



ACINETOBACTER SEPSIS IN A TERTIARY NEONATAL INTENSIVE CARE UNIT IN COASTAL KARNATAKA: A RETROSPECTIVE STUDY

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KEYWORDS :

INTRODUCTION

- Acinetobacter, once considered an opportunistic pathogen of low virulence, has recently emerged as an important nosocomial pathogen the world over, mostly involving patients with impaired host defense, especially in intensive care units, and neonatal units.(1)
- Various studies demonstrated that Acinetobacter spp. accounts for 8–22% of blood culture- positive neonatal sepsis and is among the top 3 Gram-negative organisms causing neonatal sepsis along with Klebsiella spp., and Escherichia coli (2)
- Along with other organisms such as E. coli, Klebsiella spp., Staphylococcus aureus, Pseudomonas spp., and Salmonella spp., Acinetobacter species are gaining importance as potential pathogens in neonatal septicemia because of their frequent isolation and multi-drug resistance. (1)
- Acinetobacter is often multi- or extensively-drug resistant. It has been demonstrated that, in India and South Asia, 78–91% of Acinetobacter spp. isolates were multi-drug resistant (2)
- The present study highlights Acinetobacter spp. as an important pathogen in neonatal bloodstream infection.

Objective

- To determine the bacteriological profile and antibiotic susceptibility pattern of Acinetobacter sepsis in the NICU of a tertiary teaching hospital in Mangalore.

MATERIALS AND METHODS

- We retrospectively reviewed positive blood cultures obtained in the neonatal intensive care unit between 1st January 2024 and 31st December 2024.
- Inclusion: All neonates, either born at the tertiary hospital or transferred from referral units, regardless of diagnosis, those who had a positive blood culture, were included.
- Data were entered into an Excel spreadsheet
- Specimens for Cultures were obtained using aseptic methods.
- The BACTEC instrument was used for detecting the growth of bacteria in the specimen.
- It monitors the culture bottle for growth by detecting change in pH in the indicator at the bottom of the bottle.
- Changes in pH signal growth and the bottle is flagged as positive.
- The VITEK system was used:-
- for organism identification
- for ascertaining antibiotic susceptibility of recovered organisms

RESULTS

- Among 290 neonates admitted during the study period, 234 specimens were sent for culture and sensitivity.
- Bacteria were isolated from 39/234 specimens.
- Among the 39, 5(12%) had Acinetobacter growth, which showed high susceptibility to Tigecycline and Colistin, and showed high resistance to Cephalosporins, Aminoglycosides and Piperacillin-tazobactam. Among these 5 specimens, 1 was extremely drug resistant(XDR).

Total number of admissions Between 1st January 2024 and 31st December 2024 → 290			
Total number of specimens sent for culture and sensitivity → 234			
Total number of positive culture specimen → n = 39			
Late Onset Sepsis –54%(n=21)		Early Onset Sepsis - 46% (n=18)	
Gram Negative spp 54%(n=21)		Gram Positive spp - 46% (n=18)	
Most common Gram negative isolate Klebsiella spp 20% (n=8) - (n=40)		Most common Gram positive isolate Staphylococcus-26% (n=10)	
ESBL – 59% among Gram Negative Bacteria		Carbapenemase - 37% among Gram negative isolates	
Drug name	Acineto-bacter (n= 5)	Drug name	Acineto-bacter (n= 5)
		IMIPENEM	3
CEFOTAXIME	NT	MEROPENEM	4
cefoperazone	4		
		LINEZOLID	NT
CEFEPIME	4	VANCOMYCIN	NT
		OXACILLIN	NT
CEFTAZIDIME	2		
		BENZYL PENICILLIN	NT
ERYTHROMYCIN	NT		
		PIPERACILLIN	2
		AMPICILLIN	NT
CLINDAMYCIN	NT		
		COLISTIN	4
GENTAMICIN	3		
		CHLORAM-PHENICOL	NT
AMIKACIN	4		
		TRIMETHOPRIM/ SULFAME-THOZXOLE	3
CIPRO-FLOXACILLIN	4		
		TIGECYCLINE	4
LEVO-FLOXACILLIN	1		
		NITROFURANTOIN	1

DISCUSSION

- Over the last three decades, Acinetobacter species has emerged as an important pathogen in the healthcare setting, both globally and locally. It has a remarkable ability to develop or acquire multiple antibiotic resistance and a propensity to survive for prolonged periods under a wide range of environmental conditions, making it a frequent cause of hospital outbreaks and an endemic healthcare-associated pathogen (3)
- MDR nosocomial Acinetobacter sp. septicemia may cause severe clinical diseases in neonates that are associated with high mortality (4)

- Although classically described as nosocomial pathogen in adults, Acinetobacter is also an important pathogen in neonates hospitalized in ICUs. (1)
- The isolation rate of Acinetobacter species from blood samples of septicemic neonates in the Indian literature ranges from 8.3% to 15.2%.
- In the present study, Acinetobacter contributed to 12% of total septicemia cases.

Author Institute State	Duration of study Positive case	ACINO- BACTER ISO- LATION	Sen- sitive	resistant
KK Lahiri,et al Armed Forces Medical College, Pune Jan-Jun 2000 (5)	Jan-Jun 2000 1175 cases	(152/1175) 12.9%	Colistin 100% Tige-cycline 100%	ampicillin 80% Ceftriaxone 78% trimethoprim + sulphamethoxazole (77%)
SWATHI MAHICHE et al PGIMER CHANDIGARH (2)	(February 2018 - January 2019) 406 cases	43/406 (10.65%)	Colistin 100 % Tige-cycline 100 %	Ceftriaxone 100% Ceftazidime 85.7% Cefoperazone 84.6 %
ASIFA NAZIR et al GOVT MEDICAL COLLEGE ,SRINAGAR .(6)	March 2017 to February 2018. 357 cases	49/357 (13.7%)	Colistin Tige-cycline	Ceftriaxone 49% Cefepime 49% Gentamicin 47 %
This study, KIMS KARNATAKA	1st January 2024 and 31st December 2024 39 cases	5/39 (12%)	Colistin Tige-cyclin	Cephalosporins, Aminoglycosides Piperacillin-tazobactam.

CONCLUSION

- Based on the present study, we conclude that Acinetobacter should be added to the list of organisms causing severe nosocomial infection in neonatal intensive care units.
- Multi-drug resistant nosocomial Acinetobacter septicemia may cause severe clinical disease in neonates that is associated with high mortality.
- It may be associated with severe complications like bleeding diathesis, NEC, meningitis, and hyperbilirubinemia with consequent high mortality. Therefore, continuous bacteriological surveillance, implementation of infection control policies, careful disinfection of intensive care equipment, and rational antibiotic use are required to control such infections

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