ABSTRACT OF 350 WORDS
TRENDS OF ANTIBIOTIC RESISTANCE AMONG PATHOGENS WITH SPECIAL REFERENCE TO BETA-LACTAMASES IN VARIOUS PATIENTS OF DIFFERENT KOLKATA HOSPITALS

The extensive and indiscriminate use of antibiotics in the community and hospitals has fueled a major antibiotic resistance crisis. Our present study was undertaken to compare the antibiotic resistance pattern among various clinical isolates of Kolkata hospitals. 284 non-repeat pathogenic strains were collected from six major city hospitals of Kolkata from February 2002 to April 2003. *Escherichia coli* was the most frequently isolated organism (43.7%), followed by *Klebsiella pneumoniae* (22.2%), *Staphylococcus aureus* (21.8%), *Pseudomonas aeruginosa* (5.3%), *Proteus vulgaris* (4.6%) and *Klebsiella* spp (2.5%). Maximum resistance was observed towards the beta-lactam group of antibiotics and 28.3% of the beta-lactam resistance was due to beta-lactamases as tested by Nitrocefin Spot Test and Microiodometric Assay of beta-lactamase. As the Gram-negative organisms were more in number, the beta-lactamases of the Gram-negative organisms were phenotypically characterized and classified. Forty six were found to be Extended Spectrum Beta-Lactamase (ESBL) producers, 4 isolates were resistant to all beta-lactamase inhibitors (IRT-BL), 23 were AmpC beta-lactamase producers, of which 4 were inducible AmpC beta-lactamase producers, and the number of metallo-beta-lactamase producers were five. So, for successful therapy, characterization of the above beta-lactamases is essential as some of the beta-lactams and beta-lactamase-inhibitors (Clavulanic acid, Sulbactam & Tazobactam) may result in hyperproduction of these enzymes causing increased morbidity and mortality. pI of 5.4 and 7.8 were obtained in case of beta-lactamases tested by Analytical isoelectric focusing. Antibiotic resistant plasmids (R-plasmids) are well known as carriers for spread of antibiotic resistance genes. The plasmid profile of our strains showed plasmid size of 2.1 kb to 6 kb and one common plasmid of greater than 53.4 kb in most *E.coli* strains. This study highlighted the fact that the antibiotic resistance problem in the hospitals of Kolkata is highly prevalent. Maximum resistance was towards beta-lactam group of antibiotics. Hence if the type of beta-lactamase produced by the pathogens is detected along with the antibiogram before administrating the beta-lactam drug to the patient, the incidence of therapeutic failure is most likely to be significantly reduced.