

Risk factors associated with Neonatal sepsis

Shivaprasad B¹, Proteek Sen²

¹Senior consultant, ²DNB trainee, Department of Neonatology, St Martha's Hospital, Bangalore, India.

Address for correspondence: Dr Shivaprasad B, Senior consultant, Department of Neonatology, St Martha's Hospital, Bangalore 560001

Email: neoprasad@gmail.com

ABSTRACT

Introduction : Infections are the single largest cause of neonatal deaths globally. Sepsis is the commonest cause of neonatal mortality and is responsible for about 30- 50% of the total neonatal deaths every year in developing countries. This study is done to assess the risk factors associated with neonatal sepsis.

Aims & Objective: To assess the distribution of risk factors of neonatal sepsis.

Materials & Methods: This study was conducted over a period of 12 months. All neonates with culture positive or probable sepsis in St Martha's NICU and postnatal ward were included in the study. 50 neonates fulfilling the inclusion criteria were studied. Age of baby greater than 28 days and infants not showing features of sepsis were excluded from the study. A detailed history and clinical examination was done of the babies showing features of sepsis. The presence of risk factors were noted down.

Results: In the present study, males (76%) were more affected than females (24%) and the male to female ratio was 3.1:1. In this study low birth weight (LBW) is another important predisposing factor for neonatal sepsis, with majority of babies weighing between 1500 grams to 2499 grams. In our study it was seen that Premature Rupture Of Membranes (PROM) greater than 18 hours was associated with (46%) of the babies. Chorioamnionitis was present in 6% of the cases.

Conclusion: Sepsis was more common in male babies. Low birth weight and PROM > 18 hours has important contributing factor for sepsis. Chorioamnionitis, foul smelling liquor, maternal Urinary tract infections were other important contributing factors.

Keywords: Neonatal, sepsis, low birth weight, premature rupture of membrane

INTRODUCTION

It is estimated that 20% of all Neonates develop septicemia and approximately 1% succumb to sepsis related causes¹. Two forms of clinical presentations have been identified. Early onset sepsis, which presents within 72 hours of life, usually presents with respiratory distress and

pneumonia. It is probably related to perinatal risk factors. Late onset sepsis, which presents after 72 hours of life is related to hospital acquired infections and usually presents with septicemia and pneumonia¹.

This present study is done to assess the risk factors associated with neonatal sepsis in our NICU and postnatal wards and the affected neonates can be diagnosed at the earliest.

MATERIALS AND METHODS

The present study was conducted on 50 neonates in the Neonatal Intensive Care Unit and post natal ward of St Martha's Hospital and it is a hospital based prospective observational cross sectional study conducted over a period of 12 months. All neonates with culture positive or probable sepsis in St Martha's NICU and postnatal ward were included and age of baby greater than 28 days and infants not showing features of sepsis were excluded.

Informed consent of parents was taken after explaining in details about the Method and the procedure involved in the study in their own language and Ethical Clearance was obtained. Data was collected with help of a proforma

A detailed history and clinical examination was done of the babies showing features of sepsis. The presence of risk factors were noted down. Data analysis was carried out using Statistical Package for Social Science (SPSS ver 10.5) package.

RESULTS

In the present study, males (76%) were more affected than females (24%), and the male to female ratio was 3.1:1 (Table 1). In this study, Early onset septicemia (80%) was more common than Late onset septicemia (20%) (Table 2)

Table 1: Showing gender distribution of study population.

Sex	Number of Cases	Percentage
MALE	38	76%
FEMALE	12	24%
TOTAL	50	100%

Table 2: Showing Distribution of neonatal sepsis cases according to the onset of sepsis.

AGE AT PRESENTATION	NUMBER	Percentage
EARLY ONSET (<72 hours)	40	80%
LATE ONSET(>72 hours)	10	20%

The incidence of sepsis in term babies (58%) was greater than that of preterm babies (42%) (Table 3). It was seen that low birth weight is another important predisposing factor for neonatal sepsis, with majority of babies weighing between 1500 grams to 2499 grams (Table 4). In this study PROM was associated with 52.5% of cases with early onset sepsis and 20% of late onset sepsis (Table 5). Amongst all the cases of chorioamnionitis, all cases were of early onset sepsis

(Table 6).

Table 3: Showing Distribution of cases according to the gestational age of the neonate.

Gestational Age	Number of Cases	Percentage
28- <32 WKS	7	14%
32- <37 WKS	14	28%
>=37 WKS	29	58%
TOTAL	50	100%

Table 4 : Showing Distribution of cases according to birth weight.

Birth Weight	Number	Percentage
<1000 grams	1	2%
1000- <1500 grams	9	18%
1500- <2500 grams	21	42%
= 2500 grams	19	38%
TOTAL	50	100 %

Table 5: Showing association between PROM >18 hours and the onset of sepsis.

	Prom		Total	λ^2 value	'p' value
	Yes	No			
EARLY ONSET SEPSIS	21	19	40	3.402	0.065
	52.5%	47.5%	100.0%		
LATEST ONSET SEPSIS	2	8	10		
	20.0%	80.0%	100.0%		

Total	23	27	50		
	46.0%	54.0%	100.0%		

Table 6: Showing the association between Chorioamnionitis and onset of sepsis.

	Chorioamnionitis		Total	λ^2 value	'p' value
	Yes	No			
EARLY ONSET SEPSIS	3	37	40	0.798	0.372
	7.5%	92.5%	100.0%		
LATEST ONSET SEPSIS	0	10	10		
	0%	100.0%	100.0%		
Total	3	47	50		
	6.0%	94.0%	100.0%		

DISCUSSION

In the present study, males (76%) were more affected than females (24%), and the male to female ratio was 3.1:1. This is comparable to the other studies by Shrestha et al² and NJ Begum S et al³. This is also in concurrence with studies done by Shashikala Tallur et al⁴ where more males(67%) were affected than females (33%). Studies done by Varsha et al⁵ showed 66% males against 34% females.

In this study, Early onset septicemia (80%) was more common than Late onset septicemia (20%). which is consistent with the studies of Aletayab et al⁶, Waseem R et al⁷ and Al-Shamahy et al.⁸ There was a similar result in a study done by Khinchi⁹ et al in which, 60 % patients had early onset sepsis while 40 % of patients had late onset sepsis. In this study it was seen that the incidence of sepsis in term babies (58%) was greater than that of preterm babies (42%). Studies done by ASM Naushaduddin Ahmed et al¹⁰ which showed increased incidence of sepsis among preterm (52%) as compared to (48%) in term. Khatua et al¹¹ found higher incidence of sepsis among preterm babies (63%).

The increased incidence of sepsis in term babies could be because of prolonged NICU stay with requirement of multiple interventions.

It was seen that low birth weight is another important predisposing factor for neonatal sepsis, with majority of babies weighing between 1500 grams to 2499 grams

In a study done by Meenu et al¹² low birth weight babies had a higher incidence of neonatal sepsis than babies with normal birth weight. Shashikala et al⁴ also proved that there was a higher incidence of sepsis in babies with birth weight < 2kg.

In our study it was seen that Premature Rupture Of Membranes greater than 18 hours was associated with 46% of the babies. This is in concurrence with a study done by Meenu

et al¹² which found that 45% of babies with sepsis were born to a mother with history of Premature Rupture of Membranes.

In this study PROM was associated with 52.5% of cases with early onset sepsis and 20% of late onset sepsis. Even though the percentage of cases with early onset sepsis with history of PROM was higher, it was statistically insignificant ($p = 0.065$). Chorioamnionitis was present in 6% of the cases. Amongst all the cases of chorioamnionitis, all cases were of early onset sepsis. However this was statistically insignificant ($p = 0.372$). Foul smelling liquor was present in 2% of the cases. Maternal UTI was present in 2% of the cases.

CONCLUSION

Sepsis was more common in male babies than in female babies. The incidence of sepsis in term babies and preterm babies was almost comparable. Low birth weight was noted to be an important contributing factor. Majority of them were low birth weight of which a major proportion was those whose weight was between 1500- 2500 grams. PROM greater than 18 hours was noted to be an important contributing factor, present in (46%) of cases. Chorioamnionitis, foul smelling liquor, maternal UTI were other important contributing factors.

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