27th ECCMID
Vienna, Austria
22 – 25 April 2017
The congress of ESCMID

Session: P020 Carbapenemases - here, there and everywhere

Category: 3b. Resistance surveillance & epidemiology: Gram-negatives

22 April 2017, 15:30 - 16:30
P0415

Evaluation of carbapenemase-producing Enterobacteriaceae isolates from blood culture in haematological patients

Anna Korobova*[1], Svetlana Khrulnova[1], Anastasia Fedorova (Mironova)[1], Irina Frolova[1], Galina Klyasova[1]

[1]*National Research Center for Haematology*

Background: The number of reported multidrug-resistant Gram negative bacteria including carbapenemase producing *Enterobacteriaceae* (CPE) has increased worldwide. The aim of the study was to evaluate the detection of CPE among isolates with reduced carbapenem susceptibility by real-time PCR.

Material/methods: Minimum inhibitory concentration (MIC) of meropenem for all isolates were determined by broth microdilution method. Interpretation was performed by using EUCAST clinical breakpoints, non-susceptible to meropenem isolates had MIC of meropenem ≥ 4 mg/l. The detection of carbapenemase genes was performed for *Enterobacteriaceae* isolates with reduced carbapenem susceptibility when the MIC of meropenem was found to be above the EUCAST epidemiological cut-off (ECOFF) value (>0.12 mg/l). Genes of carbapenemases OXA-48-like, KPC, VIM, IMP and NDM types were detected by real-time PCR.

Results: A total of 95 *Enterobacteriaceae* isolates with reduced carbapenem susceptibility (56 (59%) - *Klebsiella pneumoniae*, 18 (19%) - *Escherichia coli*, 14 (15%) - *Enterobacter* spp., 7 (7%) – other *Enterobacteriaceae*) from blood culture were processed. The MIC of meropenem was ≥ 4 mg/l in 15 (16%) of these isolates. CPE was detected in 23 (24%) from 95 isolates. Distribution of carbapenemases in CPE (n=23) was as follows: OXA-48 (n=21), OXA-48+VIM (n=1), KPC (n=1). The results of CPE depending on the MIC of meropenem are presented in Table.

Conclusions: The MIC of meropenem was found to be below the clinical breakpoint in 12 (52%) of 23 CPE. Thus screening for *Enterobacteriaceae* isolates with MICs of carbapenems above EUCAST ECOFF value and subsequent detection genes of carbapenemases should be necessary for epidemiological surveillance.

Table. Detection of carbapenemase genes according to the MIC of meropenem value

MIC of meropenem, mg/l	No of strains	CPE, n(%)
≥ 4	15	11 (73%)
0.125 - 2	80	12 (15%)