

O142

1-hour Oral Session

Epidemiology of carbapenemases

Multidrug-resistant and carbapenem-resistant *Klebsiella pneumoniae* in Saint-Petersburg region in Russia

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Objective:

The aim of the present study was to reveal the rate of MDR and carbapenem resistance of *K. pneumoniae* in two neighboring regions of Russia.

Materials and methods:

Identification of *K. pneumoniae*, isolated from different samples of in-patients from hospitals of Saint-Petersburg and Leningrad region, was performed with Maldi Biotyper (Bruker Daltonics, USA). Resistance to antibiotics was screened with disc diffusion method, in MDR isolates was studied with Microscan plates (Microscan Walk-Away System, USA). The genes of resistance to carbapenems (GES-1 to GES-9, GES-11, OXA-48-like, VEB-1 to VEB-6, PER-1, PER-3, IMP, VIM, KPC-1 to KPC-5, NDM-1, BIC-1, SPM-1, AIM-1, GIM-1, SIM-1, DIM-1) were studied by PCR. All genes encoding carbapenemases, detected by PCR, were sequenced with ABI Prism 3130 (Applied Biosystem, USA)

Results:

1367 consecutive strains of *K. pneumoniae* were isolated from different samples (blood, postoperative wounds, bronchoalveolar-lavage fluid, peritoneal fluid, sputum, urine etc.) from in-patients from 7 hospitals in Saint-Petersburg and 2 hospitals of Leningrad region. Multi-drug resistant were 956 (69.9%) isolates. The rate of multi-drug resistance in strains from Saint-Petersburg hospitals was 73.4%, from Leningrad region- 44.1%. MDR strains were commonly resistant to inhibitor-protected penicillins, 3rd generation cephalosporins, aminoglycosides and fluoroquinolones. Resistant to carbapenems were 21 (1.5%) isolates. All of them were attributed to 3 hospitals in Saint-Petersburg. All carbapenem-resistant strains of *K. pneumoniae* were MDR. NDM-1 gene was present in the majority carbapenem resistant *K. pneumoniae* strains.

Conclusions:

1. Multidrug resistance was revealed in 2/3 of *K. pneumoniae* strains isolated from samples of in-patients in Saint-Petersburg and Leningrad region.
2. The rate of multidrug resistance in Saint-Petersburg was higher than in Leningrad region.
3. Carbapenem-resistant strains were detected in Saint-Petersburg. All isolates from the neighboring Leningrad region were susceptible to carbapenems.
4. All carbapenem-resistant strains of *K. pneumoniae* were multidrug resistant.
5. NDM-1 gene dominated in carbapenem resistant strains of *K. pneumoniae*.