



BACTERIOLOGICAL PROFILE AND ANTIMICROBIAL SUSCEPTIBILITY PATTERNS OF NEONATAL SEPSIS IN A TERTIARY CARE SICK NEWBORN CARE UNIT (SNCU) IN MIDNAPORE, WEST BENGAL

Paediatric Medicine

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ABSTRACT

Background & Objective: Neonatal sepsis remains a significant contributor to neonatal morbidity and mortality in developing nations, particularly within high-volume tertiary care units. Due to the rapid emergence of multi-drug resistant (MDR) pathogens, local antibiograms are crucial for guiding empirical therapy. This study aimed to evaluate the bacteriological profile and antimicrobial susceptibility patterns of blood culture isolates among neonates admitted with suspected sepsis at the Sick Newborn Care Unit (SNCU) of Midnapore Medical College and Hospital, West Bengal. **Methods:** A hospital-based descriptive study was conducted utilizing blood culture specimens collected from symptomatic neonates admitted to the Midnapore MMC SNCU. A total of 80 blood culture samples were processed under standard aerobic microbiological protocols. Isolates were identified to the species level, and antibiotic susceptibility testing (AST) was performed using standard disk diffusion or automated methods in accordance with Clinical and Laboratory Standards Institute (CLSI) guidelines. **Results:** Out of the 80 blood culture samples evaluated, 6 samples yielded growth, representing a culture-positivity rate of 7.51%. The isolated pathogens demonstrated an equal distribution between Gram-positive (n=3, 50.01%) and Gram-negative (n=3, 50.01%) species: Gram-Positive Isolates: Included two (33.31%) Methicillin-Resistant *Staphylococcus aureus* (MRSA) strains and one (16.7%) *Enterococcus faecium* strain. Both MRSA isolates showed consistent susceptibility to Glycopeptides (Vancomycin) and Oxazolidinones (Linezolid), though atypical in-vitro sensitivities to standard beta-lactams were documented. *Enterococcus faecium* was susceptible to Vancomycin, Linezolid, Co-trimoxazole, and Doxycycline. Gram-Negative Isolates: Included one (16.7%) *Pseudomonas* spp., one (16.7%) *Escherichia coli*, and one (16.7%) Extended-Spectrum Beta-Lactamase (ESBL)-producing *Enterobacter aerogenes*. *Pseudomonas* spp. demonstrated sensitivity to Cefoperazone, Ciprofloxacin, Imipenem, and Piperacillin-Tazobactam. *E. coli* was susceptible to Doxycycline, Polymyxin B, Amikacin, and Ciprofloxacin, while the ESBL *Enterobacter* isolate showed susceptibility to Meropenem, Doxycycline, Co-trimoxazole, and Cefotaxime/Cefoperazone. **Conclusion:** While the overall culture-positivity rate (7.5%) remains relatively low, the high proportion of highly resistant isolates—including MRSA, ESBL-producing enterics, and multi-drug resistant Gram-negative bacilli—is a matter of grave clinical concern. Traditional first-line empirical regimens (such as Ampicillin combined with Gentamicin or Cefotaxime) are highly vulnerable to therapeutic failure against these isolates. These findings underscore the critical need for strict infection control measures, regular unit-specific microbiological surveillance, and a revised empirical antibiotic policy utilizing reserve agents like Carbapenems, Amikacin, and Piperacillin-Tazobactam for severe, deteriorating cases.

KEYWORDS

Neonatal Sepsis; Sick Newborn Care Unit (SNCU); Antibiogram; Methicillin-Resistant *Staphylococcus aureus* (MRSA); ESBL; West Bengal