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Pediatrics

A STUDY ON CLINICAL PROFILE OF NEONATAL SEPSIS IN EASTERN BIHAR.

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ABSTRACT

Introduction: Neonatal sepsis is defined as an invasive bacterial infection occurring in the first 4 weeks of life. The incidence of neonatal sepsis varies in different countries. The major cause of neonatal mortality and morbidity in newborns both in developed and
developing countries is Neonatal Sepsis.

Objective: This study was conducted to analyze the symptoms and sign of Neonatal Sepsis.

Materials and Methods: Hospital based study in which retrospectively the data was collected from patient record files of one year (April 2017 to March 2018).

Result: 212 Neonates with suspected sepsis were studied out of which 60 were culture positive. The most common organism was E. coli and the most common clinical presentation was the respiratory distress and letharginess.

Conclusion: Infection in Neonate is an important cause of mortality & morbidity especially in low birth babies.-

KEYWORDS : Sepsis, Mortality, Neonate and Antibiotics.

INTRODUCTION

Neonatal sepsis is the most common cause of neonatal mortality. It is responsible for 30-40% of neonatal deaths in developing countries [1,2]. The incidence of sepsis is 30 per thousand live births according to the National Neonatal Perinatal Database. Newborn babies develop sepsis due to various maternal and neonatal risk factors. Neonatal septicemia is one of the commonest causes of neonatal mortality and morbidity. It is estimated that 20% of all neonates develop sepsis [3], and it is responsible for 30-50% of total neonatal death in developing countries [4].

Neonatal septicemia is a clinical syndrome of bacteremia characterized by systemic signs and symptoms of in first month of life. It encompasses systemic infections of newborn including meningitis, pneumonia, arthritis osteomyelitis and urinary tract infections of the newborn [5].

Depending on the onset of symptoms, Neonatal sepsis is of two types:

(a.) Early onset sepsis usually presents within the first 72 hours of life.
(b.) Late onset sepsis usually presents after 72 hours of age [6].

As Neonatal septicemia is a life-threatening emergency and delays in diagnosis and treatment may have adverse consequences, surveillance is needed to identify the common symptoms and signs as well as the antibiotic sensitivity patterns for the agents.

The main objective of this study was to identify the most common symptoms and signs of Neonatal septicemia in our NICU.

MATERIALS AND METHODS:

This is a one year retrospective study done at Neonatal ICU of Jawahar Lal Nehru Medical College and Hospital, Bhagalpur, Bihar.

Period of Study

The neonatal cases which were admitted from April 2017 to March 2018.

Source of Information

In the present study data was collected from the patient record files who were admitted in the above mentioned period at Neonatal ICU of JLNMCH, Bhagalpur.

Selection of Cases

The records of 856 cases of newborns admitted during this period were reviewed on the basis of history, clinical finding and the investigation as per sepsis score, 212 cases were identified to have clinically suspected septicemia5

Table 1 :Neonatal Sepsis Score

Score 1	Score 2	Score 3	Score 4
Maternal fever in 3rd trimester, instrumental delivery, intubations, exchange transfusion, LBW, outside delivery, abdominal distention, irritability, lethargy, convulsion, apnea	Hypothermia, fever, local infection, refusal to feeds, not tolerating feed, vomiting, loose stools, me conium aspiration	Leaking membrane>12 hours, chorioamnionitis , cord erythema, foul smelling from cord,	Sclerema, meningitis, DIC, NEC

Score1=risk of infection, score2=need septic work up to exclude, score 3 or more=investigate and treat

Table 2: Sepsis Score

Sepsis Score (Clinically diagnosis)	
Score	**Number Of Patients**
1	0
2	42
3	64
4	46
5	24
6	26
7	10
Total	212

Table 3: Common Clinical Manifestation

S.No.	Clinical Features	Prevalence %
1.	Respiratory Distress	42.6%
2.	Lethargy	40%
3.	Jaundice	30%
4.	Fever	28.3%
5.	Poor Feeding	28.3%
6.	Abdominal Distention	26.7%
7.	Apnea	16.3%
8.	Vomiting	15.6%
9.	Hypothermia	15.5%

10.	Cyanosis	15%
11.	Irritability	13.3%
12.	Convulsion	11.2%
13.	Umbilical Sepsis	10%
14.	TLC < 5000pmm	10%

Table 4: Culture report of highly suspected case

Culture Report of Highly Suspected Case	
Culture Sent	106 (Score>4)
Positive	60 (56.60%)
Negative	46 (43.40%)

Table 5: Culture report of highly suspected case

Organism	Number(%)
Gram Negative	46 (76.66%)
Gram Positive	14 (23.33%)

Table 6: Culture report of highly suspected case

Organism	Number(%)
E.Coli	18 (30%)
K.Pmeumoniae	16 (36.66%)
P.aeuroginosa	10 (16.66%)
Streptococcus spp.	4 (06.66%)
Acinetobacter	2 (03.33%)
Staphylococcus aureus	10 (16.66%)
Total	60 (100%)

Total number of Mortality = 24 (Most of them culture positive (Pseudomonas & Staphylococcus) Among 212 clinical suspected cases, more than half were delivered at home, 28 cases were delivered by caesarean section and 48 had a history of birth asphyxia. Maternal fever during delivery was present in 12 cases and 14 mothers also had premature rupture of membrane. In clinically suspected case 136 (64.15%) were male and most of them were ELBW or VLBW.

The most frequent presentation of suspected cases were respiratory distress, lethargy, Jaundice, fever and poor feeding. The respiratory distress was significantly more common in early onset septicemia and VLBW & ELBW babies.

The total leukocyte count of 5000per cubic milliliter and below were found in 10% cases while 7% cases had infiltrates on chest X-Ray. Significant number of cases (34.4%) showed band cells and toxic granules on examination of peripheral smear while only 3.4% cases had anaemia. Lumbar puncture was done in 20 suspected cases of meningitis, out of them 16 were abnormal. 10 were positive for E. coli & 6 were for the klebsiella. Among the 212 clinically suspected cases the blood culture was done 123 cases having the clinical sepsis score more than 4. Out of them 60 had culture proven sepsis giving an incidence of 28.30% and the culture positivity rate was 56.60%. Out of them 80% had early onset sepsis and 20% had late onset sepsis. E. coli & klebsiella were the common pathogen accounting for 56.66% cases followed by staphylococcus (16.66%) and pseudomonas (16.66%).

Majority of the isolates were sensitive to Amikacin, Gentamicin, Amoxycillin and chloramphenicol. Some resistance was seen for the III generation cephalosporins.

Out of 212 neonates admitted as the clinically suspected septicemia 24 (11.32%) expired. Among Expired newborn 8 were ELBW. 12 were VLBW and 4 were term babies with meningitis. Out of 24, 20 were culture positive.

DISCUSSION:

Neonatal - prenatal database 2000 say that 23% neonatal deaths are due to sepsis [4]. But in our study it is only 11.32% as compared to other hospital of Nepal [8]. The most important risk factors for neonatal sepsis are prematurity and low birth weight. In our study 83.33% (20/24) cases expired were due to ELBW and VLBW. In a study at Bangladesh prematurity and low birth weight were found to have high case fatality rates [9].

Males have been reported to be 2-3 fold more likely than females to develop septicemia [10]), the nearly 2:1 ratio of male to female infants in our study. In this study the culture positivity was 28.30%, which is quite low as compared to other study [11]. Increased prevalence of gram negative organism septicemia, as found in our study has been reported in other study [12]. The E-coli and Klebsiella were the commonest organism. Similar organisms have been reported in study in Nepal [7]. For most of the organisms, amino glycosides and penicillins were effective. In our hospital we continued use of these agents in initial, empiric treatment of septicaemic neonates. WHO also recommended use of penicillin or ampicillin plus an aminoglycoside for the infants below the age of two months. The Gram-negative organisms showed good sensitivity to piperacillin-tazobactam and ciprofloxacin and high resistance to ampicillin. This finding is similar to another study done by Rao et al [13].

Overall, the incidence of Gram-negative sepsis was more than Gram-positive sepsis in our study. This is similar to another study done by Joshi et al [14]. The majority of the study population was poor and delivered at home and did not have proper antenatal checkups. Untrained birth attendants conducted most of the deliveries, which was associated with an increased risk of serious neonatal infection. Respiratory distress syndrome was found to be the most common clinical presentation in our study which is similar in other studies [15]. Another study was done by Shah et al. [16] also showed similar findings.

CONCLUSION

A large number of neonatal deaths are still due to infection etiology and it is mainly in the premature and low birth weights babies. Therefore the identification and treatment of the infecting organism will be the top priority for any institution. Organisms causing neonatal sepsis and their antibiotic susceptibility vary from place to place. Each neonatal unit should have its own antibiotic policy based on antibiotic susceptibility studies. This will help the pediatricians to choose appropriate empirical treatment for the management of neonatal sepsis. This will also avoid the use of irrational drugs and help in reducing drug resistance. We recommend additional community based studies of local patterns and antibiotics sensitivity of pathogens of Neonatal Septicemia in our country, India, in order to formulate rational antibiotic use policies so that mortality and morbidity of neonates can be brought down.

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