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Abstract (poster session)

Occurrence and genetic analysis of OXA-48-producing strains in European countries, 2007-2010

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Objectives: To evaluate the dissemination and genetically characterize OXA-48-producing strains in Europe. Increasing traveling and immigration among countries in the Mediterranean area seem to promote the spread of blaOXA-48. We used the SENTRY Program network to assess the occurrence of OXA-48-producers among 16 European nations. **Methods:** Among 201 (1.3%; 15,520 strains) carbapenem-resistant (R) Enterobacteriaceae strains collected during 2007-2010 in 16 European countries, 42 OXA-48-producing strains were detected using Modified Hodge Test (MHT) and PCR for carbapenemase-encoding genes. Clonality was assessed by PFGE. Gene location was determined by S1 endonuclease restriction, followed by hybridization. Genetic environment was amplified using primers targeting IS1999 anchoring on the OXA-48 gene. Amplicons were digested with AluI, RsaI and Sau3IA and different types were sequenced. **Results:** OXA-48-producers were collected in 2007 (3 strains), 2008 (6), 2009 (28) and 2010 (6). 41 strains were detected in Turkey (all years) and one K. pneumoniae (KPN) in Italy. The latter was collected in April/2009 from a 79 y/o female patient hospitalized in Sicily. Isolates belonged to four bacterial species: KPN (23 strains; all years), E. coli (EC; 14 strains; 2008 and 2009), E. cloacae (ECL: 4 strains; 2010 only); K. oxytoca (KOX; 3 strains; 2009 only) and one E. aerogenes (2009). Imipenem (IMI) MIC values ranged from 1 to >8 mg/L and meropenem (MER) from 0.25 to >8 mg/L (mode, 4 and 1 mg/L, respectively). One KPN strain was MHT negative (IMI and MER MIC, 2 and 1 mg/L, respectively). KPN displayed great genetic diversity by PFGE (12 patterns). Clonality was observed only in 2009 (1 cluster of 5 strains and 3 clusters of 2). Among EC, 8 patterns were noted and 7 of 10 strains from 2009 belonged to the one cluster. ECL strains displayed two patterns and KOX were identical. All strains carried blaOXA-48 in plasmids and two different blaOXA-48 genetic elements were observed: IS1999(± IS1 tnpA disruption)/ blaOXA-48/IS1999. **Conclusions:** OXA-48-producing strains were found to be disseminated in Turkey and one strain was detected in Italy. These strains were not observed on other European countries (5 in the Mediterranean region) surveyed by the SENTRY Program. High rates of OXA-48-producers in 2009 seemed to be related to clonal spread. This gene seems to disseminate via plasmid or genetic element with no boundaries among Enterobacteriaceae species.