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Chromosome mediated colistin resistance in clinical isolates of *Klebsiella pneumoniae*

Kashi Nath Prasad, Ashutosh Pathak and Sanjay Singh
Sanjay Gandhi Postgraduate Institute of Medical Sciences, India

Multidrug-resistant (MDR) Gram-negative bacteria have emerged as the most dreaded health-care threat worldwide. Increased carbapenem resistance in Gram-negative bacteria has led to frequent use of colistin with risk of emergence of resistance. Recently several studies have reported plasmid (*mcr-1* gene) mediated colistin resistance among Enterobacteriaceae isolated from veterinary and human sources. In the present study, we have investigated for the presence of *mcr-1* gene in colistin resistant clinical isolates of *Klebsiella pneumoniae*, one of the most notorious bacteria in the family Enterobacteriaceae. Total 1000 Gram-negative bacteria isolated from clinical samples during January and February 2016 were subjected to antimicrobial susceptibility and 21 colistin resistant *K. pneumoniae* were detected. All 21 isolates were subjected to PCR for *mcr-1* and *bla*_{NDM} genes. Isolates positive for *mcr-1* gene were further analyzed by Southern hybridization for localization of the gene either on plasmid or on chromosome. Clonal-relatedness of *mcr-1* positive isolates was studied by pulsed field gel electrophoresis (PFGE). PCR based screening showed that 4 of 21 *K. pneumoniae* isolates harboured *mcr-1* gene; one *mcr-1* gene positive isolate also harboured *bla*_{NDM}. All 3 *mcr-1* gene positive isolates were clonally related by PFGE, while one *bla*_{NDM} positive isolate was unrelated. Southern hybridization analysis showed that the *mcr-1* gene was located on chromosome. In contrast to other earlier studies where the *mcr-1* gene was plasmid borne, in the present study, it was localized on the chromosome. Further studies are required to know the genetic environment associated with *mcr-1* gene to understand the source and its mechanism of transmission.

Biography

Kashi Nath Prasad has completed his MD from Institute of Medical Sciences, Banaras Hindu University, India. Currently, he is a Professor of Microbiology at Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, India. He has guided 16 PhD and 10 MD students. He has published more than 210 scientific papers. He has received several awards by Academic Bodies and Scientific Societies. He is a Fellow of Royal Society of Tropical Medicine and Hygiene, International Congress of Environmental Research, National Academy of Medical Sciences (India) and Indian Academy of Tropical Parasitology. He has been invited as a speaker to more than 50 scientific events.

kashinprasad@gmail.com

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