

Reverse transcription-polymerase chain reaction based assays to detect SARS-CoV-2 variant of concern omicron among international travelers arriving in Kuala Lumpur

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ABSTRACT

Introduction: Although whole genome sequencing (WGS) is the gold standard for genomic surveillance to detect SARS-CoV-2 variants, it is expensive and time-consuming to perform. Reverse transcription polymerase chain reaction (RT-PCR) based assays which detect mutations associated with SARS-CoV-2 variants of concern (VOC) are cost-effective alternatives to whole genome sequencing. In this study, we evaluated the Omicron detection using RT-PCR-based assays at the Kuala Lumpur International Airport among the international travelers during the November to December 2021 period. **Materials and Methods:** All SARS-CoV-2 samples originated from KLIA with cycle threshold (CT) <30 were subjected to RT-PCR-based assays to detect SARS-CoV-2 spike gene mutations. Subsequently, the detection of the mutations by RT-PCR was compared to VOC detection by WGS. **Results:** A total of 1764 COVID-19 positive samples were subjected to RT-PCR to detect SARS-CoV-2 variants based on spike protein mutations. Of these, 1264 samples were detected as presumptive Omicron cases with the first presumptive Omicron case detected on the 1st of December 2021. The detection of the first Omicron case and subsequent increase in the Omicron detection by RT-PCR corresponded well with data from WGS. The detection of Omicron cases using RT-PCR was significantly faster than the detection by WGS. **Conclusion:** The rapid detection of SARS-CoV-2 variants of concern using RT-PCR may have an important impact on local public health policies. In addition, the variant diversity of Omicron and non-Omicron detected among international travelers at Kuala Lumpur International Airport correlated with global diversity indicating the importance of travel hubs for SARS-CoV-2 genomic surveillance.

Keywords: COVID-19, SARS-CoV-2, VOC Omicron

Mortality rate and associated risk factors in hospitalised COVID-19 patients with kidney disease

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ABSTRACT

Introduction: COVID-19 still poses a high morbidity and mortality in chronic kidney disease. We aim to determine the risk factors for mortality amongst hospitalised COVID-19 patients with kidney disease. **Materials and Methods:** This is an observational cohort study involving all COVID-19 patients with kidney disease in the first quarter of 2021. Relevant data was extracted from the electronic medical records and statistical analysis was conducted using SPSS version 26. **Results:** Of 414 COVID-19 patients, 165 (39.9%) had kidney disease [25.5% end stage kidney disease (ESKD), 4.2% chronic kidney disease (CKD) and 70.3% acute kidney injury (AKI)]. 56 of them died, giving an inpatient mortality rate of 33.9% in patients with kidney disease compared to 17.1% from all COVID-19 admissions. ESKD had the highest mortality rate at 42.9% followed by AKI, 31% and CKD, 28.6% ($p=0.365$). Majority of patients with kidney disease who died, were older (66 ± 10.4 vs 54 ± 14.6 , $p<0.001$), male (78.6% vs 61.5%, $p=0.035$) and had category 5 infection (28.6% vs 19.3%; $p=0.009$). 66.1% were on mechanical ventilation while 51.8% were managed in the intensive care unit. Multiple logistic regression predicted older age, premorbid CKD & ESKD, raised peak serum sodium, admission category of illness 4 & 5, mechanical ventilation and unknown epidemiology link to increase mortality risk in patients with COVID-19 infection with kidney disease. **Conclusion:** COVID-19 mortality rate remains high amongst those with ESKD, CKD and AKI. Future studies should evaluate the incidence and outcome post vaccination.

Keywords: mortality, kidney, nephrology, COVID-19, morbidity