Research Paper Medical Science

A Study on Bacterial Sepsis in Neonates Admitted in A Tertiary Care Hospital

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ABSTRACT

The importance of bacterial sepsis as a cause of increased morbidity and mortality among newborns has been stated by many across the globe. Premature infants are at much higher risk of both early-onset and late-onset sepsis than infants born at full term because of their immature immune system. So, a hospital based prospective study was conducted in Neonatal Intensive Care Unit of the Department of Paediatrics, Gandhi Medical College, Bhopal to find out prevalence of bacterial sepsis among neonates. Neonates with birth weight <2 kg were included in study and blood culture of neonates was taken and asses for bacterial sepsis.

KEYWORDS

INTRODUCTION-

New-born infections claim an estimated 1.4 million lives each year and are responsible for approximately one third of the world's 4 million neonatal deaths. The incidence of neonatal sepsis according to data of National Neonatal Perinatal Database is 30 / 1000 live births. India remains home to both the highest number of births as well as neonatal deaths in the world. This is despite the fact that neonatal deaths in developing countries are under-reported and that infection as a cause of death is underestimated because of imprecision in diagnosis. These grim facts again bring home the necessity of knowing more about different kinds of neonatal infections, the modes of transmission of infection, the profile of microorganisms involved and degree of antibiotic resistance developed, steps which can be taken for prevention of infection as well as for monitoring and surveillance. While advances in neonatal intensive care have resulted in improved survival of preterm infants, mortality is as much as threefold higher for VLBW infants who develop sepsis than for those without sepsis [1, 2].]. In fact, sepsis accounts for approximately half of all deaths beyond the second week of life in VLBW infants [3]. So, a prospective study is conducted to evaluate the prevalence and risk factors of bacterial sepsis in the neonatal unit of Department of Pediatrics, Gandhi Medical College, Bhopal.

METHODS-

A hospital based prospective study was conducted in Neonatal Intensive Care Unit of the Department of Paediatrics, Gandhi Medical College, Bhopal during September 2012- October 2013.Neonates with birth weight <2 kg were included in study and blood culture of neonates was taken and asses for bacterial sepsis.

OBSERVATION-

During study period 520 neonates with birth weight <2 kg were admitted, and every third neonate was selected and thus a total of 160 samples was studied. Out of which 54 (33.7%) neonates were positive for bacterial sepsis and rest were reported either sterile or with fungal growth and hence excluded from the study.

The tables below depict the observations and result obtained in this study-

Table no: 1
DISTRIBUTION OF NEONATES ACCORDING TO EARLY AND LATE ONSET BACTERIAL SEpsis

Sepsis	Number of neonates	percentage
Early onset	18	33.3%
Late onset	36	66.6%

TABLE NO: 2
Distribution of the pathogenic organisms among all blood culture positive cases

Bacterial positive cases	No.	%
E.coli	22	40.7
Klebsiella	20	37
Gram negative non-lactose fermenting bacilli	5	9.2
Staphylococcus Aureus	5	9.2
Pseudomonas	2	3.7
Total	**54**	

Table no: 3
Distribution of neonates according to birth weight

Birth weight	Bacterial sepsis	Percentage
< 1 kg	3	30%
1-1.5 kg	34	35.7%
>1.5- 2kg	17	30%
Total	**54**	

Table no: 4
Distribution of neonates according to gestational age

Gestational age (weeks)	Bacterial sepsis	Percentage
<30	5	27.7%
30-34	39	36.4%
>34-36	4	33%
Full term	6	26%

Table no: 5
clinical features in neonates with sepsis

Clinical signs	Bacterial positive	Percentage
Temperature instability	34	62.9%
Increased respiratory rate	32	59%
Abdominal distension	29	53.7%
Gastric residual	32	59%

DISCUSSION-

Out of 160 blood samples, bacterial growth was observed in 54 (33.7%), E.coli and klebsiella contributed a major portion to bacterial sepsis. Similar pattern of sepsis was reported by Juyal et al[4] who studied cases of neonatal septicaemia, a total of 381/548 (69.5%) cases were blood culture positive**.**

Another study by Sardana[5] et al reported 365/527 (69.3%) blood culture positive cases.

Out of 160 newborn, bacterial sepsis observed was 30% in newborns with birth weight <1kg, 35.7% in birth weight 1-1.5 kg, and 30% in birth weight >1.5-2 kg.

Similar study by Sardana et al[5], Goel et al[6] , Agrawal et al[7], Narain et al[8], Baradkar et al[9], reported low birth weight as the common risk factor for sepsis.

Out of 54 newborns, bacterial sepsis was observed in 27.7% in < 30 week, 36.4 % in 30-34 week, 33 % in > 34-36 week and 26% in full term. This shows that prematurity is a risk factor for septicaemia which is similar to study by Faten et al[9], Sardana et al[5], Vinod Kumar et al[10], Femitha et al[11],Baradkar et al[9], G prakash et al[12], Agrawal et al[7], Narain et al[8], Goel et al[6]. Out of 54 newborns, temperature instability was observed in 34 (62.9%), increased respiratory rate was found in 32(59%), abdominal distension in 29 (53.7%) and gastric residual in 32(59%).Similar results were also seen by Bardakar et al[9], Juyal et al[4], Sardana et al[5] who observed respiratory distress as the most common clinical presentation of neonatal sepsis.

CONCLUSION-

In our study group, we have concluded that:-

Out of 54 neonates positive for bacterial sepsis 18 (33.3%) were culture positive in the first 7 days of life that is early onset and 36 (66.6%) neonates show positive bacterial culture after 7 days that is late onset sepsis.

In neonates weighing < 2kg bacterial sepsis contributed 33.7% of total sepsis.

E.coli infection was found in 22 cases (40.7%) and reported most common cause of bacterial sepsis followed by klebsiella in 20 neonates (37%).

Bacterial sepsis was found commonly in low birth weight neonates.

Temperature instability was observed in 62.9% and was most common clinical sign reported in bacterial sepsis followed by increased respiratory rate and was found in 59%.

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