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O0960 Carbapenem- and pan-aminoglycoside resistant Enterobacteriaceae from hospitalized patients, Sao Tome and Principe

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Background: Multidrug resistance (MDR) in Gram negatives is increasingly reported nowadays. Worringly, a series of plasmid-borne determinants conferring resistance to the last-resort antibiotics carbapenems, aminoglycosides, and colistin may be associated in some given isolates. Very few epidemiological data are available regarding the occurrence of those acquired resistance determinants in African countries, and no data at all in some countries such as Sao Tome and Principe. We therefore initiated a prospective study in the unique hospital of that country in order to evaluate the occurrence of MDR bacteria in that country, and identify the corresponding mechanisms of resistance.

Materials/methods: Rectal swabs were collected from hospitalized patients (children and adults) during a one-week screening period, March 2017. After an overnight pre-culture in broth, samples were screened for either pan-aminoglycoside-, carbapenem-, or polymyxin resistant Enterobacteriaceae using the respective selective media SuperAminoglycoside, SuperCarba, and SuperPolymyxin. PCR experiments were further performed using primers specific for corresponding resistance genes. Genotyping was performed by pulsed-field gel electrophoresis.

Results: A total of 35 samples were collected among which 27 carbapenemase producers were identified, all producing OXA-181, including 23 *Escherichia coli* (representing three different clonal lineages) and 4 *Klebsiella pneumoniae* (all clonally-unrelated). Seven OXA-181-producing *E. coli* isolates corresponding to a single clone co-produced the 16S rRNA methylase RmtB conferring high-level of resistance to all aminoglycosides. A single *K. pneumoniae* isolate produced RmtB. Most of those isolates (90%) were additionally producing the CTX-M-15 extended-spectrum ß-lactamase. Finally, only a single isolate was found to exhibit acquired resistance to colistin, being an *E. coli* strain exhibiting a wild-type ß-lactam and aminoglycoside susceptible phenotype, but producing the plasmid-encoded MCR-1 determinant.

Conclusions: We report here a very high rate of patients colonized by MDR Enterobacteriaceae, including producers of the ultimate antibiotic resistance mechanisms, namely the OXA-181 carbapenemase, the 16S rRNA methylase RmtB, and the phosphoethanolamine transferase MCR-1. Also of note is the wide dissemination of OXA-181 producers, a phenomenon recently observed in Angola, another Portuguese-speaking African country. Such high rate of colonization by MDR bacteria in a low-income country with limited access to antibiotics, is particularly worrysome.