

Clinical Profile of Neonatal Sepsis

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Abstract

Introduction: Neonatal Sepsis is a major cause of mortality and morbidity in newborns both in developed and developing countries. **Objective:** This study was to analyse the symptoms and sign of Neonatal Sepsis. **Materials and Methods:** Retrospective hospital based study the data was collected from patient record files of two years (Jan. 2001–Dec.2002). **Result:** 106 Neonates with suspected sepsis were studied out of which 30 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.

Key Words: Neonate, Sepsis and Mortality.

Neonatal Septicemia is one of the commonest causes of Neonatal mortality and morbidity. It is estimated that 20% of all neonates develop sepsis¹, and it is responsible for 30-50% of total neonatal death in developing countries².

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 newborn³.

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 age⁴.

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 two-year retrospective study done at NICU of Nepalgunj Medical College, Nepalgunj Nepal

Period of Study

Cases admitted from Jan. 2001 to Dec. 2002 (Two years).

Source of Information

The data was collected from the patient record files of NICU by the VMJ and SKM, was confirmed by NKJ.

Selection of Cases

The records of 428 cases of newborns admitted during this period were reviewed on the basis of history, clinical finding and the investigation as per sepsis score 106 cases were identified to have clinically suspected septicemia⁵.

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Table 1. Neonatal sepsis score

| Score1 | Score2 | Score3 | Score4 |
|---|---|---|--------------------------------|
| Maternal fever in 3 rd 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, meconium 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.

| | |
|--|--------------|
| Duration of Study | 2 years |
| Total Newborn Admitted | 428 |
| Found as clinically suspected septicemia | 106 (24.76%) |

Table 3.

| | Early Onset septicemia | Late onset septicemia | Total |
|--------|------------------------|-----------------------|-------------|
| Male | 45 | 23 | 68 (64.15%) |
| Female | 28 | 10 | 38 (35.85%) |
| | 73 (68%) | 33 (31.1%) | 106 |

Table 4.

| | SFD | AFD | LFD | |
|-----------|-----|-----|-----|-------------|
| PRETERM | 31 | 29 | 2 | 62 (58.49%) |
| TERM | 11 | 26 | 3 | 40 (37.73%) |
| POST TERM | 1 | 2 | 1 | 4 (03.77%) |
| ELBW = 6 | | | | |
| VLBW = 10 | | | | |
| LBW = 15 | | | | |
| 31 | | | | |

Table 5.

| Sepsis Score (Clinically diagnosis) | |
|-------------------------------------|----------------|
| SCORE | No. Of Patient |
| 1 | 0 |
| 2 | 21 |
| 4 | 23 |
| 5 | 12 |
| 6 | 13 |
| 7 | 5 |
| Total | 106 |

Table 6. Common Clinical Manifestation

| S.N. | 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 < 5000 pmm ³ | 10% |

Table 7

| Culture report of highly suspected case | |
|---|----------------------|
| Culture sent | 53 Cases (Score > 4) |
| Positive | 30 (56.60%) |
| Negative | 23 (43.40%) |
| | |
| Organism | No. (%) |
| Gram Negative | 23 Cases (76.66%) |
| Gram Positive | 07 Cases (23.33%) |
| | |
| Escherichia coli | 9 (30%) |
| Klebsiella pneumoniae | 8 (36.66%) |
| Pseudomonas aeruginosa | 5 (16.66%) |
| Streptococcus spp | 2 (06.66%) |
| Acinetobacter | 1 (03.33%) |
| Staphylococcus aureus | 5 (16.66%) |
| | 30 (100.%) |

Mortality:-

Total = 12 (Most of them culture positive (Pseudomonas & Staphylococcus))

Among 106 clinical suspected cases, more than half were delivered at home, 14 cases were delivered by caesarean section and 24 had a history of birth asphyxia. Maternal fever during delivery was present in 6 cases and 7 mothers also had premature rupture of membrane. In clinically suspected case 68 (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 5000 per cubic millilitre 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 10 suspected cases of meningitis, out of them 8 were abnormal. 5 were positive for E. coli & 3 were for the klebsiella. Among the 106 clinically suspected cases the blood culture was done 63 cases having the clinical sepsis score more than 4. Out of them 30 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 106 neonates admitted as the clinically suspected septicemia 12 (11.32%) expired. Among Expired newborn 4 were ELBW. 6 were VLBW and 2 were term babies with meningitis. Out of 12, 10 were culture positive.

Discussion

Neonatal - prenatal database 2000 say that 23% neonatal deaths are due to sepsis⁽²⁾. But in our study it is only 11.32% as compared to other hospital of Nepal⁽⁶⁾. The most important risk factors for neonatal sepsis are prematurity and low birth weight. In our study 83.33% (10/12) 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 rates⁷. Males have been reported to be 2-3 fold more likely than females to develop septicemia⁽⁸⁾, 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 study⁹. Increased prevalence of gram organism septicemia, as found in our study has been reported in other study¹⁰. The E-coli and Klebsiella were the commonest organism. Similar organisms have been reported in study in Nepal⁽⁵⁾.

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 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 studies¹¹.

A large number of neonatal deaths are still due to infection aetiology 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. We recommend additional community based studies of local patterns and antibiotics sensitivity of pathogens of Neonatal Septicemia in order to formulate rational antibiotic use policies.

Acknowledgment

I am highly thankful to Mr. Raees Shahi & Mr. Krishna Panthi for their help in analysis and computer typing of the data.

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