

## Clinical Features and Detection Methods of Covid-19 Asymptomatic Patients

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### ABSTRACT

*It needs find the patients and cut off its transmission routes to effectively control the novel coronavirus disease (COVID-19), while the COVID-19 asymptomatic patients bring a great challenge to control the epidemic. It is essential for controlling epidemic to effectively screen the asymptomatic COVID-19 patients, and a combination of comprehensive and rigorous epidemiological surveys and multiple detection methods can help identify asymptomatic COVID-19 patients.*

### Keywords

COVID-19, Asymptomatic, Clinical features, Detection methods.

### Introduction

Currently, COVID-19 is raging around the world. Finding patients with infectious diseases and cutting off transmission routes are important ways to control COVID-19 spread. However, the presence of COVID-19 asymptomatic patients brings great challenges to controlling the epidemic [1].

### Clinical features of COVID-19 asymptomatic patients

COVID-19 can be clinically divided into four types: mild, common, severe and critical cases. Mild cases show light clinical symptom, their imaging examination has no pneumonia manifestation. Common cases showed symptoms of respiratory system such as fever and pneumonia in imaging examination. Severe cases are consistent with respiratory distress, hypoxia ( $SpO_2 \leq 93\%$ ) and abnormal blood gas analysis ( $PaO_2 < 60\text{mmHg}$ ;  $PaCO_2 > 50\text{mmHg}$ ). Critical cases are consistent with respiratory failure requiring mechanical ventilation, shock, and other organ failure requiring ICU monitoring treatment. The prognosis of mild and common

cases is good, but severe cases, especially critical cases, often have systemic organic dysfunction, long hospital stay, poor recovery.

In a study, 55 asymptomatic COVID-19 patients were admitted to hospital, they asymptomatic in hospital, but occurred following changes in conditions after 1 to 7 days after hospitalization: 14 cases developed into mild pneumonia, 39 cases common pneumonia and 2 cases severe pneumonia, in which 2 cases of severe pneumonia were all women over 60. When their family members were early admitted to hospital after COVID-19 infection, and they showed normal chest CT in first day after hospitalization, while occurred mild cough and low fever after 5 days and associated with hypoxia and restlessness, and showed pneumonia after CT examination and gradually developed into severe pneumonia [2]. Another study has shown that 3.6% of asymptomatic COVID-19 patients may deteriorate, and only a few patients developed typical symptoms at 3 to 5 days during hospitalization [3]. In the process of daily prevention and control, people often focus on those who have symptoms of fatigue and dry cough, especially fever, but other family members who are asymptomatic are often ignored. During the development of the disease, a large number of asymptomatic

cases are actually the source of COVID-19 infection, but are regarded as healthy people before being screened out [4].

### Detection of COVID-19 asymptomatic patients

Current studies have shown that age is significantly associated with symptoms, and asymptomatic cases are more common in middle-aged people. According to the past case reports, we should emphasize the importance of systematic epidemiological investigations and the combination of different detection methods to control COVID-19. Family cluster case reports emphasize the importance of rigorous epidemiological investigations. Lu et al. [5] reported the first patient in this family cluster had urticaria but had no respiratory symptoms or fever. The rash gradually subsided after hospital dermatology treatment. When the urticaria patient came to the hospital for further consultation, the disease control specialists repeatedly verified the epidemiological investigation records, and finally found suspicious clues from close contact with the patient. This family gathering case has brought us important enlightenment, firstly, epidemiological investigations must be designed in a comprehensive and rigorous manner to avoid missing important clues; secondly, it is necessary for disease control specialists to repeatedly verify the epidemiological investigation data of patients at high risk, so as to prevent patients from missing important epidemic information due to subjective and objective reasons.

Screening of COVID-19 asymptomatic patients plays an important role in controlling the epidemic. Nucleic acid detection of COVID-19 is valuable in outpatients with a suspected history of contact with them [6]. But in some cases, the results of multiple viral nucleic acid tests in COVID-19 asymptomatic patients are negative, suggesting that we should be alert to the negative effect of false negative rate of nucleic acid detection on the prevention and treatment of COVID-19. Due to the limitations of specimen collection and detection methods, the sensitivity of RT-PCR method to pharyngeal swab specimens is between 30%~60%. Chest CT scanning can provide important diagnostic information for the detection of viral nucleic acids [7], and its sensitivity can reach 97.0% [8]. While the sensitivity and specificity of fast IgM-IgG binding antibody testing for COVID-19 diagnosis can reach 88.7% and 90.6%, respectively. A study has suggested that chest CT and serum antibody detection methods are helpful for screening patients with asymptomatic COVID-19 [9].

### Conclusion

In conclusion, screening asymptomatic COVID-19 patients is essential for epidemic control, and a combination of comprehensive and rigorous epidemiological surveys and multiple detection methods can help identify asymptomatic COVID-19 patients.

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