

## An Observational Study to Evaluate the Incidence of Early and Late Onset Neonatal Sepsis in a Tertiary Care Hospital

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DOI: [10.36347/sjams.2019.v07i08.047](https://doi.org/10.36347/sjams.2019.v07i08.047)

| Received: 20.08.2019 | Accepted: 27.08.2019 | Published: 30.08.2019

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### Abstract

### Original Research Article

This is a prospective study, conducted in Department of Pediatrics affiliated teaching hospital & Dept of Pathology of Index Medical College from November 2016 to December 2018. A total of 500 neonates of both sexes, referred to neonatology unit in indoor as well as out-patient department were selected as per the inclusion and exclusion criteria adopted. Out of the total 110 cases of culture proven sepsis, early onset sepsis was seen in 61.3% while late onset sepsis was seen in 38.7% cases. The neutrophil VCS parameter is very useful for early diagnosis and evaluation of treatment efficacy in neonatal sepsis without requirement for any extra blood collection. It is simple, easy, non-time consuming and no additional cost. Combination of MNV and CRP gave better results than the usage of each marker alone.

**Keywords:** Incidence, Early, Late Onset, Neonatal & Sepsis.

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## INTRODUCTION

According to the data from National Neonatal-Perinatal Database (NNPD) 20015- 16, the incidence of neonatal sepsis in India is 30/1000 live births. The database comprising 18 tertiary care neonatal units across India reported sepsis to contribute 19 percent of all neonatal deaths [1].

‘NEONATAL SEPSIS’ or ‘SEPSIS NEONATORUM’ refers to generalized bacterial infection of infants during the first month of life. It also encompasses various systemic infections of the newborn; such as septicaemia, pneumonia, meningitis, arthritis, osteomyelitis and urinary tract infections. Superficial infections like conjunctivitis and oral thrush are not included in it[2,3].

McCracken *et al.* stated that the organisms causing neonatal sepsis differ from place to place, country to country and from nursery to nursery. In the same nursery they may vary from season to season [4].

According to McCracken and Shinefield, during 1954 to 1958, gram positive organisms especially Staphylococcus were primarily responsible for sepsis in neonates. From 1959 to 1964, majority of

the cases were due to gram negative organisms, mainly Escherichia coli [5].

## MATERIAL & METHOD

This is a prospective study; conducted in Department of Pediatrics affiliated teaching hospital & Dept of Pathology of Index Medical College from November 2016 to December 2018. A total of 500 neonates of both sexes, referred to neonatology unit in indoor as well as out-patient department were selected as per the inclusion and exclusion criteria adopted.

## INCLUSION CRITERIA

- Neonates i.e. age from the day of birth to one month.
- Suspected of clinical sepsis[6] (presence of 3 or more of the following categories of clinical signs) :
- Temperature instability (hypothermia, hyperthermia)
- Respiratory signs and symptoms (grunting, apnoea, tachypnoea, cyanosis)
- Cardiovascular signs and symptoms (bradycardia, tachycardia, hypotension)
- Neurologic signs and symptoms ( hypotonia, lethargy, seizures) and

- Gastrointestinal signs and symptoms (feeding, intolerance, abdominal distension)

## EXCLUSION CRITERIA

- Neonates with fungal infection
- Neonates with congenital anomalies

## PREREQUISITES DONE

- Approval from the Ethical committee was taken.
- Informed written consent was taken from the parent/guardian.
- Detailed clinical history of both mother and the baby was collected as indicated in the patient proforma.

## RESULTS

**Table-01: Age of onset**

Age of Onset	Sepsis		Total
	No	Yes	
0-3 days	239	73	312
	61.3%	66.4%	62.4%
4-30 days	151	37	188
	38.7%	33.6%	37.6%
Total	390	110	500
	100.0%	100.0%	100.0%
<b>p- value - 0.37</b>			

Out of the total 110 cases of culture proven sepsis, early onset sepsis was seen in 61.3% while late onset sepsis was seen in 38.7% cases.

**Table-02: Comparing incidence of early onset sepsis in the present study with the previous study**

Name of author	Year	Incidence of early onset sepsis
Present study	2016	61.3%
Torkaman M[7]	2012	57%
Bhat R[8]	2009	56%

From the above table, it is seen that the finding in the present study are comparable with other study.

**Table-03: Comparing incidence of early onset sepsis in male in the present study with the previous study**

Name of author	Year	Incidence of male predominance
Present study	2016	75%
IstemiH.celik[9]	2011	51%
Sharma A[10]	1993	74.0%

From the above table, it is seen that the finding in the present study are comparable with other study.

## DISCUSSION

In EOS, GBS was the most common etiologic agent, and, together with *E coli*, accounted for >60% of

cases. Although the incidence of EOS was highest in extremely preterm infants and decreased with advancing gestational age, 43% of cases of EOS occurred in infants born at term. Remarkably, the observed EOS incidence of 0.28 in our cohort was 2- to 3-fold lower compared with the incidence of 0.54-0.9 per 1000 livebirths reported in other European countries and in the US[11], whereas the relative proportion of EOS cases associated with GBS and *E coli* was in the range of previous reports. Severity of infection was considerable with septic shock present in 26%, and a mortality of 18%, which is comparable with other studies [12].

## CONCLUSION

The neutrophil VCS parameter is very useful for early diagnosis and evaluation of treatment efficacy in neonatal sepsis without requirement for any extra blood collection. It is simple, easy, non-time consuming and no additional cost. Combination of MNV and CRP gave better results than the usage of each marker alone.

### Study Designed

Observational Study

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