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Paper Poster Session V

Carbapenem resistance in Klebsiella

Colonization and infection of critically ill patients with *Klebsiella pneumoniae* carbapenemase strains: molecular typing

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**OBJECTIVE:** The aim of this study is the molecular charecterization of KPC strains isolated from rectal swab and bloodstream cultures of critically ill patients and the investigation of possible genetic correlation between the strains.

**MATERIAL AND METHOD:** 20 KPC strains isolated from 10 rectal swab specimens and 10 bloodstream cultures were enrolled in this study. These strains were obtained from a total of 116 critically ill patients in the ICU of our hospital. The patients were colonized and then developed bloodstream infection from the same multi drug resistant strains. 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 bloodstream cultures were processed with automated system BACTEC 9120. Phenotypic method with disk synergy test using meropenem and boronic acid and further genotypic detection confirmed the presence of bla<sub>KPC</sub> gene. Strain typing by pulse-field gel electrophoresis (PFGE) was performed following XbaI restriction enzyme digestion (30). The PFGE pattern was analyzed by BioNumerics (Applied Maths, Kortrijk, Belgium), using the Dice correlation coefficient and the unweighted pair group mathematical average (UPGMA) clustering algorithm.( Central Public Health Laboratory, Hellenic Centre of Disease)

**RESULTS:** All the strains were resistant to all b-lactam antibiotics (100%), quinolones (100%), carbapenems (100%) and sensitive to one or more aminoglycosides (resistance to amikacin: 50% , gentamycin: 23%). All strains were sensitive to colistin and tigecycline. PFGE revealed that the isolated strains belonged to 2 types: A (n=15) and B (B1: n=2 και B2: n=3). Type A strains belonged to the global clone ST258. Comparing the molecular fingerprints of the strains isolated from rectal swab and bloodstream cultures collected from the same patient, it was found that in 9/10 cases the colonization strain was responsible for the infection.

**CONCLUSIONS:** The colonization of patients with KPC strains is an important predisposing factor for infection development by these strains. The molecular typing of these strains (carrier and infection) demonstrates the bacterial tranlocation of the *Klebsiella pneumonia* from the intestine to the bloodstream of patients resulting in septicemia.