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P1084 The epidemiology of non-carbapenemase-producing carbapenem-resistant Enterobacteriaceae (CRE non-CP)

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Background: The epidemiology of carbapenem-resistant Enterobacteriaceae (CRE) had evolved dramatically. Initially, a global pandemia of clonal *bla*$_{KPC}$-producing strains, were associated with the vast majority of CRE new acquisitions. However, other clones producing *bla*$_{KPC}$, other strains producing other carbapenemases (e.g., *bla*$_{NDM}$), and other CRE strains with no carbapenemases detected (i.e., CRE non-CP), were soon starting to emerge. While the epidemiology of *bla*$_{KPC}$-producing CRE was extensively investigated, the epidemiological features of CRE non-CP acquisitions is largely undetermined.

Materials/methods: A case series cohort study was conducted at Assaf Harofeh Medical Center, Israel (2014-2016). CRE was determined according established definition, set to a minimal inhibitory concentration (MIC) to meropenem threshold of 2 µg/mL or more. Infection vs. asymptomatic colonization, and the exact infectious syndrome, were determined according to established criteria. Risk factors and outcomes were queried by logistic and Cox regression.

Results: 111 patients with new CRE non-CP acquisition were enrolled: 91 (82%) *Klebsiella pneumoniae*, 17 (15%) *Escherichia coli*, and 4 (3%) *Enterobacter*. The median MIC to meropenem was 4 µg/mL (range 2-16). Two of the patients were children, and 82 (74%) were elderly (>65 years). The mean Charlson's combined condition score was 7±3, and 102 (92%) were recently (3 months) exposed to antibiotics. In 105 of the patients (96%), no signs of active infections were present, and the CRE non-CP rectal isolation represented asymptomatic colonization. Of the asymptomatic carriers, 49 (47%) had died in the following 3 months, and among survivors, 36 (55%) experienced deterioration in their baseline functional status and 40 (62%) of the patients who were admitted from home, were discharged to long-term care institutions. In multivariable analysis, independent predictors for 90-days mortality among asymptomatic carriers were advance age (p=0.001), low Charlson's survival probability (p=0.013), and impaired cognition in baseline [OR=4.9 (1.3-18), p=0.02].

Conclusions: In opposite to previous recent reports, in this controlled case-series analysis, CRE non-CP acquisition was associated with devastating outcomes, even among asymptomatic carriers. Detailed molecular analyses (based on whole genome sequencing), and matched case-case-control analyses, will further contribute to tailor the prevention efforts associated with CRE non-CP acquisition, which poses a major therapeutic and infection-control challenge.