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Antibiotic Susceptibility Pattern of the Pathogens Isolated from Hospital Acquired Acute Bacterial Meningitis in a Tertiary Health Care Centre in North India

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Abstract : Background: Acute bacterial meningitis remains the major cause of mortality and morbidity. More than half of the survivors develop the significant lifelong neurological abnormalities. Diagnosis of the hospital acquired acute bacterial meningitis (HAABM) is challenging as it appears either in the post operative patients or patients acquire the organisms from the hospital environment. In both the situations, pathogens are exposed to high dose of antibiotics. Chances of getting multidrug resistance organism are very high. We have performed this experiment to find out the etiological agents of HAABM and its antibiotics susceptibility pattern. Methodology: A perspective study was conducted at the Department of Microbiology, All India Institute of Medical Sciences, New Delhi. From March 2015 to April 2018 total 400 Cerebro spinal fluid samples were collected aseptically. Samples were processed for cell count, Gram staining, and culture. Culture plates were incubated at 37°C for 18-24 hours. Organism grown on blood and MacConkey agar were identified by MALDI-TOF Vitek MS (BioMerieux, France) and antibiotic susceptibility tests were performed by Kirby Bauer disc diffusion method as per CLSI 2015 guideline. Results: Of the 400 CSF samples processed, 43 (10.75%) were culture positive for different bacteria. Out of 43 isolates, the most prevalent Gram-positive organisms were S. aureus 4 (9.30%) followed by E. faecium 3 (6.97%) & CONS 2 (4.65%). Similarly, E. coli 13 (30.23%) was the commonest Gram-negative isolates followed by A. baumannii 12 (27.90%), K. pneumonia 5 (11.62%) and P. aeruginosa 4(9.30%). Most of the antibiotics tested against the Gram-negative isolates were resistance to them. Colistin was most effective followed by Meropenem and Imepenim for all Gram-negative HAABM isolates. Similarly, most of antibiotics tested were susceptible to S. aureus and CONS. However, E. faecium (100%) were only susceptible to vancomycin and teicoplanin. Conclusion: Hospital acquired acute bacterial meningitis (HAABM) is becoming the emerging challenge as most of isolates are showing resistance to commonly used antibiotics. Gram-negative organisms are emerging as the major player of HAABM. Great care needs to be taken especially in tertiary care hospitals. Similarly, antibiotic stewardship should be followed and antibiotic susceptibility test (AST) should be performed regularly to update the antibiotic patter and to prevent from the emergence of resistance. Updated information of the AST will be helpful for the better management of the meningitis patient.

Keywords : CSF, MALDI-TOF, hospital acquired acute bacterial meningitis, AST
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