12th International Meeting on Microbial Epidemiological Markers (IMMEM XII)
Dubrovnik, Croatia
18–21 September 2019

128 A sentinel testing survey of plasmid-mediated (transferable) colistin resistance among Enterobacteriaceae in tertiary-care hospital.

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Background: Currently, colistin is used as a last line option to treat severe infection caused by multidrug-resistant gram-negative pathogens in hospitalised patients. The emergence of the plasmid-mediated (self-transferable) colistin resistance in livestock and humans is now a public health topic of the utmost importance because its spread could lead to outbreaks of virtually untreatable infections. We aimed to perform a sentinel testing survey to gather data on the prevalence and/or spread of *Enterobacteriaceae* carrying *mcr*-mediated colistin resistance.

Materials/methods: Between June and November 2018, rectal swabs or faecal samples from patients hospitalized in Motol University Hospital, Prague, Czech Republic were enriched in 5ml *Enterobacteriaceae* enrichment broth (Mossel) overnight and the enriched cultures were tested for the presence of *mcr-1 to 8* genes by multiplex qPCR assays. The enriched cultures were also inoculated onto selective agar Brilliance UTI Clarity agar (Oxoid) supplemented with colistin (2.0 mg/L). Bacterial colonies of *Enterobacteriaceae* and *Pseudomonas spp.* were retested for the presence of *mcr*-1 to 8 genes. Intrinsically resistant species were excluded.

Results: In a six-month period, 1,016 samples were investigated. Using multiplex qPCR assays, the enrichment broth proved positive in three cases (0.3%) and subsequent Sanger sequencing confirmed the presence of the *mcr-1* gene. Cultures on selective agar revealed positivity on *Enterobacteriaceae* and/or *Pseudomonas* sp. in 272 (26.8%) cases and positivity on intrinsically resistant species in 134 (13.2%) cases. Two isolates (*E. coli*), successfully cultured from two of three *mcr-1* positive enriched cultures, were also positive for the presence of *mcr-1* gene by qPCR and Sanger sequencing.

Conclusions: To the best of our knowledge, this is the first study on the prevalence of *mcr-1* to *8* in tertiary-care hospital settings in the Czech Republic. We identified the first occurrence of *mcr-1*-mediated colistin resistance in three Czech patients. The *mcr*-gene carriage rate in hospitalized patients was low compared to the carriage of intrinsically colistin resistant isolates and isolates with acquired mechanism of colistin resistance.

Acknowledgment:

Supported by Ministry of Health of the Czech Republic, grant nr. NV18-09-00254.

Number of gram-negative isolates grown on selective media with colistin (2 mg/L)			
	Swabs (n=726)	Stools (n=290)	Total (n=1016)
Escherichia coli	26	10	36
Klebsiella sp.	44	27	71
Enterobacter sp.	26	3	29
Citrobacter sp.	17	4	21
Pseudomonas sp.	57	43	100
Other (*Acinetobacter sp., Aeromonas sp., Salmonella sp., Stenotrophomonas sp.*)	9	6	15
Intrisically resistant species (*Proteus sp., Providencia sp., Morganella sp., Serratia sp., Hafnia sp.*)	79	55	134
Culture negative samples	205	44	249

Table 1: Owerview of culture results. Culture results for G+ bacterial species are not shown.