

## Editorial

## Lack of MERS-CoV Co-infection among Hospitalized COVID-19 Patients in Saudi Arabia

Kingdom of Saudi Arabia (KSA) is the only country with ongoing transmission of both lethal  $\beta$ -coronaviruses; Middle East Respiratory Syndrome-Corona Virus (MERS-CoV) and Severe Acute Respiratory Syndrome-Corona Virus-2 (SARS-CoV-2) that causes COVID-19. MERS-CoV, the most lethal of the three coronaviruses with 32% case fatality rate, first emerged in KSA 2012 and spread to 27 countries causing a global total of 2949 laboratory confirmed cases through March 2020. Three-fourth (74%) of these global totals of MERS-CoV cases are reported from KSA. KSA reported the first case of COVID-19 caused by the third lethal coronavirus SARS-CoV-2 on March 2, 2020, and by July 20, 2020, the cumulative number of cases exceeded quarter million with case fatality rate of about 1% (2601 deaths).

Barry et al. in this issue of the journal present the clinical characteristics of first case series of hospitalized COVID-19 patients admitted to one of the three MERS-CoV reference centers in KSA. This is also the first cohort data that reports on assessment of the co-occurrence of MERS-CoV among SARS-CoV-2 infected persons. Data is reported for 99 hospitalized COVID-19 patients who met the criteria for a suspected case of MERS-CoV in the largest academic hospital, King Saud University Medical City, through June 6, 2020. These 99 hospitalized COVID-19 patients constitute 16% of 632 positive SARS-CoV-2 tests among 6633 persons (positivity rate, 9%).

Cases were confirmed using real-time RT-PCR for SARS-CoV-2, and MERS-CoV by RT-PCR. All 99 patients tested negative for MERS-CoV PCR. The epidemiologic and clinical features of these patients are similar to MERS-CoV infection. The majority of these 99 hospitalized patients were male (66%), had a mean age of 44 years (range, 19–87), 25% were health care workers, and 53% had comorbid conditions. The clinical course and symptoms of these COVID-19 patients were consistent with previous reports. Late presentation with severe disease, an abnormal chest X-ray, lymphopenia, high inflammatory markers, and end organ damage were predictors death (mortality rate, 12%).

The lack of concurrent infections of MERS-CoV and SARS-CoV-2 may be due to several factors. First, the sample size in the current study is small but would have been sufficient to identify some MERS-CoV. The reported MERS-CoV positivity rates among suspected cases who met the KSA Ministry of Health MERS-CoV case

definition was 2–6% during the past 4 years. Second is the seasonality of MERS-CoV sero-prevalence as observed among camels, highest being in winter months. Third, the circulation of MERS-CoV in Saudi population is much lower than it was anticipated, and it is possible that MERS-CoV is on retreat as it had happened with the first lethal coronavirus SARS-CoV. Also, given the lack of evidence of widespread exposure of Saudi population to MERS-CoV, it is unlikely that MERS-CoV related acquired immunity may have protected some persons against the new corona virus, SARS-CoV-2. Data from larger cohorts of COVID-19 patients who meet the clinical criteria for MERS-CoV and observed through the winter months along with immunological studies would help inform questions on concurrence of infections with these two circulating coronaviruses. Once we know more about MERS-CoV and SARS-CoV-2 interactions, and if there are any, a review of existing MERS-CoV-2 case definitions may be warranted.

Despite the lack of evidence of coinfection of COVID-19 patients MERS-CoV in the early phase of COVID-19 pandemic, the similarities between the viruses and similarity in the natural history of diseases caused by the two viruses present additional challenges to attending physicians. Indeed, a major difference between MERS-CoV and SARS-CoV-2 is the relatively higher prevalence of asymptomatic infections associated with SARS-CoV-2 than MERS-CoV. However, given that majority of asymptomatic patients do not seek clinical care, this difference between MERS-CoV and SARS-CoV-2 may not be of significant help to clinicians in differentiating the two infections in a symptomatic patient.

For now, endemicity of both the two lethal coronaviruses in KSA underscores the need for continued co-monitoring among hospitalized patients with COVID-19 and MERS-CoV. Unlike with MERS-CoV, the escalating trends in COVID-19 is a source of immense uncertainty and unpredictability for the nation as a whole from various socio-economic perspectives, but the impact is most felt by the clinical service providers. Clarity on presence or absence of interaction between MERS-CoV and SARS-CoV-2 can usefully and favorably help boost the morale of the many clinical service providers. Discerning the trajectory of MERS-CoV in KSA would be a critical contribution to ease the burden on the nation's efforts to mitigate COVID-19.

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Shahul H. Ebrahim\*

College of Medicine, University of Sciences, Technique and Technology, Bamako, Mali  
\*Email: [ebrahimsh2@gmail.com](mailto:ebrahimsh2@gmail.com)

Given his role as an Associate Editor, Dr. Shahul H. Ebrahim had no involvement in the peer-review of this article and has no access to information regarding its peer-review. Full responsibility for the editorial process for this article was delegated to Dr. Ziad Memish.