Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Viral loads of SARS-CoV, MERS-CoV and SARS-CoV-2 in respiratory specimens: What have we learned?

Dear Editor,

There is a concern of the presence of asymptomatic patients with coronavirus infection such as the Middle East Respiratory Syndrome Coronavirus (MERS-CoV) [1]. The emergence of the SARS-CoV-2 (COVID-19) in Wuhan city, China had raised international concerns about the potential occurrence of a pandemic. Understanding the viral loads of SARS-CoV-2 is an important aspect to enhance the knowledge of the disease and understanding of the transmission mechanism. In a recent paper, Zou et al. described SARS-CoV-2 viral load in upper respiratory samples of infected patients [2]. These patients had peak viral loads about 3 days after onset of symptoms with a higher load in the nose than the throat, thus mimicking influenza [2]. In the SARS patients, viral loads peak occurred 10 days after symptom onset [3]. Those patients had higher viral loads later in the course of the disease in lower respiratory samples. Similarly, in the case of the Middle East Respiratory Syndrome Coronavirus (MERS-CoV), viral load peaked about the second day of hospitalization in the upper respiratory samples and about the sixth day in the lower respiratory samples [4]. These findings parallel the findings from SARS-CoV [3]. In addition, the peak upper respiratory tract RNA occurred on day 7–10 after onset in community cases [5].

There was a higher percentage of positive upper respiratory tract samples in MERS-CoV (47.6%) compared to the 38% in SARS-CoV [5]. However, these studies are not comparable as the reference point was either onset of symptoms for SARS or admission for MERS-CoV. Further studies showed that MERS-CoV RNA levels peaked during the first week after onset in the upper respiratory tract samples of patients who did not require supplemental oxygen compared to a peak viral load in the 2nd and 3rd week in those who required oxygen depending on lower respiratory tract samples [6].

Another difference is that in MERS-CoV, the viral RNA was detected in the nasopharyngeal-swab of 29% and in the throat-swab of 59% of patients [7] and this is in sharp contrast with the SARS-CoV-2 [2]. There was persistent viral load beyond 3 weeks in severe cases of MERS and SARS [7]. There is a need to study viral dynamics of SARS-CoV-2 in mild and severe cases and study the duration of shedding to further enhance our understanding of SARS-CoV-2. These studies will aid in the development of infection control and public health measures in order to decrease the transmission of the virus. In addition, such studies will further enhance our understanding of the severity of cases and possible contributing factors to severity of SARS-CoV-2.

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