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Abstract (publication only)

First detected outbreaks of carbapenemase-producing *Klebsiella pneumoniae* in the Czech Republic in 2011

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Objectives: In the Czech Republic, prevalence of carbapenemase-producing Enterobacteriaceae (CPE) seems to be low, restricted only in few cases in the last years. Here, we describe molecular typing of carbapenemase-producing *Klebsiella pneumoniae* isolated in the Czech Republic in 2011. **Methods:** A total of 15 carbapenem-non-susceptible *K.pneumoniae* isolates were examined. MICs of 10 antimicrobials were determined by broth microdilution method. In all isolates, carbapenemase production was tested by the MALDI-TOF MS meropenem hydrolysis assay, followed by the inhibitor-based phenotypic detection of carbapenemases by using phenylboronic acid and EDTA as carbapenemase inhibitors. The presence of carbapenemase genes was identified by PCR and amplicon sequencing. The environments of bla genes were examined by PCR mapping and sequencing. All isolates were tested by multilocus sequence typing (MLST), conjugation and transformation experiments. The plasmids were typed by PCR-based plasmid replicon typing. Localization of bla genes was studied by the S1 nuclease method followed by hybridization with specific probes. **Results:** Five VIM-1-producing isolates belonging to the ST11 and one VIM-4-producing isolate to a novel ST1029 have been detected. blaVIM-1 and blaVIM-4 as a part of class 1 integron were chromosomally located or carried by a plasmid belonging to A/C replicon type (blaVIM-4). KPC-3-producing isolates of ST512 causing an outbreak were recovered from 6 patients. Three more isolates producing KPC-2 enzyme belonged to ST258. Both blaKPC genes were part of Tn4401a transposon carried out on plasmid of the pKpQIL type. The isolates were resistant to all antibiotics tested except colistin and/or gentamicin in some strains. Four strains were recovered from patients repatriated to the Czech Republic from Greece and Italy. **Conclusion:** Carbapenemase-producing enterobacteria seem to be uncommon in the Czech Republic. In 2011, first two outbreaks and a few cases of VIM- and KPC-producing *K. pneumoniae* were reported here. *K. pneumoniae* species represented the only member of the Enterobacteriaceae family producing carbapenemases in this year in the Czech Republic. This work was supported by NT11032-6/2010 and CZ.1.07/2.3.00/30.0022 grants and by the Charles University Research Fund (project number P36).