

### Stability of the dominant Methicillin-resistant *Staphylococcus aureus* clones in Kuwait hospitals in 2016–2017



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**Introduction:** MRSA strains isolated in healthcare facilities differ in their antibiotic resistance, genetic backgrounds, and virulence determinants. Knowledge of the local clonal composition of MRSA strains is important for patients' management, and for designing effective control and eradication methods. This study investigated MRSA strains isolated in Kuwait public hospitals during 2016–2017 for antibiotic resistance, genetic backgrounds and carriage of Panton Valentine leucocidin (PVL) genes.

**Methods:** In total, 3801 MRSA isolated from different clinical samples in 2016 (N = 2305) and 2017 (N = 1496) in 13 hospitals were tested for antibiotic susceptibility and typed using Staphylococcal chromosome cassette mec (SCCmec) typing, Spa typing and DNA microarray for clonal composition and carriage of PVL genes.

**Results:** The isolates were susceptible to vancomycin (MIC:  $\leq 2$  mg/L), linezolid and rifampicin. The isolates (2016; 2017) were resistant to fusidic acid (51.0%; 55%), kanamycin (42.0%; 41.0%), tetracycline (36.0%; 39.0%), trimethoprim (37.0%; 35%), erythromycin (40.0%; 33%), clindamycin (13.0%; 16%), gentamicin (33%; 32%), chloramphenicol (13%; 16%) and high level mupirocin (4%; 25%). Genes for PVL was detected in 31% and 21% of the isolates in 2016 and 2017 respectively. SCCmec types IV (50%; 45%), type V (30%; 29%), type III (13%; 11.7%) and type VI (7.0%; 11.3%) were detected in 2016 and 2017 respectively. There were 22 clonal complexes (CC) and 273 spa types in 2016 and 24 CC and 263 spa types in 2017. The dominant genotypes (2016; 2017) were CC5-MRSA-V-t688 (10.4% VS 12.6%), CC6-MRSA-IV-t304 (9.1%; 8.9%), CC239-MRSA-III-t860 (8.2% 8.4%), CC1-MRSA-IV- t127 (6.5%; 6.4%), CC5-MRSA-IV-t311 (5.3%; 4.9%), CC80-MRSA-IV- t044 (5.7%; 4.0%), CC22-MRSA-IV- t223 (4.0%; 3.7%), CC5-MRSA-IV-t002 ((4.4; 3.2%), CC97-MRSA-V- t267 (2.8%; 2.8%) and CC30-MRSA-IV-t019 (2.5%; 2.3%).

**Conclusion:** The MRSA strains belonged to diverse genetic backgrounds with the dominant clones being stably maintained over the study period suggesting their ongoing transmission in Kuwait hospitals.

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### The Subtle Nature of Brucellosis: A Case series of Unique Clinical Presentations



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Brucellosis remains the commonest zoonotic disease worldwide with more than 500,000 new cases annually [1]. Brucellosis is an important public health problem in the Mediterranean countries, especially in the Arabian Peninsula. Furthermore, because of different symptoms and clinical findings, the disease could mimic several other diseases. Focal infection occurs in about 30% of cases with osteoarticular involvement being the most common presentation [2,3]. Other systemic involvement rarely exceeds 7% of total cases [2,3]. Therefore, we elected six cases of extremely rare presentation: a case of primary involvement of peritoneum causing ascites, two cases of catamenial fever with possible endometrial involvement, a case of pancytopenia, a case

of neurobrucellosis involving the spinal cord and never roots and a case of splenic infarction.

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### Carbapenem Resistant Gram Negative Bacteremia – epidemiology, clinical profile and outcome from Rashid Hospital, Dubai



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**Background:** Increased prevalence of infection due to Carbapenem Resistant Enterobacteriaceae (CRE) has been reported globally, can lead to serious nosocomial infection and are related with increased mortality rate (ranged from 44% - 70%); for bacteremia 50%.

The purpose of this study was to see the epidemiological, clinical profiles, and associated mortalities in patients with carbapenem resistant gram negative bacteremia.

**Methodology:** All positive blood cultures with carbapenem resistant gram negative bacteria were selected from Sep 2015 – Sep 2017. Further analyzed on VITEK 2 for species identification and antibiotic susceptibility, and PCR for carbapenem resistant genes. Medical records were used for clinical information.

**Results:** 523 cultures were positive for gram negative bacteria and among them 72 (14%) were carbapenem resistant.

*Klebsiella pneumoniae* was the dominant specie found in 51%, (NDM 11, OXA48 9, NDM+OXA48 7, PCR not done in 10 cases) followed by 25% *Pseudomonas*.

Meropenem mic ranged from >1 to >16 (65, 90% were having mic of more than 16).

Most common site of infection was chest 40 (56%) followed by urine 16 (22%) and skin and soft tissue infections 14 (19%).

In prior antibiotic exposure during 3 months, carbapenem and tazobactam piperacillin were the most commonly used 54 (75%) each, followed by cephalosporins and fluorquinolone 25 (35%) each.

Cardiovascular disease and cva had the same share 46 (64%) in the comorbidities, followed by diabetes mellitus 32 (44%) and chronic renal disease 21 (29%).

40 (56%) had in-hospital mortality; 26 were within 30 days of positive culture. 81% of survivors received combination therapy versus 62% of non-survivors.

**Conclusion:** This study showed the intensity of carbapenem resistant gram negative bacteria in our institute and provided us the platform to strengthen infection control program, judicious use of antimicrobial and to develop local guidelines based on hospital antibiogram aligned with international practices.

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