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P1306 Hypervirulent carbapenemase producer *Klebsiella pneumoniae* in the Arabian Peninsula

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Background: Reports on hypervirulent carbapenem-resistant *Klebsiella pneumoniae* (hvCRKP) have been emerging worldwide. We studied the presence of hypervirulent strains among CRKP isolated in five countries of the Arabian Peninsula.

Materials/methods: Screening for hypermucoviscosity of 1073 independent CRKP isolates recovered in 2011-2017 in Bahrain (n=20), Kuwait (n=98), Saudi Arabia (n=159), Oman (n=60) and the United Arab Emirates (UAE) (n=736) was done by string test. Positive isolates were PCR screened for the presence of *rmpA/A2* and *iucA*. The genetic relatedness, virulence and resistance gene content of hypermucoviscous and *rmpA/A2* positive strains was established by whole genome sequencing. Antibiotic susceptibilty was tested by broth microdilution. The virulence was *in vivo* tested in the *Galleria mellonella* model. Patients' clinical data and outcome were collected.

Results: Sequence and capsular type, major virulence gene content, carbapenemase type and clinical data of the five isolates identified as hypermucoviscous/hypervirulent among the screened isolates (5/1073, 0.47%) is shown in the Table.

StrainHospitalDiagnosisOutcomeMLSTDeduced capsular locusMajor virulence genesCarbapenemaseLogLD50 72h post infection of *G. mellonella*ABC167UAE-AVAPDiedST412KL57*rmpA+A2, iucA, iroN*OXA-485.709±0.02ABC509UAE-BPneumoniaRecoveredST23KL1*rmpA+A2, iucA, iroN, fyuA*NDM-15.921±0.08KW150KW-AunkownunkownST383KL30*rmpA+A2, iucA*NDM-1; OXA-484.656±0.04KW161KW-BBSIDiedST2096KL64*rmpA+A2, iucA, fyuA*OXA-2324.612±0.08SA56/2SA-CVAPRecoveredST709KL9*rmpA2, iucA*OXA-486.504±0.05

The five isolates were unrelated, and all of them produced carbapenemase(s). They were resistant to all beta-lactam antibiotics, including carbapenems, and were variably resistant to aminoglycosides, ciprofloxacin, co-trimoxazole, colistin and tigecycline. Although only one of them belonged to the classical hvKP ST23-K1 clone, the strains carrying both *rmpA* and *rmpA2* showed a virulent behaviour comparable to NTUH-K2044 *K. pneumoniae* (logLD50=5.781±0.16). Three of the patients, whose detailed clinical data were available to us, had severe underlying conditions. In two of them death was directly attributable to the hvCRKP infection.

Conclusions: Our results show the polyclonal emergence of hvCRKP producing different carbapenemases in the Arabian Peninsula. Further monitoring is needed to control the spread of these highly virulent and resistant organisms in the region.