The reflection on an AIDS patient with asymptomatic COVID-19

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Case Report

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Abstract

We reported the process of exposure, clinical characteristics, diagnosis and prognosis of an AIDS patient with asymptomatic COVID-19. In our report, we found the asymptomatic is still shedding virus for at least 29 days. Therefore, we suggested that for individuals who had close contact with diagnosed or suspected COVID-19 patients, in addition to isolation, medical observation, and further related testing if clinical symptoms appear in the observation period, it is best to collect nasopharyngeal and throat swab specimens and test for COVID-19 nucleic acid as early as possible. The purpose of this active detection is to screen out COVID-19 asymptomatic patients, and to avoid further transmission through recessive source of infection. Our findings will facilitate understanding of asymptomatic COVID-19 and improve prevention strategies against COVID-19 transmission.

Introduction

As of 23 February 2020, 77 150 cases of COVID-19 have been reported in China (with 2592 deaths), and cases have been detected in 29 regions and countries outside China(<https://2019ncov.Chinacdc.Cn/2019-Ncov>). A study estimated that about two thirds of COVID-19 cases exported from China have remained undetected worldwide, potentially resulting in multiple chains of as yet undetected human-to-human transmission outside China.¹ Currently there is no specific medication recommended for COVID-19. Antibiotics are not effective against viruses. A number of antiviral medications will be trialled to assess whether they can be used to treat COVID-19. Experimental vaccines are also in development. So, the prevention and treatment of COVID-19 are at a critical stage. Here, we reported the process of exposure, clinical characteristics, diagnosis and prognosis of an AIDS patient with asymptomatic COVID-19. This study is in accordance with regulations issued by the National Health Commission of China and the Helsinki Declaration. Our findings will facilitate understanding of asymptomatic COVID-19 and improve prevention strategies against COVID-19 transmission.

Case Report

The patient was a 29 years old men. He was admitted to hospital for regular chemotherapy for Kaposi's sarcoma on February 12, 2020. The patient had no fever, no dry non-productive cough, no fatigue and no dyspnoea. Past medical history showed that he was confirmed with HIV infection and began to receive mixture antiretroviral drugs (Elvitegravir, Cobicistat, Emtricitabine and Tenofovir Alafenamide Fumarate) against HIV on December 23, 2019. Lymphopenia was showed by blood routine test, but chest CT scans didn't show bilateral ground-glass opacities. On February 14, the patient is ready for discharge because the second chemotherapy for Kaposi's sarcoma finished. Considering the outbreak of COVID-19 in Wuhan, nasopharyngeal and throat swab tested for COVID-19 were performed as routine for patients discharged from the infectious diseases department. It was not until then that the positive COVID-19 nucleic acid test was found. By further inquiring about the epidemiological exposure history, the patient recalled that the company organized an annual dinner on January 16, 2020. Around January 20, three colleagues were successively diagnosed with COVID-19 due to fever, and the father of one of them was

also diagnosed with COVID-19. During the following isolation period, the patient still did not have any symptoms related to COVID-19. Based on the epidemiological exposure history and etiological results, the patient was confirmed as COVID-19 asymptomatic infection. The patient was isolated and provided with traditional Chinese medicine decoction treatment. During the isolation period, still no symptoms related to COVID-19 occurred. On February 21 and 22, nasopharyngeal and throat swab specimens tested for COVID-19 were both negative. More than 20 healthcare workers and 6 patients who had close contact with this patient were tested for COVID-19, and fortunately, none was infected with COVID-19. All the data were shown in figure 1.

The isolation and quarantine actions undertaken at identification of the fever cases appear to have successfully limited the further transmission of COVID-19. In Wuhan where COVID-19 is most prevalent, the number of new confirmed cases per day has been significantly reduced after the government adopted a series of strong traffic control measures.

However, in our report, we found the asymptomatic is still shedding virus for at least 29 days. Among the healthcare workers and patients who had close contact with this patient, no infected case have been found. The probability reason may be due to the strong awareness of prevention and necessary protective measures taken in hospital during the outbreak of COVID-19. Lately, the protection against occupational exposure to COVID-19 was standardized after a warning report about healthcare workers infection with COVID-19 in the same hospital.² If the above factors are excluded, we cannot ensure the general population couldn't be infected by such asymptomatic patient without any protective measures, because a literature has reported that the viral load that was detected in the asymptomatic patient was similar to that in the symptomatic patients, which suggests the transmission potential of asymptomatic patients.³ Such existence of asymptomatic greatly increases the difficulty of preventing and controlling of COVID-19. This case gives us some problems worth paying attention to in COVID-19 prevention and control. For individuals who had close contact with diagnosed or suspected COVID-19 patients, in addition to isolation, medical observation, and further related testing if clinical symptoms appear in the observation period, it is best to collect nasopharyngeal and throat swab specimens and test for COVID-19 nucleic acid as early as possible. The purpose of this active detection is to screen out COVID-19 asymptomatic patients, and to avoid further transmission through recessive source of infection.

Although lymphopenia is the characteristics of COVID-19,⁴ it is also common among AIDS patients. Before combination antiretroviral therapy in December, 2019, the baseline CD4 cells of this patient was only 21 cells/ul, which indicating an extreme immunodepletion state. From an immunological perspective alone, the patient's baseline immunity appears to have no benefit in controlling any viral infection, including COVID-19. But he had been taking a mixture antiretroviral drugs (Elvitegravir, Cobicistat, Emtricitabine and Tenofovir Alafenamide Fumarate) against HIV replication prior to the exposure of COVID-19. Whether anti-HIV drugs taken by this patients had any therapeutic effect on COVID-19 is unknown, but so far, the effect of anti-HIV drugs on the severity of COVID-19 cannot be ruled out at least. COVID-19 asymptomatic infection appears possible. A reverse transcription polymerase chain reaction-confirmed asymptomatic child was described with radiological signs of pneumonia reported from a

family cluster in Shenzhen.⁵ Although only one case of an asymptomatic patient has been reported in this short report, we are confident that there should be a cohort of similar asymptomatic patients in areas where COVID-19 outbreak, especially in Wuhan, Hubei, China. Further studies on the epidemiological significance of these asymptomatic cases are warranted. If sufficient sample size is available, the systematic analysis of immune, genetic and drug history of asymptomatic patients will be helpful in the development of drugs for prevention and treatment on COVID-19, as well as the development of vaccine against COVID-19 infection.

Declarations

Contributors

RY, XG, SG and PM collected the data. RY processed statistical data and drafted the manuscript. HK, YZ and YX revised the final manuscript. HK, YZ and YX had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis. They share correspondence authors.

Declaration of interests

No potential conflict of interest was reported by the authors.

Patients provided written informed consent and protocols were approved by the ethics committee from Zhongnan Hospital of Wuhan University (No. 2020020).

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Figures

	Dec.23, 2019	Jan.16, 2020	Jan.20, 2020	Jan.21-23, 2020	Feb.12-14, 2020	Feb.14-20, 2020	Feb.20, 2020	Feb.21, 2020
Epidemiological Exposure History		An annual dinner	Three colleagues were diagnosed with COVID-19	Healthcare workers and patients had close contact with this patient	Healthcare workers and patients had close contact with this patient			
Symptoms								
Fever	No	No	No	No	No		No	No
Cough	No	No	No	No	No		No	No
Fatigue	No	No	No	No	No		No	No
Dyspnoea	No	No	No	No	No		No	No
Blood Routine Test	Lymphopenia			Lymphopenia	Lymphopenia			Lymphopenia
CD4+ T lymphocyte counts	21cells/ul							
Chest CT				Normal			Normal	
Nasopharyngeal and Throat Swab					Positive		Negative	Negative
Treatment	Treat AIDS with E/C/F/TAF			First chemotherapy for Kaposi's sarcoma	Second chemotherapy for Kaposi's sarcoma	Isolation and traditional Chinese medicine decoction		

Figure 1

Timeline of disease course according to epidemiological exposure history, detection results and treatment, from Dec 23, 2019 to Feb 21, 2020