

# COVID-19 and respiratory tract viral co-infections: Choosing the screening method

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**Keywords:** COVID-19, SARS-CoV-2, Diagnostic, Co-infection, Secondary infection

The new pandemic pathogen, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) or Coronavirus disease 2019 (COVID-19), causes a wide range of symptoms that differ from mild cold-like symptoms to pneumonia and death. This virus has been an international public health emergency since December, 2019 due to its high infectious rate. Beyond the pathogenesis of COVID-19, viral co-infections play a vital role in the occurrence and development of this pandemic by increasing the difficulties of diagnosis, treatment and even the disease symptoms and mortality. Regarding clinical presentation, transmission and coincidence this disease is very similar to Middle East respiratory syndrome (MERS), severe acute respiratory syndrome (SARS) and seasonal influenza which makes it difficult to accurately detect [1-3].

The COVID-19 detection and diagnostic methods are mainly divided into two groups, a laboratory-based (such as serological tests, and real-time reverse-transcriptase polymerase chain reaction (RT-PCR)) and lung computed tomography (CT) scan or chest radiography. Accuracy of these methods related to their sensitivity and specificity. Previous studies showed that only some of them had both sensitivity and specificity over 50% in detecting SARS-CoV-2 infection. Therefore, the use of appropriate diagnostic

methods with sufficient accuracy is of particular importance in screening COVID-19 [4-6].

Several reports indicate that viral interactions have some effect on the course of infectious diseases. Therefore, high co-infection rate might be due to the overlap between the emergence of COVID-19 and other respiratory viruses. This overlap emphasizes the importance of the COVID-19 screening methods, regardless of other positive results for other viruses in the initial trials [7].

Although co-infection with dual respiratory viruses is uncommon in adults, but there were cases have been reported. Previous study showed that influenza A virus was one of the common viral pathogens causing co-infection among patients with COVID-19 which may have caused initial false-negative results of RT-PCR for SARS-CoV-2 [8]. In a case report, co-infection of metapneumovirus and SARS-CoV-2 has been investigated [9]. Huang et al. reported a unique case of influenza B virus co-infection with SARS-CoV-2 in Taiwan [10]. Other viruses that can cause co-infection include: coronavirus, rhinovirus/enterovirus, respiratory syncytial virus (RSV), parainfluenza [11-13]. Therefore, it is necessary to limit the risk of secondary infections by other viruses that can cause false-negative results for SARS-CoV-2 on screening methods and increase the risk of

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Received: January, 03, 2021  
Accepted: January, 05, 2021



mortality rate in COVID-19 patients. Recognition of possible viruses causing co-infection among COVID-19 patients helps clinicians to choose appropriate screening method, proper management and therapeutic [7, 14].

### Author Contributions

All authors contributed equally to this manuscript, and approved the final version of manuscripts.

### Conflict of Interests

The authors declare that they have no conflicts of interest.

### Ethical declarations

Not applicable.

### Financial Support

None to be declared.

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