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Carriage of integron classes in ESBL producing *Klebsiella pneumoniae* isolates from blood stream infections

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Introduction: Integrons are mobile genetic elements capable of gene capture and expression via site-specific recombination and the action of a promoter. Integrons play a major role in the dissemination of antibiotic resistance genes and are commonly associated with members of the family *Enterobacteriaceae*.

Objectives: To find out the incidence and the classes of integron associated with multidrug resistant ESBL producing *Klebsiella pneumoniae* isolated from blood stream infections.

Materials and Methods: This study was carried out on 256 *K.pneumoniae* isolates over a period of two years. Antimicrobial susceptibility was tested for 14 antibiotics. ESBL detection was done as per CLSI guidelines followed by a multiplex PCR. Integrase gene PCR was done to detect class 1, class 2 integrons; similarly for class 3 and class 4 integron using specific primers. Sequencing was done for representative number of strains.

Results: Out of the 256 isolates, 167 (65.2%) were ESBL producers. *bla*SHV (77.2%) and *bla*CTX-M (85.6%) were the most common. Of the 167 ESBL positive isolates, 121 (72.4%) carried class 1 integron; 51 (42.1%) isolates carried class 2 integron. Both class 1 and class 2 were found in 33 (27.2%) and none had class 3 or class 4 type. Sequencing and blasting results confirmed their identities. The drug resistant rates of integron positive isolates were 23% higher compared to integron negative strains.

Conclusions: A higher percentage of class 2 integrons association with ESBL strains is being noted for the first time from our region, also the co-existence of both class 1 and class 2 types increases the higher risk of multidrug resistant gene transfer rates. These findings strongly suggest that integrons have a major role in the dissemination of ESBL mediated resistance among nosocomial isolates of *K.pneumoniae*.

Biography

Mohamudha Parveen Rahamathulla has completed her Master's in Medical Microbiology from University of Madras and PhD in Medical Microbiology from the Institute of National Importance - JIPMER, India. She was awarded her doctorate by the honorable Prime Minister of India, in the convocation held in JIPMER. She has published many research papers in reputed journals. Her expertise and research interest includes Clinical Bacteriology with reference to antimicrobial drug resistance mechanisms. She is serving as Peer reviewer in more than dozen reputed, peer-reviewed Medical and Science Journals. She is also an Assistant and Associate Editor in a couple of Journals. She is a member of various Professional Societies and Organizations. Dr MPR is an active academician and researcher, presently working as Assistant Professor and Head of the Department in Department of Medical Lab Sciences, College of Applied Medical Sciences in Wadi Al Dawaser, Prince Sattam bin Abdulaziz University, Saudi Arabia.

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