Clin Microbiol 2015, 4:5
http://dx.doi.org/10.4172/2327-5073.C1.019

OMICS International
conferenceseries.com

4th International Conference on
Clinical Microbiology and Microbial Genomics
October 05-07, 2015 Philadelphia, USA

Carbapenem resistant *Enterobacteriaceae* (CRE): Prevalence, risk factors, mechanisms of resistance treatment options and its impact on hospital mortality, first of its kind study from India

Ruchika Bagga
Fortis Memorial Research Institute, India

Introduction: Multidrug resistance has emerged as a huge problem both from the hospital and public health perspective. Carbapenems are the main stay of treatment in such cases. Development of carbapenem resistance through hyper production of enzymes /drug efflux/ loss of porins has significant healthcare implications. India with a 1.252 billion population base has a huge resistance potential.

Aim: The current study was undertaken to understand epidemiology of CRE, risk factors for its acquisition, treatment options and its impact on hospital mortality.

Materials & Methods: All culture positive samples growing *Enterobacteriaceae* both CRE and Carbapenem Sensitive *Enterobacteriaceae* (CSE) from October 2014 to April 2015 were included in the study. These isolates were selected based on identification and susceptibility tests done on VITEK 2 (bio-Merieux). *Enterobacteriaceae* intermediate or resistant to Imipenem / Meropenem were included as CRE while those susceptible were included under CSE. Details on demography of the patient (including age, sex), co morbidities (diabetes, hypertension, cerebro-vascular disease, hepatic disease, renal disease, malignancy), APACHE score, immune-suppression, length of stay in the hospital, previous hosp. stay, presence of central line, urinary catheter , surgery and ventilation days were noted. Patients were followed up for 14 days after positive culture for impact on hospital mortality. Treatment options were analyzed based on in vitro susceptibility of CRE isolates. Data was analyzed using multivariate analysis and $\chi 2$ analysis.

Results: 60.22% of all samples (159 out of 264 samples) were CRE while 39.8% samples grew CSE with prevalence being highest in respiratory samples (73%) and lowest in blood stream infections (52%). Of all factors, immune-suppression, previous use of 3rd and 4th generation cephalosporins, prolonged duration of hospitalization (beyond 10 days), malignancy, high APACHE scores and ventilation days were significantly associated with acquisition of CRE infections. The resistance was largely due to combined carbapenemase production and porin loss. 98% of isolates were susceptible to colistin, 93% being susceptible to tigecycline, amikacin (33%), minocycline (12%) and co trimoxazole (5%). In hospital, mortality for patients with CRE was 30%.

Discussion: The current study highlights the facts that prevalence of CRE is high in Indian settings. (More studies though are needed across India) CRE are poor outcome infections with very limited options. Robust infection control practices to prevent acquisition and transmission of CRE, anti-microbial stewardship and new drug discovery are needed to tackle the crisis.

ruchikaa.bagga@gmail.com

Notes: