ORIGINAL RESEARCH PAPER

Volume-9 | Issue-1 | January-2020 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

STUDY OF AEROBIC BACTERIAL PROFILE OF BLOOD STREAM INFECTIONS AND ANTIBIOTIC SUSCEPTIBILITY PATTERN OF THE ISOLATES IN SKMCH, MUZAFFARPUR

Microbiology

Dr. Anubha Tutor, Department of Microbiology, SKMCH, Muzaffarpur.

Dr. Ranjeet Kumar* HOD &Associate Professor, Department of Microbiology, SKMCH, Muzaffarpur *Corresponding Author

Dr. R.N. Sharma Associate Professor, Department of Microbiology, SKMCH, Muzaffarpur

KEYWORDS

Blood stream infections, Antibiotic resistance pattern, ESBL.

BACKGROUND

Blood stream infections (BSIs) are among the most common healthcare associated infections. They are a major cause of significant morbidity and mortality worldwide including India. Increasing resistance shown by the bacterial isolates to the available antibiotics and emergence of multi-drug resistant strains has compounded the problem. Blood culture remains the only definitive diagnostic modality. However delay in reporting positive cultures is a major concern to start the therapy. Regular survey of BSIs with regards to the commonly isolated pathogens and their antibiotic profile would thus help the clinicians to choose a proper empirical antibiotic until the culture reports become available.

OBJECTIVES

1) Isolation of aerobic bacteria from suspected cases of blood stream infections.
2) To know the antibiotic susceptibility pattern of the isolated organisms.
3) To detect the prevalence of extended spectrum beta lactamase producers among the *Escherichia coli* and *klebsiella pneumoniae* isolates.

METHODS

The present study was conducted in the Department of Microbiology, SKMCH, Muzaffarpur over a period of 1 year from January 2018–December 2018. The study included 192 clinically suspected cases of BSIs. Blood samples were collected and processed according to standard laboratory techniques. The organisms isolated were identified and their antibiotic susceptibility testing done by Kirby-Bauer disk diffusion method, including ESBL detection for *E. coli* and *K. pneumoniae* isolates, according to CLSI guidelines.

RESULTS

84/192 samples yielded bacterial growth. *Escherichia coli* (22.62%), *Klebsiella pneumoniae* (20.24%), Coagulase negative *Staphylococcus* (16.67%), *Pseudomonas aeruginosa* (14.28%) and *Staphylococcus aureus* (11.9%) were the 5 most common isolates. In general, the organisms showed high resistance to Ampicillin, Cotrimoxazole, Ceftazidime and Amoxicillin – Clavulanic acid. Imepenem and Vancomycin were highly effective antibiotics. The prevalence of extended spectrum beta lactamase (ESBL) producers among *E. coli* and *K. pneumoniae* isolates was 42% (17/36).

CONCLUSION

Ongoing surveillance for antibiotic susceptibility pattern of the isolates from BSIs, with routine detection of ESBL strains is the need of the hour.

REFERENCES

1) Winn Jr. W, Allen S, Janda W, Koneman E, procop G, Schrekenbeger P et al. Chapter 2. Guidelines for the Collection, Transport, Processing, Analysis, and Reporting of cultures from specific Specimen Sources. In: Koneman's Color Atlas and Textbook of Diagnostic Microbiology, 6th edition. Lippincott Williams and Wilkins, 2006; 97-105.
2) Ananthanarayan R, Paniker CKJ. Textbook of Microbiology, 8th edition. Universities Press (India) Private Limited. 2009; 80.
3) Collee JG, Duguid JP, Fraser AG, Marmion BP and Simmons A. Chapter 4. Laboratory strategies in the diagnosis of infective syndromes. In: Collee JG, Fraser AG, Marmion BP and Simmons A, editors. Mackie and McCartney, Practical Medical Microbiology, 14th edition. Churchill Livingstone, New York. 2007; 54.
4) Reynolds R, Potz N, Colman M, Williams A, Livermore D and MacGowan A. Antimicrobial susceptibility of the pathogens of bacteraemia in the UK and Ireland 2001-2002: the BSAC Bacteraemia Resistance Surveillance Programme. J Antimicrob Chemother. 2004; 53: 1018-32.
5) Arora U and Devi P. Bacterial Profile of Blood Stream Infections and Antibiotic Resistance Pattern of Isolates. J K Science. 2007; 9(4): 186-190.
6) Karlowsky JA, Jones ME, Draghi DC, Thornsberry C, Sahm DF and Volturo GA. Prevalence and antimicrobial susceptibilities of bacteria isolated from blood cultures of hospitalized patients in the United States in 2002. Ann Clin Microbiol Antimicrob. 2004; 3: 7.
7) Bhattacharya S. Blood culture in India: A proposal for a National Programme for early detection of sepsis. Indian J Med Microbiol. 2005; 23(4): 220-6.
8) Uslan DZ, Crane SJ, Steckelberg JM, Cockerill III FR, St. Sauver JL, Wilson WR and Baddour LM. Age- and Sex-Associated Trends in Bloodstream Infection – A Population Based Survey in Olmsted Country, Minnesota. Arch Intern Med. 2007; 167: 834-9.
9) Murthy DS and Gyaneshwari M. Blood cultures in paediatric patients: A study of clinical impact. Indian J Med Microbiol. 2007; 25: 220-4.
10) Qureshi M and Aziz F. Prevalence of microbial isolates in blood cultures and their antimicrobial susceptibility profiles. Biomedica. 2011; 27: 136-9.
11) Vincent JL, Martinez EO and Silva E. Evolving Concepts in Sepsis Definitions. crit Care Clin. 2009; 25: 665-75.
12) Munford RS. Chapter 271. Severe Sepsis and Septic Shock. In: Longo, Fauci, Kasper, Hauser, Jameson and Loscalzo, editors. Harrison's TM Principles of Internal Medicine, 18th edition, The McGraw-Hill companies, 2012: 2223-31.
13) Seifert H and Wisplinghoff H. Chapter 19. Blood Stream Infections and Endocarditis. In: Topley and Wilson's Microbiology and Microbial infections.10th edition, Edward Arnold Ltd. 2006: 509-54.
14) Ryan KJ and Ray CG. Chapter 68. Intravascular infections, Bacteremia and Endotoxemia. In: Sherris Medical Microbiology- An introduction to infectious diseases, 4th edition, 2004: 881-91.
15) Lenz R, Leal JR, Church DL, Gregson DB, Ross T and Laupland KB. The distinct category of healthcare associated bloodstream infections. BMC Infect Dis. 2012; 12: 85.
16) Siegman-Igra Y, Fourer B, Orni-Wasserlauf R, Golan Y, Noy A, Schwartz D et al. Reappraisal of Community Acquired Bacteremia: A Proposal of a New Classification for the Spectrum of Acquisition of Bacteremia. Clin Infect Dis. 2002; 34: 1431-9.
17) Decousser J-W, Pina P, Picot F, Delalande C, Pangon B, Courvalin P et al. Frequency of isolation and antimicrobial susceptibility of bacterial pathogens isolated from patients with bloodstream infections: a French prospective national study. J Antimicob Chemother. 2003; 51: 1213-22.