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LETTER TO EDITOR

A Comparative Study On The Antimicrobial Activity Of Meropenem And Other Anti-infective Agents

RAJESH P K*

*Asso. Prof., Unit of Clinical Microbiology, School of Medicine, AIMST University, Semeling, 08100, Kedah darul aman, (Malaysia).
E-mail-rajesh.perumbilavil@gmail.com

Dear Editor,

Extended-spectrum ß-lactamases (ESBLs) are a rapidly evolving group of ß-lactamases which share the ability to hydrolyze third-generation cephalosporins and aztreonam yet are inhibited by clavulanic acid [1] ESBLs can be difficult to detect because they have different levels of activity against various cephalosporins. If an ESBL is detected, all penicillins, cephalosporins, and aztreonam should be reported as resistant, even if in vitro test results indicate susceptibility [2],[3].Carbepenems are the drugs of choice for the treatment of infections caused by ESBL producing organisms but carbapenemases (Mettalo ß-lactamases or MBLs) have emerged and have spread from *Pseudomonas aeruginosa* to Enterobacteriaceae. The routine clinical microbiology laboratories should employ simple methods to recognize these enzymes using various substrates and inhibitors. Presently, the therapy relies on beta-lactam/ beta-lactamases inhibitor combinations, carbepenems and piperacillin - tazobactam plus aminoglycoside combination [4]. In this regard would like to briefly report a study conducted at tertiary care centre. The antibacterial efficacy of the Meropenem was compared with Amikacin, Ceftazidime, Cefpirome, Cefoperazone/sulbactam, Imipenem, Ofloxacin and Piperacilin/Tazobactam. 200 bacterial isolates comprising up to 100 aerobic gram positive bacteria and up to 100 aerobic gram negative bacteria, were speciated and tested for their susceptibility pattern. The isolates were all resistant to commonly used first line drugs and not more than 10% of the total isolates were from the same species. Bacteria known to be resistant to Meropenem like methicillin resistant staphylococci (MRSA), *Enterococcus faecium, Stenotrophomonas maltophilia* were excluded. Quality control strain replicates were included. However concerning ESBL's we focus only on the 100 gram negative isolates. Every clinical sample tested was compiled in a case record form which includes patient particulars, diagnosis, the type of sample and the site of collection. Samples included pus, wound swabs, bronchoalveolar lavage fluid, blood cultures and urine specimen. Kirby-Bauer disc diffusion method as recommended by NCCLS was followed. Meropenem was the only drug observed to be sensitive in 12 % of the isolates.8 isolates, mostly Pseudomonas species, were resistant to Meropenem. Imipenem and Piperazillin/Tazobactum was sensitive in 2 and 6 isolates respectively where Meropenem was resistant. Carbapenems also differ with regards to *Pseudomonas aeruginosa* resistance as mechanisms of resistance differ between Imipenem and Meropenem [5].2 mutations (loss of porin OprD / D2 protein & upregulation of MexA MexB OprM are required for meropenem

resistance. Imipenem resistance is due to lack of OprD and activity of chromosomal amp-C type ß-lactamases. Antibiotic resistance is increasing at an alarming rate, leading to increased morbidity, mortality and treatment costs and unless conscious efforts are made to contain the menace of drug resistance, multi-drug resistant organisms, untreatable by every known antibiotic, may emerge [6]. Pseudomonas resistant to carbapenems should be tested for metallobetalactamase (MBL) production. It has been documented that MBL producing Pseudomonas are associated with a higher mortality rate [7]. In conclusion it is important that interpretation of sensitivity results is done with extreme care. Double disc tests, Combination disc methods and E-test strips are confirmatory methods which can be adopted in all clinical laboratories to identify ESBL'S and MBL's [8].

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