

Enlightenments of asymptomatic cases of SARS-CoV-2 infection

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ABSTRACT

This article reports two asymptomatic cases of SARS-CoV-2 infection. Both cases came from Hubei Province. One was a 63-year-old male and the other was a 29-year-old female. Both were diagnosed with SARS-CoV-2 infection during the screening of high-risk personnel from the affected areas. During the 14-day isolation medical observation, they had no symptoms, their blood lymphocyte count and lung CT examinations were normal. An asymptomatic infection had been diagnosed, however, it was not "asymptomatic infection" state in incubation period. Due to the timely and effective isolation measures taken for the two cases, no other persons have been infected by them. Therefore, effective control of the source of infection, cutting off the route of transmission, and protecting vulnerable populations are currently effective measures to prevent the spread of coronavirus infected disease.

Key words: severe acute respiratory coronavirus 2, coronavirus disease, asymptomatic case

INTRODUCTION

Since December 2019, an outbreak of coronavirus disease (COVID-19) caused by a severe acute respiratory coronavirus 2 (SARS-CoV-2) has occurred; the coronavirus disease has spread severely in China and around the world, causing worldwide concern.^[1] Cases of asymptomatic infection have been reported, which should be given sufficient attention, and the infected persons should be strictly managed, otherwise they may pose a serious threat to public health and bring great difficulties to epidemic control.^[2,3] The clinical features of the previously reported asymptomatic cases of SARS-CoV-2 infection are that the infected person does not have any clinical symptoms, the lymphocyte count is normal, the CT scan is normal or have abnormal changes, but the qRT-PCR test for SARS-CoV-2 is positive.^[4] Here, we report the epidemiological and clinical characteristics of two asymptomatic cases of SARS-CoV-2 infection. Case 1 is a 63-year-old male and

Case 2 is a 29-year-old female. They both had normal lymphocyte counts and CT scans, without clinical symptoms; however, their qRT-PCR results of throat swabs and sputum samples both showed positive for SARS-CoV-2.

CASE REPORTS

Case 1 and his family are from the city of Xiaogan, Hubei Province, but they have lived and worked in the city of Shenyang, Liaoning Province for many years. Xiaogan is adjacent to the city of Wuhan, and its epidemic severity is second only to Wuhan. Twelve family members returned to Xiaogan on January 15, 2020 for the Spring Festival, and returned to Shenyang by self-driving private cars on January 26. The wife, daughter, and son-in-law of Case 1 were successively diagnosed with novel coronavirus-infected pneumonia, all of which were common types, and all had clinical symptoms such as fever, cough, sore throat, decreased lymphocyte count,

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and the CT examination of both lungs showed typical ground-glass and patchy shadows, and qRT-PCR results of pharyngeal brush and sputum specimens were positive for SARS-CoV-2. The Shenyang Center for Disease Control and Prevention (CDC) tested the pharyngeal swab specimens of the other 9 family members for SARS-CoV-2 nucleic acid. On February 21, the patient was found to have a positive result, and was transferred to our hospital for treatment in isolation on the same day. During the hospitalization, the patient had no symptoms such as fever, and the lymphocyte count and CT scan were normal. The qRT-PCR results of the patient's pharyngeal swab on February 25, and the results of both pharyngeal swab and

sputum samples on March 5 and 7 were all negative for SARS-CoV-2. Case 1 was discharged on March 7 (Figure 1).

Case 2 was from the city of Tianmen, Hubei Province, and worked and lived there for a long time. The outbreak in Tianmen was the lightest in Hubei Province. The patient traveled from Wuhan on January 19, 2020 to Shenyang by plane. On February 1, the CDC of Shenyang went to her hotel to collect the pharyngeal swab specimens. On February 2, she was found to have a positive qRT-PCR result for SARS-CoV-2 and transferred to our hospital for treatment in isolation. During the hospitalization, the patient had no symptoms such as fever, and the lymphocyte

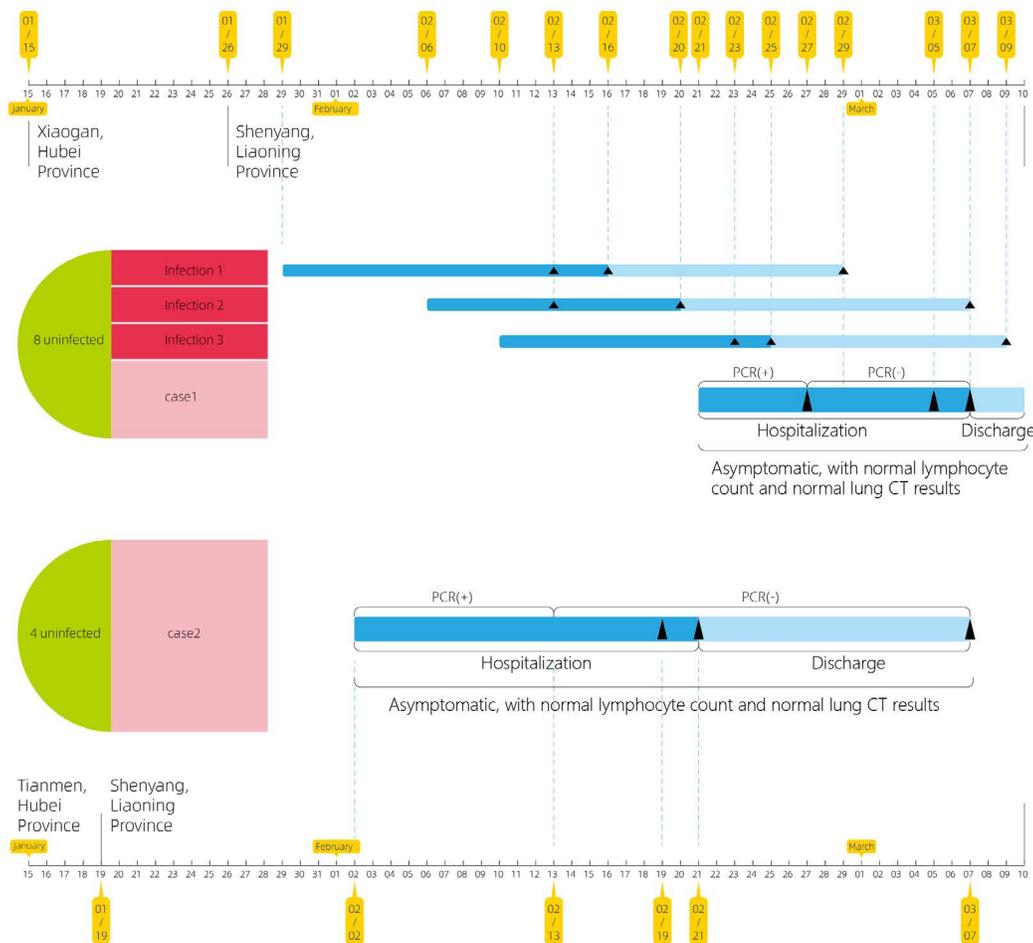


Figure 1: Of the 12 members of the Case 1 family, 8 were uninfected and 4 were infected. Among them, infected patients 1, 2 and 3 had clinical symptoms (fever, cough, sore throat, etc.), lymphocyte count decreased, lung CT scan showed typical ground-glass and patch shadows, and qRT-PCR tests of pharyngeal swabs and sputum specimens revealed positive for SARS-CoV-2. Case 1 was an asymptomatic infection. Throughout the course of the disease, Case 1 had no clinical symptoms, and the lymphocyte count and lung CT scan were also normal. On February 21, Case 1 had tested positive for SARS-CoV-2 by qRT-PCR of pharyngeal swabs, and was hospitalized in isolation. Four of the 5 members of the Case 2 family were uninfected, and only Case 2 was infected and asymptomatic. Throughout the course of the disease, Case 2 had no clinical symptoms; lymphocyte count and lung CT scans were also normal. On February 2, Case 2 had tested positive for SARS-CoV-2 by qRT-PCR of pharyngeal swabs, and was hospitalized in isolation.

On that day, qRT-PCR tests were performed on pharyngeal swabs and sputum specimens, and the results were negative for SARS-CoV-2.
 Blue indicates hospitalization Light blue indicates discharge.

count and CT scan were normal. On February 19 and 21, the qRT-PCR results of patient's pharyngeal and sputum samples were negative for SARS-CoV-2. Case 2 was discharged on February 21. During the follow-up on March 7, the qRT-PCR results of patient's pharyngeal swabs and blood samples were negative for SARS-CoV-2. None of the other 4 family members of Case 2 had entered Wuhan and all had qRT-PCR tests on pharyngeal brush specimens, all of which were negative for SARS-CoV-2 (Figure 1).

Of the 4 people of SARS-CoV-2 positive infection in the Case 1 family, who was the first to be infected and transmitted the virus to the other 3 people? This is impossible to verify, but the important thing is that the asymptomatic persons are unaware that they are infected with the virus, so they will not take isolation measures or seek treatment. Alternatively, they may be missed by clinicians, so that may spread the virus to others without their own knowledge. There were 5 members in the Case 2 family, and the other 4 family members did not leave their place of residence. Only Case 2 herself passed through Wuhan and was infected. There seems to be a connection between the passing and the infection, which may be related to the large number of viruses and high pathogenicity in Wuhan.

The two cases of asymptomatic infection were both found and confirmed with SARS-CoV-2 infection when the CDC in Shenyang screened at-risk individuals with a history of exposure in Wuhan. In addition, during isolation medical observation and follow-up after discharge, the two patients had no clinical symptoms, and no abnormalities in blood tests and lung CT scans. They were asymptomatic infection, nevertheless not "asymptomatic infection" state in incubation period. Due to our timely detection and quarantine measures, so far no other people have been infected by these two cases. Due to our timely detection and isolation measures, so far no other person has been infected by these two cases. Through these two cases, we have the following enlightenment: First, because the disease

is extremely contagious, in order to effectively prevent and control transmission, it is urgent to actively and accurately screen potential infections. Close contacts of people infected with SARS-CoV-2 should be tested for the virus to exclude infection, even if they have no symptoms; this is especially true for family members and those who have been to the epidemic area within 14 days, especially to the severely affected areas. The second is to establish a grid-based joint prevention and control mechanism to quickly trace the movement of the infected person. The third is to promptly release preventive measures, inform the public of accurate protection methods, and provide living guarantee materials accessible to the public. Therefore, although controlling the source of infection, cutting off the route of transmission, and protecting susceptible people are conventional measures to prevent the spread of infectious diseases, it is still the most effective way in the current potential world pandemic situation.

Conflict of Interest

None declared.

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