P1105 Epidemic dissemination of a carbapenem-resistant Acinetobacter baumannii clone carrying armA

Konstantina Nafplioti1, Irene Galani*,1, Panagiota Adamou6, Helen Moraitou2, Panagiota Giannopoulou3, Paraskevi Chra4, Maria Damala5, Evangelos Vogiazakis2, Eleftheria Trikka-Graphakos3, Vasiliki Baka4, Eleni Prifti5, Maria Souli6

1National and Kapodistrian University of Athens, School of Medicine, Infectious Diseases Laboratory, 4th Dept Internal Medicine, Chaidari, Athens, Greece, 2“Sotiria” General and Chest Diseases Hospital, Department of Clinical Microbiology, Athens, Greece, 3“Thriasio” General Hospital of Elefsina, Microbiology Department, Elefsina, Athens, Greece, 4Korgialenio Benakio Hellenic Red Cross Hospital, Microbiology Department, Athens, Greece, 5“Alexandra” General Hospital of Athens, Microbiology Department, Athens, Greece, 6National and Kapodistrian University of Athens, School of Medicine, Infectious Diseases Laboratory, 4th Dept Internal Medicine, Chaidari, Athens, Greece

Background: The aim of the present study was to analyse the prevalence of 16S rRNA-methylase-genes (RMTs) among consecutively collected A. baumannii isolates, in Athens Metropolitan area, their carbapenemase gene content, the genetic relatedness and the evolution of clonal lineages among RMT-producing isolates recovered from Greek patients during 2015-2016.

Materials/methods: Single-patient A. baumannii clinical isolates, resistant to amikacin, gentamicin and tobramycin (n=346), were consecutively collected during a two-year period (2015- 2016) in five tertiary-care hospitals in Athens. All isolates were sent to a central laboratory for MIC determination to the 4,6-disubstituted aminoglycosides amikacin, gentamicin and tobramycin, as well as to apramycin and neomycin with the broth dilution technique. Isolates with MICs ≥256 mg/L to 4,6-disubstituted aminoglycosides were examined for the presence of 16S rRNA methylase (RMT) genes (armA, rmtB, rmtC, rmtA, rmtD and npmA) by two multiplex PCRs. Carbapenemase production was confirmed by multiplex PCR in all RMT-positive isolates. A PCR-based method proposed by Turton et al, 2007, was used to assign the sequence groups and the corresponding major international clones.

Results: A. baumannii, resistant to amikacin, gentamicin and tobramycin were isolated at participating institutions at a rate of 67.8% (calculated in the 1st Semester of 2016). Three hundred and twenty-four A. baumannii isolates of 346 tested (93.6 %), were positive for armA. The vast majority of armA-bearing A. baumannii strains were OXA-23 producers (98.5%) while four isolates (all from the same hospital) were OXA-24 producers (1.2%), and only one isolate was OXA-58-producer. The armA bearing A. baumannii isolates that produced the OXA-23 carbapenemase were assigned mainly (99.4%) to sequence group G1 corresponding to international clone IC2, while those producing the OXA-24 to G6 corresponding to CC78. The unique armA- harbouring isolate that produced OXA-58 was assigned to G2 corresponding to IC1.

Conclusions: RMT production is an emerging mechanism of resistance, capable to compromise the clinical efficacy of aminoglycosides. High prevalence of armA was observed among A. baumannii strains isolated in participating hospitals in Athens. ArmA-positive isolates were mainly OXA-23 producers belonging to IC2.