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Poster Session IV
Molecular detection of bacterial resistance

DETECTION OF RESISTANCE MECHANISMS AND MOLECULAR TYPING OF CARBAPENEM-RESISTANT ACINETOBACTER BAUMANNII ISOLATED FROM BLOOD CULTURES IN A GREEK TERTIARY HOSPITAL

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Objectives: The aim of this study was to assess the presence of OXA-genes and class 1 integrons and characterize the genetic relatedness of 21 carbapenem and colistin -resistant *Acinetobacter baumannii* bloodstream isolates collected in a Greek tertiary hospital over a two-year period between May 2011 to September 2013.

Methods: Isolates were identified and MICs were determined using automated system Vitec2 (Biomerieux) according to CLSI guidelines. For Colistin was used the CLSI recommendations: susceptibility, MIC≤2 μg/ml, resistace, MIC≥4 μg/ml and MIC determinations were repeated by E-test (AB Biodisc). Screening for the presence of a carbapenemase was performed with the Modified Hodge Test. Genes coding for carbapenemase production, thus the three subgroups of acquired OXA-carbapenemases (OXA-23-like, OXA-24-like and OXA-58-like) and the fourth intrinsic to *Acinetobacter baumannii* OXA-51-like subgroup, were detected by a multiplex PCR. Integrons of class 1 were sought by PCR and PCR products were cloned and sequenced in order to characterize their content. Typing was done by PFGE of *Apa*I-digested genomic DNA.

Results: All isolates had almost identical susceptibility patterns, demonstrating resistance in beta-lactam/ beta-lactamase inhibitor combinations, cephalosporins, aztreonam, imipenem, meropenem, aminoglycosides, ciprofloxacin, trimethoprim-sulfamethoxazole, chloramphenicol and colistin. Fourteen isolates were found positive for the OXA-58-like gene, four isolates for the OXA-23-like gene and three isolates carried both OXA-58-like and OXA-23-like genes. No OXA-24-like carriers were found in this study. All isolates were positive for the intrinsic OXA-51-like gene. PFGE typing revealed two different clones designated I and II. Clone I was the most prevalent (seventeen isolates), containing two subclones (1-3 band difference). Clone II differed by four to six bands from clone I, demonstrating therefore possible relatedness according to published criteria. Isolates harboring the OXA-23-like carbapenemases belonged to clone II. Seven of the isolates all belonging to clone I, harbored a 2.2 kb class 1 integron and two of the isolates belonging to clone II, carried a 150 bp class 1 integron.

Conclusions: Carbapenem resistance in *Acinetobacter baumannii* blood isolates in our hospital was mainly related with the presence of OXA-23-like and OXA-58-like producing carbapenemases. The genetic relatedness of the two PFGE clones suggests common source of transmission. Continuous surveillance is needed for monitoring the spread of worrisome strains equipped with drug resistance mechanisms and mobile genetic elements such as class 1integrons.