

reported in Riyadh region (50.36%), and minority was in Jazan region (0.12%). The generation of infection was determined from three main sources; Primary infection was 24.16% (camel contact and/or consumption of their raw milk), Secondary infection was 38.34% (hospital acquired 92.16% and community acquired 13.48%) and un-identified source 37.5% of all cases.

MERS infection caused 368 death among 829 cases (case fatality rate CFR = 44.4%) for all the period. The mortality rate according to the source of infection was; un-identified source (44%), secondary infection (32.6%, including 97.5% hospital acquired), and primary infection (23.4%).

**Conclusion:** Incident and mortality rates were found significantly decreased from 2015 to 2017. Age group and source of infection demonstrated high risk population. Identification of MERS epidemiological characteristics support the control plan and preventive measures for improving public health impact in Saudi Arabia.

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### Descriptive Epidemiology, Clinical Characteristics and Outcomes for Middle East Respiratory Syndrome Coronavirus (MERS-CoV) Infected Patients in AlAin – Abu Dhabi Emirate



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**Introduction:** MERS-CoV was first identified in 2012 and highest incidence was in Saudi Arabia, followed by Republic of Korea and UAE. The majority of reported cases are males. Patients with comorbidities have higher mortality rate. The source of MERS-CoV infection is linked to camel exposure, nosocomial and human-to-human transmission. The clinical course of MERS-CoV infection can vary from asymptomatic disease to septic shock with multi-organ failure (MOF). We studied the clinical characteristics and outcomes of MERS-CoV infected patients in AlAin – UAE.

**Method:** A retrospective multicenter chart review study for MERS-CoV confirmed cases by RT-PCR at Tawam and AlAin Hospitals over 6 years period (2012 – 7/ 2018). Epidemiological, demographic, clinical and laboratory data were collected and analyzed using descriptive analysis.

**Results:** A total of 58 individuals were identified, 41 males (70.6%) with median age of 43.5 years. The majority of patients were asymptomatic carriers or having mild symptoms (34 [58%]) and were previously healthy. The comorbid conditions were hypertension (18[31%]), diabetes mellitus (11[18.9%]), coronary artery disease (6[10.3%]), and chronic kidney disease (9 [15.5%]). The risk factors for MERS-CoV infection were camels contact (5[8.6%]), travel 5 [8.6%](Oman 2, Saudi Arabia 3) and human-to-human contact with MERS-CoV infected patient or nosocomial transmissions (40 [68.9%]). Common symptoms at presentation were fever 46.5%, myalgia 41.3%, respiratory symptoms 41.3%, and gastrointestinal symptoms 22.4%. The mean duration of viral shedding was 18.5 days. Twelve patients (20.6%) required ICU care for septic shock, acute respiratory failure and acute kidney injury (AKI) requiring renal replacement therapy. The mortality rate was 12% and only noted among ICU admitted cases.

**Conclusion:** In this study of MERS-CoV, human-to-human and nosocomial transmissions were more common than camel contact. In keeping with previous studies, most patients had mild symptoms, however, the mortality rate among adult ICU admissions was high (12%).

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### The yield of blood cultures performed at Tawam Hospital for all children from all department



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All blood cultures (BCs) were taken from January 2013 up to June 2013 for children from birth up to 15 years old at Tawam hospital. A retrospective cross-sectional descriptive analytic study was performed to them. One hundred seventy one (6%) were yielded from 3015 BCs. These organisms were classified into true bacteremia (62%) and false positive cultures (38%). The true bacteremia was compared with negative cultures by gender, age groups, fever, and the presenting condition of the child, oncology patient, immunodeficiency patient, and any child having indwelling catheter or other devices and any cardiovascular abnormality to evaluate the difference. Most of these risk factors had statistical significant of the difference except neonate and the presence of VP- shunt. The following organisms were yielded; from gram positive cocci (70% of all organisms) were coagulase –ve Staphylococcus (19% of BCs), Staphylococcus epidermidis (15% of BCs) and both Streptococcus pneumoniae and viridans (3.6% of BCs for both), from gram –ve rods (14% of BCs) were Klebsiella pneumoniae (5% of BCs) and Acinetobacter spp.(3.5% of BCs) and from non-bacteria organism was Candida spp. (6% of BCs).

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### Latent Tuberculosis Screening Using T-Spot-TB Test Among People Living With HIV: A Retrospective Study Of 190 Patients At A Tertiary Care Hospital In Dubai, UAE



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**Background:** It is estimated that one third of 33.3 million people living with HIV worldwide are infected with TB. Overall mortality is twofold higher for HIV/TB co-infected individuals compared to those with isolated HIV infection. Consequently, diagnosis of latent TB infection (LTBI) and provision of chemotherapy to those testing positive is strongly recommended. This article reviewed the epidemiology of LTBI among adult people living with HIV following up in a tertiary care center in Dubai, United Arab Emirates (UAE).

**Methods:** A retrospective study included all HIV-infected patients who were screened for LTBI using T-SPOT test at Rashid hospital, Dubai from January 2016 until December 2016, through medical records. Patient with active TB either during study period or in past were excluded.

**Results:** 209 patients with HIV were evaluated and 190 were included in analysis. 52(27%) were female and 138 (73%) were male. 140/190 (74%) of patients were UAE national, 24/190 (12%) were African and 15/190 were from other Arab countries. T-SPOT was reactive in 33/190 (17%) of cases, 155/190 (82%) were nonreactive and only 2/190 (1%) patients had an indeterminate result. There was no statistically significant association between low CD4+ T-cell count, viral load and T-SPOT reactivity. Over 70% of patients in both arms have suppressed HIV viral activity with viral load below 50 copies/ml. A CD4 cell count less 200 cells/mm<sup>3</sup> was observed in less than 30% of cases in each group, whereas over 30% of patients in each group had a CD4 cell count of more than 500 cells/mm<sup>3</sup>. Twenty one (68%) patients with reactive T-SPOT were offered preventive therapy.

**Conclusions:** Study showed high compliance with international recommendations regarding screening for LTBI in HIV infected patients. It showed over two third of patients received prophylactic therapy. As TB continues to be a major threat to HIV infected patients all efforts should be taken for prevention.

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### Inhibition of inflammatory responses in LPS/LTA-stimulated keratinocytes using magnetic nanosystems developed based on PBP10 peptide

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**Background and purpose:** Down-regulation of pro-inflammatory mediators and restoration of the physiological balance between pro- and anti-inflammatory factors, is an important strategy to modulate various inflammation-associated medical conditions, including skin and soft tissue infections (SSTIs). It was found that PBP10, a synthetic rhodamine B-conjugated peptide based on the PIP2-binding site of human plasma gelsolin, interacts specifically with LPS and LTA and limits microbial-induced inflammatory effects. Using the human keratinocytes cells stimulated by LPS and LTA as an in vitro model of bacterial infection, we examined the bactericidal and anti-inflammatory effects of nanosystems consisting of iron oxide-based magnetic nanoparticles with aminosilane (MNP@NH<sub>2</sub>) or gold shells (MNP@Au) functionalized by a set of PBP10 peptides and investigated the utility of MNPs as factors enhancing the biological activity of PBP10 peptides.

**Methodology:** Bactericidal activity and biocompatibility of PBP10-containing nanosystems was evaluated by killing assay method, MTT assay and hemolysis assay. Quantification of NO release, ROS formation and release of IL-8 by LPS/LTA-stimulated HaCaT cells was assessed using Griess assay, DCFH-DA-based fluorimetric assay and ELISA assay, respectively.

**Results and discussions:** Our results indicate that PBP10-containing nanosystems can kill both Gram-positive and Gram-negative bacteria and limit the production of inflammatory mediators, including NO, ROS and IL-8 in the response to heat-killed microbes or extracted bacterial cell wall components. The developed nanosystems are characterized by enhanced therapeutic efficacy, lower toxicity and improved hemocompatibility when compared to free peptides.

**Conclusions:** The augmentation of peptide bioactivity by MNPs suggest the possible application of MNP-based nanosystem in development of improved anti-infectious therapeutic agents with combined immunosuppressive functions that diminish the excessive inflammatory reaction of the host in the response to induction by bacterial-derived compounds.

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### Serological investigation of MERS-CoV in humans between 2011–2016, Jeddah, Saudi Arabia

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**Background:** The Middle East Respiratory Syndrome-Coronavirus (MERS-CoV) is a novel zoonotic virus emerged in 2012 in the Middle East. Accumulating body of evidence suggests that dromedaries are the main known reservoir hosts. Nonetheless, both Human-to-human and camel-to-human transmissions have been reported. So far, only 2,090 confirmed cases have been reported in 27 countries with a high mortality rate of 30–40%. However, prevalence of MERS-CoV in the general population is still not clear and epidemiological studies are limited especially in Saudi Arabia which is the most affected country. Therefore, our main goal in this study was to determine the sero-prevalence of MERS-CoV among healthy people in the western region of Saudi Arabia.

**Methodology:** A total of 7,462 archived serum samples collected between 2011 and 2016 from healthy blood donors in the western region of Saudi Arabia were screened by ELISA tests for the presence of MERS-CoV antibodies. All ELISA positive samples were tested for presence of neutralizing antibodies using MERS-CoV neutralization assay.

**Results:** The indirect ELISA results showed that the seroprevalence of MERS-CoV for the years 2011, 2012 and 2013 were 1.11% (1/90), 0.74% (10/1360) and 1.8% (18/999), respectively. Interestingly, testing samples from 2016 showed increased seroprevalence of 3.01% (151/5013).

The cumulative overall seroprevalence of MERS-CoV for all years was 2.41% (180/7,462). Interestingly, none of the positive samples showed any evidence of neutralizing antibodies.

**Conclusion:** Our data here showed that MERS-CoV or a closely related coronavirus might have been circulating before 2012 in Saudi Arabia. Data also suggest that there might be several cases that are undiagnosed or missed probably due to mild or asymptomatic infections which could result in the observed very low or undetectably neutralizing antibodies. Interestingly, we found that seroprevalence of MERS-CoV is increasing over the years underscoring the importance for continued active surveillance for MERS-CoV.

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