



ORIGINAL RESEARCH PAPER

Clinical Microbiology

SPECTRUM OF GRAM NEGATIVE BACILLI AND THEIR ANTIMICROBIAL SENSITIVITY PATTERN AMONG BLOOD CULTURE ISOLATES AT PMCH, PATNA

KEY WORDS: Antibiotic Sensitivity ,Blood Stream Infection, Gram Negative Bacilli .

Dr Rashmi Prabha*

Tutor, Dept of Microbiology, PMCH Patna. *Corresponding Author

Dr Prachi

2nd year PG, Microbiology, PMCH Patna.

Dr Babita Kumari

Assistance Professor, Dept of Microbiology, PMCH, Patna.

Dr(Prof) Vijay Kumar

Professor, Microbiology PMCH Patna

ABSTRACT

Introduction - Blood stream infection are major cause of morbidity and mortality world wide . Surveillance of etiological agents in these infection is important for their prevention and treatment. **Material and Methods**- A cross sectional study of 6 month duration (February to July 2023) was conducted in microbiology laboratory at Patna medical college Patna . A total of 540 blood samples were evaluated .The antibiotic susceptibility was performed by the Kirby -Bauer disc diffusion method on Muller Hinton Agar and interpreted using CLSI guidelines **Results**- Out of 540 samples ,Gram negative bacilli were isolated from 46 samples .The predominant GNB was Escherichia coli (19) followed by Klebsiella pneumoniae(14),Pseudomonas aeruginosa (8) and Acinetobacter species (5).Escherichia coli isolates were sensitive to both 1st line and 2nd line drugs.Klebsiella pneumoniae isolates were mostly sensitive to Colistin and resistant to more than 2 drugs (MDR pathogens) .Pseudomonas aeruginosa isolates were mostly resistant to 1st line drugs and were sensitive to 2nd line drugs . **Conclusion**-In present study ,most of pathogens isolated from blood culture showed high rate of resistance to most commonly used antibiotics used to treat bacterial infections Therefore ,rational use of antibiotics should be practiced .

INTRODUCTION

Sepsis is one of the leading cause of death worldwide accounting for approximately 20% of all ICU admissions and also leading cause of ICU non -cardiac mortality .Organism isolated from blood cultures vary according to different geographical distribution and has higher tendency of developing multidrug resistance in their prolong course, is of great concern. So frequent studies are needed from time to time to know the changing trends of the culture and sensitivity pattern in different regions.

Methodology

A cross sectional study was done at Patna Medical college, Bihar from February 2023 to July 2023 on blood samples received at microbiology laboratory.

Blood samples received was inoculated aseptically into BHI broth and incubated at 37 degree C for 48 hrs. Subcultures from all bottles were done aseptically on Nutrient, Mac Conkey and Blood Agar. 2 subcultures were done at 48 hrs and 72 hrs respectively and last subculture from 5-7th day. Bacteria are identified on the basis of colony morphology, Gram staining and biochemical tests. Antimicrobial Sensitivity Test was performed using Kirby-Bauer disk diffusion method on Mueller Hinton agar.

RESULTS

Out of 540 samples, Gram negative bacilli were isolated from 46 samples (8.5%). The predominant GNB was Escherichia coli (19), followed by Klebsiella pneumoniae(14) followed by Pseudomonas aeruginosa (8) and Acinetobacter species (5)

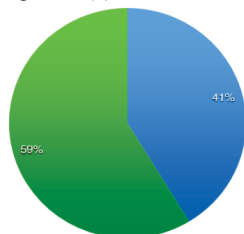


Fig 1- Sex Wise Distribution Of Isolates. Male -27, Female -19

Table 1- Spectrum Of Gram Negative Bacilli

GNBs	NO. of cases	% of cases
E .coli	19	41.30%
K. Pneumoniae	14	30.43%
Pseudomonas aeruginosa	8	17.39%
Acinetobacter species	5	10.86%

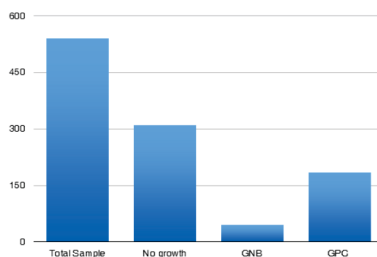


Fig 2: Growth Pattern

Table 2- Antimicrobial Sensitivity Pattern In Isolates

Antibiotics	E coli (n= 19)	K. pneumoniae	P. aeruginosa	Acinetobacter spp
PIT	15	10	5	2
Amoxyclav	4	11	ND	ND
Amikacin	6	9	6	4
Cefepime	3	3	4	4
Imipenem	12	5	6	5
Meropenam	11	5	4	5
Gentamicin	8	7	7	3
Ciprofloxacin	3	9	5	3
Cotrimoxazole	7	2	ND	4
Colistin	15	13	7	5
Ceftazidim	ND	ND	7	3

CONCLUSION

Cases of MDR GNB are on rise in blood culture isolates. Isolates resistant to Colistin are being found. As the AST pattern varies from place to place and even keeps on changing from time to time, similar studies need to be done for formulation of hospital antibiotic policy advocating the

judicious use antibiotics.

REFERENCES

1. Mackie & Mccatney practical microbiology, 14e
2. Ananatharayan and Paniker's textbook of microbiology 12e
3. Bassetti M, Righi E, Carnelutti A. Bloodstream infections in the Intensive Care Unit. *Virulence*. 2016;7(3):267-79.
4. Tian L, Sun Z, Zhang Z. Antimicrobial resistance of pathogens causing nosocomial bloodstream infection in Hubei Province, China, from 2014 to 2016: a multicenter retrospective study. *BMC Public Health*. 2018;18(1):1121.
5. Opota O, Croxatto A, Prod'homme G, Greub G. Blood culture-based diagnosis of bacteraemia: state of the art. *Clin Microbiol Infect*. 2015;21(4):313-22.
6. Lamy B, Dargère S, Arendrup MC, Parienti JJ, Tattevin P. How to optimize the use of blood cultures for the diagnosis of bloodstream infections? A state-of-the art. *Front Microbiol*. 2016;7:697.
7. Chela HK, Vasudevan A, Rojas-Moreno C, Naqvi SH. Approach to Positive Blood Cultures in the Hospitalized Patient: A Review. *Mo Med*. 2019;116(4):313-7.
8. Grady NP, Alexander M, Burns LA, Dellinger EP, Garland J, Heard SO, et al. Guidelines for the prevention of intravascular catheter-related infections. *Clin Infect Dis*. 2011;52(9):162-93.