

Review Article

Asymptomatic coronavirus: A Boon or Bane?

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ABSTRACT:

The COVID-19 disease, emerged in December 2019, has spread rapidly, with new cases confirmed in multiple countries. Many efforts to contain the virus are ongoing, such as containment, individual measures of protection, the authorization of use of some antiviral drugs in some countries. Also, it has been known that symptomatic and asymptomatic people whom are infected by COVID-19 have the same contagiousness which expose a far greater portion of the population to virus and increase the late diagnosis and thereafter enhance COVID-19 mortality. Thereafter, it is fundamental to review our COVID-19 screening approach and enlarge COVID-19 testing to the general population by using rapid testing appliances such as rapid SARS-CoV-2 IgG-IgM combined antibody since another appliance more efficient will be performed.

Keywords Coronavirus, SARS-COV-2, Asymptomatic infection, Community spread.

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INTRODUCTION

Coronavirus disease 2019 (COVID-19) has developed into a pandemic, with small chains of transmission in many countries and large chains resulting in extensive spread in a few countries. The course of an epidemic is defined by a series of key factors, some of which are poorly understood at present for COVID-19. The basic reproduction number (R₀), which defines the mean number of secondary cases generated by one primary case when the population is largely susceptible to infection, determines the overall number of people who are likely to be infected, or

more precisely the area under the epidemic curve. For an epidemic to take hold, the value of R₀ must be greater than unity in value. A simple calculation gives the fraction likely to be infected without mitigation.¹

As an epidemic progress, the effective reproduction number (R) declines until it falls below unity in value when the epidemic peaks and then decays, either due to the exhaustion of people susceptible to infection or the impact of control measures. The speed of the initial spread of the epidemic, its doubling time, or the related serial interval (the mean time it takes for an infected person to pass on the infection to others), and

the likely duration of the epidemic are determined by factors such as the length of time from infection to when a person is infectious to others and the mean duration of infectiousness.²

The incubation period for COVID-19 is about 5–6 days.³ Combining this time with a similar length serial interval suggests there might be considerable pre-symptomatic infectiousness. Estimates suggest that about 80% of people with COVID-19 have mild or asymptomatic disease, 14% have severe disease, and 6% are critically ill, implying that symptom-based control is unlikely to be sufficient unless these cases are only lightly infectious. No vaccine or effective antiviral drug is likely to be available soon. At present for mitigation is voluntary plus mandated quarantine, stopping mass gatherings, closure of educational institutes or places of work where infection has been identified, and isolation of households, towns, or cities.⁴

It appears that most COVID-19 patients experience relatively mild symptoms and get over the illness in a week or two without treatment. However, many COVID-19 patients die suddenly although they were not feeling any shortness of breath for many days. This is because of a unique but misleading feature of COVID pneumonia, which is different from typical pneumonia. It is known as silent hypoxia, because of which patients may not complain of breathing problems for many days, even though their oxygen levels are low and their chest X-rays show diffuse pneumonia. It is called “silent” because of its insidious, hard-to-detect nature.⁵

Fever which is considered a prominent symptom in patients who are pauci-symptomatic, might not be an adequate screening as it can potentially miss travellers incubating the disease or travellers concealing fever during travel and contribute to the importation of the virus to the countries of destination. Therefore, travel restrictions to and from high risk areas and/or 14-day quarantine of people coming from high risk areas are recommended to prevent possible importation of COVID-19. Currently, RT-PCR is a reliable test in detecting both symptomatic and asymptomatic COVID-19. Lastly, in previous experience from other viral outbreaks, i.e., dengue virus and Ebola, fever screening especially at airport had a positive effect on partially blocking importation of cases. Kuan et al.⁶

TYPES

Medical experts have discovered that there are three types of silent spreaders of COVID-19 i.e. asymptomatic, pre-symptomatic/ pauci-symptomatic and very mildly symptomatic.

1. **Mildly symptomatic**-People who display very mild symptoms (like mild cough or fever) and feel a little down and out.
2. **Pre-symptomatic**-These people do not develop any symptoms for almost a week after contracting novel

coronavirus. They later display symptoms such as coughing, fever and exhaustion.

3. **Asymptomatic**-These are people who do not display any symptom at all while incubating the virus in their bodies. As a result, they end up transmitting the virus to a lot of people and it can fuel the pandemic in a scary manner.

Zou et al. reported that the viral load detected in asymptomatic patients was similar to that found in symptomatic patients; however, the viral loads from patients with severe diseases were higher than those in patients with mild-to-moderate presentations. Moreover, higher viral loads were detected in the nose than in the throat.⁷

Rapid testing antibody kits (SARS-CoV-2 IgG-IgM combined antibody), might help in detecting these asymptomatic cases in a faster and in a more cost effective manner rather than RT-PCR, which even though is the gold standard for coronavirus detection, but it takes a lot of time as well as it is expensive especially for a large population.

DISCUSSION

An asymptomatic laboratory-confirmed case is a person infected with COVID-19 who does not develop symptoms. Asymptomatic transmission refers to transmission of the virus from a person, who does not develop symptoms. There are few reports of laboratory-confirmed cases who are truly asymptomatic, and to date, there has been no documented asymptomatic transmission. This does not exclude the possibility that it may occur. Asymptomatic cases have been reported as part of contact tracing efforts in some countries.⁸

While reliable estimates of the reproduction number and the death risk associated with COVID-19 are crucially needed to guide public health policy, another key epidemiological parameter that could inform the intensity and range of social distancing strategies to combat COVID-19 is the asymptomatic proportion, which is broadly defined as the proportion of asymptomatic infections among all the infections of the disease. Indeed, the asymptomatic proportion is a useful quantity to gauge the true burden of the disease and better interpret estimates of the transmission potential. This proportion varies widely across infectious diseases, ranging from 8% for measles and 32% for norovirus infections up to 90–95% for polio. Most importantly, for measles and norovirus infections, it is well established that asymptomatic individuals are frequently able to transmit the virus to others. Currently, there is no clear evidence that COVID-19 asymptomatic persons can transmit SARS-CoV-2, but there is accumulating evidence indicating that a substantial fraction of SARS-CoV-2 infected individuals are asymptomatic.⁹

Data concerning the transmission of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) in asymptomatic and pauci-symptomatic patients are

lacking. Symptomatic and asymptomatic cases are equally contagious, which causes late diagnosis and far greater transmission of virus. A significant portion of COVID-19 patients may never show coronavirus symptoms at all — a key factor aiding the spread of the virus. As many as 25% of people infected with the new coronavirus remain asymptomatic. It is important, because individuals that may not have any symptoms that can contribute to transmission. Even if people do get sick, they may shed the virus up to 48 hours before they show symptoms. This helps explain how rapidly this virus continues to spread across the country, because asymptomatic transmitters are transmitting 48 hours before they become symptomatic. Scientists reviewed data on COVID-19 in China outside of Hubei province, and found that 12.6% of cases appeared to involve asymptomatic transmission.¹⁰

As pandemic progresses over time, suspected cases are examined and tested for the infection using laboratory diagnostic methods. Then, time-stamped counts of the test results stratified according to the presence or absence of symptoms at the time of testing are often reported in near real-time. Nevertheless, it is important to note that the estimation of the asymptomatic proportion needs to be handled carefully since real-time outbreak data are influenced by the phenomenon of right censoring.¹¹

These asymptomatic patients can spread the virus and may represent a population that can be easily neglected in pandemic prevention. Therefore, it is important to identify asymptomatic patients with COVID-19. Since these patients are asymptomatic, careful monitoring of the natural course of the disease and contact history may only identify them.¹² It definitely proves to be a burden to identify and screen asymptomatic patients, since they are spreading this infection at a rapid rate throughout the world.

CONCLUSION

The transmission potential by individuals with asymptomatic and pauci-symptomatic infection and the detection of SARSCoV-2 in contaminated environments create challenges in control and prevention for the disease. Further studies are needed to investigate the contribution of persons with asymptomatic or pauci-symptomatic SARS-CoV-2 infection and the relationship with transmission of the virus in the household, occupational, and community settings.

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