O096

2-hour Oral Session

Trends in antimicrobial resistance

National multicentric survey of carbapenemase-producing Enterobacteriaceae in Belgium in 2014

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Objectives

Carbapenemase-producing Enterobacteriaceae (CPE) isolates are spreading worldwide and represent a serious threat for global public health. We report here the situation and update the evolution of the epidemiology of CPE in Belgium.

Methods

All clinical Enterobacteriaceae isolates referred between January 2014 and August 2014 by Belgian laboratories to the National Reference Center for suspicion of CPE were tested for imipenem hydrolysis by Carba NP test and for antimicrobial susceptibility by disk diffusion and by broth microdilution using Sensititre® panels according to CLSI guidelines. Isolates displaying positive NP result and/or susceptibility profile suggestive of CPE were tested for the presence of carbapenemase encoding genes by multiplex PCR targeting *bla*$_{VIM, IMP, NDM, KPC}$ and *bla*$_{OXA-48}$. Estimated incidence rates of clinical CPE (screening samples excluded) were calculated based on institutional data obtained for 11 hospitals participating in the EuSCAPE network structured survey (EuSCAPE NSS).

Results

Of the 556 Enterobacteriaceae isolates, 316 (57%) collected from 52 laboratories were confirmed as CPE and mostly included *K. pneumoniae* (n=183), *E. cloacae* (n=42), *E. coli* (n=36), *C. freundii* (n=25) and other miscellaneous species (n=30). Carbapenemase types included OXA-48 (n=198), KPC (n=48), NDM (n=41), VIM (n=24) while 6 isolates (all from one single centre) produced a new class D beta-lactamase (OXA-427) with putative carbapenemase activity and distantly related to OXA-48 (26% DNA homology). One isolate coproduced OXA-48 and KPC. Overall, 46% and 10% of the CPE were susceptible to meropenem (MIC <1 mg/L) and to ertapenem (MIC <0.5 mg/L) respectively according to CLSI criteria. 33 CPE local clusters were identified (>1 case of the same CPE type) and 19 laboratories reported two or more types of carbapenemase enzymes. For the 11 hospitals participating in the EuSCAPE NSS, 79 CPE cases were detected from clinical samples resulting in an overall extrapolated mean incidence rate of 3.55 cases (range 0 to 11.27) per 10000 admissions.

Conclusions

Our data showed an increasing number of CPE detected by Belgian laboratories in 2014 (estimated +30% compared to the same 8-month period in 2013) with OXA-48 (63% of all CPE) by far remaining the predominant carbapenemase. The rising incidence of clinical CPE isolates in EuSCAPE NSS participating hospitals (mean incidence rate nearly doubled in 2014 compared to 2013) together with the higher proportion of laboratories reporting more than one types of carbapenemase suggest their wider diffusion in Belgian hospitals.