BACTERIOLOGICAL PROFILE AND PREVALENCE IN NEONATAL SEPSIS

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Abstract:
Purpose: In this study we aimed to find out the bacteriological profile and prevalence in neonatal sepsis in Govt. Rajaji Hospital, a tertiary care centre in Madurai in south Tamil Nadu, during the period between 1.10.2010 and 31.3.2011. 

Materials and Methods: This study was conducted by collecting blood from neonates with History of neonatal sepsis and identifying the organisms by doing Blood culture and Biochemical tests. Results: 690 blood samples were processed during the study period. Among the 690 samples 642 showed positive growth, 12 samples were contaminated, for which repeat samples were received and 48 samples were negative for any growth. 228 isolates (35.73%) were Klebsiella species. 

Conclusion: In this study Klebsiella species was the most common organism that causes neonatal sepsis followed by Coagulase Negative Staphylococcus, Staphylococcus aureus and Escherichia coli. 

Keyword: Neonatal sepsis, Klebsiella, Blood culture, Biochemical tests

BACTERIOLOGICAL PROFILE AND PREVALENCE IN NEONATAL SEPSIS IN GOVERNMENT RAJAJI HOSPITAL, MADURAI.

Introduction: Neonatal sepsis is the single most important cause of neonatal death in the community which accounts for more than 50% of deaths. Neonatal sepsis a generic term used for systemic bacterial infections which incorporates Septicemia, Pneumonia and Meningitis of the newborn. Types of Neonatal sepsis: Neonatal sepsis can be divided into two subtypes depending on whether the onset is within 72 hrs (Early onset) or later, within 30 days (Late onset) of birth. 

Early onset type: Early onset Neonatal sepsis is usually caused by organisms that are present in the maternal genital tract. Low birth weight, prolonged rupture of membranes, Multiple per vaginal examinations, maternal fever, prolonged labor and Aspiration of meconium are some of the predisposing factors for the development of early onset Neonatal sepsis. It frequently manifests as Pneumonia and less commonly as Septicemia or...
Meningitis.

**Late onset type:**
The infection usually is transmitted through the hands of the care providers. The onset is delayed beyond 72 hrs after birth but not later than 30 days and the presentation is usually that of Septicemia or Pneumonia or Meningitis. The predisposing factors for the development of this infection are low birth weight, lack of breast feeding, superficial infections like pyoderma or umbilical sepsis, aspiration of feeds and disruption of skin integrity with needle pricks.

**Etiology:**
Most of the cases of neonatal sepsis in the community are caused by Escherichia coli and Staphylococcus aureus. In hospitals Klebsiella also can be a common pathogen.

**Materials and Methods:**
This study was conducted to identify the most common isolate causing neonatal sepsis. Study period was 6 months from 1.10.2010 to 31.03.2011. Blood samples were collected from neonates aged from one day to thirty days who were admitted in Pediatric Intensive Care Unit, Govt.Rajaji Hospital, Madurai. The clinical presentation of most of the neonates were fever, lethargy, poor feeding, poor cry, diarrhoea, vomiting, respiratory distress, umbilical sepsis and convulsions. One to three ml of blood was collected aseptically by venipuncture and added to 10 ml of Brain Heart Infusion (BHI) broth and transported to the laboratory within 2 hours.

**Methods:**
The BHI containing bottles were incubated at 37° C for 18-24 hrs after which subculturing onto the following culture media namely Nutrient Agar, MacConkeyAgar and Blood Agar was done by standard technique. All the inoculated plates were incubated at 37° C for 18-24hrs and the growths in the culture plates were observed after the incubation. In the culture plates the organisms were identified by the colony morphology and confirmed by Gram staining, Hanging drop, Coagulase, Catalase and other relevant Biochemical tests.

**Result:**
During the study period 690 blood samples were processed. Among the 690 samples, 642 showed positive growth, 12 samples (1.73%) were contaminated, for which repeat samples were received and 48 (6.95%) samples were negative for any growth. Among the 642 positive growths, 228 isolates were Klebsiella species constituting 35.51% of the total isolates. 189 isolates (29.43%) were Coagulase Negative Staphylococcus, 109 isolates (16.97%) were Staphylococcus aureus, 50 (7.78%) were Escherichia coli, 44 (6.85%) were Pseudomonas, 14 (2.18%) were Beta Hemolytic Streptococci, 6 (0.93%) were Citrobacter and two isolates (0.31%) were Enterobacter.

**Discussion:**
Any microorganism inhabiting the female genital tract or lower GIT may cause intrapartum or postpartum infections of the newborn. Most common bacteria are Group B Streptococci, Enteric organisms. According to standard text books of Paediatrics (Nelson’s text book of Paediatrics 18th edition), Escherichia coli, Staphylococcus aureus and Klebsiella are the common organisms causing neonatal sepsis. In this study Klebsiella has dominated other organisms in causing Neonatal sepsis responsible for 35.51% of cases, Escherichia coli being the etiological agent of only 7.78% of cases. This changing pattern of etiological agents of Neonatal sepsis has been observed over decades and supported by various studies.

**Conclusion:**
The commonest organism causing Neonatal sepsis is Klebsiella species in Govt.Rajaji Hospital, Madurai.
References:

BACTERIOLOGICAL PROFILE AND PREVALENCE IN NEONATAL SEPSIS IN GOVERNMENT RAJAJI HOSPITAL, MADURAI.

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