal intensive care unit, Department of Paediatrics Amaltas Institute of Medical Sciences, Dewas, M.P. in collaboration with department of microbiology.

Results: Among clinical features studied candida sepsis is more common with hypothermia (70%), abdominal distension (90%) & gastric residual (90%). Out of 30 positive candida cases, 36.7% got discharged, 36.7% got expired & 26.7% got LAMA.

Conclusion: Outcome in the form of death was seen in 36.7% (11/30) of cases with Candida sepsis, 26.7 % cases left against medical advice & good outcome was seen in 36.7% (11/30) who were discharged. Among the neonatal risk factors studied, Candida sepsis had inverse relation to birth weight & gestational age. Significant Candida sepsis was observed in neonates with birth weight <1.5 kg, gestational age 30-34 week , those with mechanical ventilation, prior antibiotic usage(>7days), prolonged hospitalisation (>7days) .

Keywords: incidence, fungal, sepsis VLBW & paediatrics.

Study Design: Observational Study.

Introduction

Sepsis is the systemic response to infection with bacteria, viruses, fungi, protozoa, or rickettsiae. Sepsis is one of the causes of the systemic inflammatory response syndrome (SIRS), which has non-infectious causes as well. If not recognized & treated early, can progress to severe sepsis , septic shock (with hypotension), multiple organ dysfunction syndrome (MODS), & death.[1]

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The importance of fungal sepsis as a cause of increased morbidity & mortality among newborn has been stated by many across the globe[2]. As per the data collected by NICHD national research network & published in 2002, Candida accounted for third most common cause (12.2% of cases) of late onset sepsis & mortality rates were as high as 32% for Candida sepsis & 36% for candida meningitis among late onset sepsis. Various studies have reported a recent increase in the incidence of fungal sepsis among newborns in recent years especially among the VLBW. Though few studies have recently reported a decreasing trend probably due to the use of prophylactic drugs.[3]

Incidence of sepsis in term neonates is around 0.1%, compared to the incidence among all VLBW neonates of approximately 20%[4]. With decreasing birth weight there is an increased risk of sepsis, since only 10% of infants with birth weights between 1,000a & 1,500 g develop sepsis compared with 35% of infants with birth weights of ≤1,000 g.

In western hemisphere the cumulative incidence of candida infection is <0.3% among infants >2,500 g birth weight admitted to the NICU. The cumulative incidence increases to 12% for infants <750 g birth weight. In addition the incidence varies greatly by individual NICU. In the National Institutes of Health–sponsored Neonatal Research Network, the cumulative incidence of candidiasis among infants <1,000 g birth weight is 2.4-20.4%. [5-6]

Material & Methods

Present study was conducted for 01 year, blood culture of 100 neonates, with weight 1 to 1.5kg not on antifungal treatment, having various predisposing factor like preterm babies, very low birth weight, & on broad spectrum antibiotic therapy. A detailed maternal history was taken followed by examination of the neonate, the cases followed longitudinally regularly till discharge or death. The symptoms & signs were closely observed & recorded on case sheet as well as on proforma specially designed for the purpose. The neonates' birth weight & gestational age were recorded.

Inclusion Criteria:

1. Very low birth weight infants with late onset sepsis

Exclusion Criteria:

1. Birth Weight <1.0kg or >1.5kg.

2. Neonates with early onset sepsis (<72 hrs).

ISSN: 0975-3583, 0976-2833 VOL15, ISSUE 02, 2024

Result

Table No. 1: Incidence of Neonates Candida Sepsis According To Gender

S. No.	Sex	Total admission	Candida growth
1	Male	59	19
2	Female	41	11
		100	30

There was a male preponderance (63.3%) noted in neonates with candida sepsis, though the growth was more common in males but this was statistically not significant (p=0.63).

Table No. 2: Distribution of Cases According To Birth Weight

S. No.	Sex	Total admission	Candida growth
1	1-1.3kg	31	10
2	>1.3-1.5 kg	69	20
		100	30

Out of newborn, candida sepsis observed was 33.4% in newborns with birth weight 1-1.3kg & 66.6% in birth weight 1.3-1.5 kg, statistically significant (p=0.046).

Table No. 3: Clinical Presentation of Cases - Candida Sepsis

S. No.	Clinical Signs	Candida Sepsis Positive
1	Temperature Instability (Hypothermia)	21 (70%)
2	Apnea	11(36.7%)
3	Abdominal Distension	27 (90%)
4	Gastric Residual	27 (90%)

Among clinical features studied candida sepsis is more common with hypothermia (70%), abdominal distension (90%) & gastric residual (90%).

Table No. 4: Outcome of the Cases with Candida Sepsis

Outcome	Discharge	LAMA	Expired	Total
Candida positive	11 (36.7%)	8 (26.7%)	11 (36.7%)	30 (100%)

Out of 30 positive candida cases, 36.7% got discharged, 36.7% got expired & 26.7% got LAMA.

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Discussion

The most common clinical feature observed was increased respiratory rates/apnoea seen in 80%, temperature instability seen in 36.7 %, & abdominal distension in 90%, gastric residual in 90%, of cases with Candida sepsis[7]. Study by Faten et al also reported respiratory distress to be the predominant clinical signs seen in 56% & abdominal distension in 50% of patients with Candida sepsis. Similar results were also seen by Bardakar et al[8], Juyal et al[9], Sardana et al[10]who observed respiratory distress as the most common clinical presentation of neonatal candidiasis. But these features were also common in those with bacterial sepsis, & thus we can say that clinical presentation of bacterial & Candida sepsis almost overlap.

Fungal infections are the emerging threat to the neonates in the tertiary care centres. Candida has been found to be the most common fungal pathogen especially in immune compromised hosts such as neonates. Various studies conducted in western countries have shown candida sepsis as a major cause of neonatal morbidity & mortality. Better outcome & survival of premature & low birth weight neonates, prolonged hospital stay, invasive procedure, & mechanical ventilation were found to be associated with higher incidence of Candida sepsis in neonates. However the data regarding the incidence, risk factors associated with Candida sepsis in tertiary care NICU & various treatment options are lacking in our country[11].This study was conducted to study the risk factors, aetiology, laboratory features & outcome of fungal sepsis.

Many NICU practices may potentially influence late-onset sepsis rates among VLBW infants. Quality improvement measures are often implemented in the NICU, however the evidence that these measures actually achieve improvement is not always present. This is especially true when prevention of late-onset sepsis is the goal because of the multifactorial etiology of late-onset sepsis. The current study examined late-onset sepsis trends over a 25-year period in a national VLBW cohort[12]. We have shown that in the final study epoch (2013–2019), late-onset sepsis rates declined to 25.6 of 10 000 hospital days, representing a greater than 50% decrease in late-onset sepsis rates over time. This decrease is even more impressive when considering the fact that during the study period mortality rates of the most immature infants, who are at the highest risk for late-onset sepsis, decreased. It is evident that during the first 2 epochs, no effective intervention was achieved as late-onset sepsis rates slightly increased.

Conclusion

Outcome in the form of death was seen in 36.7% (11/30) of cases with Candida sepsis, 26.7 % cases left against medical advice & good outcome was seen in 36.7% (11/30) who were discharged. Among the neonatal risk factors studied, Candida sepsis had inverse relation to birth weight & gestational age. Significant Candida sepsis was observed in neonates with birth weight <1.5 kg, gestational age 30-34 week , those with mechanical ventilation, prior antibiotic usage(>7days), prolonged hospitalisation (>7days) .

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