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**Phenotypic and genotypic typing of *Burkholderia cepacia* complex isolated from non-cystic fibrosis patients in two governmental secondary hospitals in Kuwait**

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**Background:** *Burkholderia cepacia* complex (Bcc) is a group of opportunistic pathogens comprising of at least 20 closely related species that are phenotypically similar yet genetically distinct. Bcc is prevalent in nature and manmade environments due to its metabolic capacity. Lately, there has been a rise in the life-threatening sporadic cases of infections caused by Bcc among ICU patients in Kuwaiti hospitals. The focus on Bcc species in this study is driven by their pathological significance and the lack of precise reports concerning their prevalence in Kuwait. This is the first study performed to characterize the Bcc strains in Kuwait

**Material/methods:** A total of eight isolates within six months were collected from patients residing in Mubarak Al-Kabeer Hospital and Amiri hospital with no history of cystic fibrosis from different sites of infection. Phenotypic identification was performed using VITEK® 2 compact system and API20NE kit. The samples were tested for antimicrobial susceptibility using E-Test strips to determine the MICs of antibiotics recommended by CLSI 2016 guidelines. Genotypic identification methods including PCR for *recA* gene, PCR-RFLP for *recA*, Pulsed-field Gel Electrophoresis (PFGE) and Multi-locus sequence typing (MLST) were applied.

**Results:** All samples were identified as Bcc. All 8 isolates produced a PCR product of 890 bp Bcc-specific *recA* gene. Three different patterns were observed by PCR-RFLP for *recA* including *B. cenocepacia* (genomovar IIIA) [n=6], *B. cepacia* (genomovar I) [n=2] and *B. multivorans* (genomovar II) [n=1]. Results of PFGE using *SpeI* restriction endonuclease illustrated the genomic diversity of the isolates. MLST demonstrated different sequence types (ST). Interpretation of MIC values showed all

isolates were resistant to at least one group of antibiotics: ceftazidime (n=2), meropenem (n=3), minocycline (n=7), levofloxacin (n=3), and chloramphenicol (n=8). One isolate was resistant to all antibiotics tested.

**Conclusions:** Since Bcc is resistant to many antibiotics used in the ICUs, the threat of epidemics and pseudo-epidemics with this group of nosocomial pathogens has emerged in the Middle East even where cystic fibrosis is not common. Our results demonstrated the diversity of Bcc strains in terms of their genotypes and resistance patterns. ST306 *B. cenocepacia* IIIa was the most prevalent type isolated from blood, of which; one isolate was pan-resistant and ultimately resulted in sepsis and death of a patient.