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Paper Poster Session V

Carbapenem resistance in *Klebsiella*

Colonization-infection with carbapenem-resistant *Klebsiella pneumoniae* strains

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**OBJECTIVE:** The aim of this study is the determination of risk factors of infection from carbapenem resistant *Klebsiella pneumoniae* strains in already colonized critically ill patients.

**MATERIAL AND METHOD:** It is a prospective study, which lasted 2 years and was conducted in G. Gennimatas Hospital in Greece. Rectal swab specimens were obtained at admission and every 2-3 days until hospital discharge or death from 222 patients, hospitalized in ICU of our hospital. Specimens were investigated for the presence of resistant carbapenem *Klebsiella pneumoniae* strains. Furthermore clinical specimens were obtained from all possible sites of infection of patients with clinical signs of infection. Demographic data, underlying conditions, APACHE II score, McCabe criteria, administration of immunosuppressive drugs, surgical procedures and recent administration of broad spectrum antibiotics were also assessed. The identification of the strains and the antibiotic susceptibility testing were performed with the automated system Vitek II (Bio Merieux France). The MIC values were confirmed via E-test. The detection of strains was performed through phenotypic methods in accordance to international literature guide-lines. The statistical analyses were carried out using the Statistical Package for Social Sciences (SPSS) for Windows, Version 20.

**RESULTS:** Of the 222 patients enrolled in the study 104 (47%) were colonized in the rectum and 38 (36%) developed infection. The median time to the colonization was 8 days (1-40). The mean length of stay of colonized and non-colonized patients was 19 days and 8 days respectively ( $p=0.03$ ). 29% of *Klebsiella pneumoniae* colonized patients developed infection from resistant to carbapenems strains while the infection rate in non-colonized accounted for 7% ( $p=0.007$ ). The presence of infection reached statistical significance between colonized and non-colonized patients ( $p = 0.049$ ). Recent administration of antimicrobial agents ( $p<0.0005$ ) and septic shock ( $p=0.001$ ) reached statistical significance in the monivariate analysis. Multiple regression analysis revealed recent administration of broad spectrum antibiotics ( $p=0.001$  OR=0.029) as independent risk factor for factors for infection development in already colonized patients.

**CONCLUSIONS:** One third of the patients colonized with carbapenemase producing *Klebsiella pneumoniae* strains developed infection by the same strains. Becoming aware of patients colonization with the strains mentioned above can be a useful tool for the prevention of infections, while the colonized patients can be isolated on time. Furthermore it is essential to attempt to preserve the last line antibiotics for the infections caused by these multi drug resistant strains in order to limit their spread.