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Short Report

Don't Miss the Other Side of the Problem in COVID-19 Research

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ABSTRACT

We urge for the attention to the other side of the problem in COVID-19 research and propose investigations on the cases such as why some persons were not infected in an atmosphere of high coronavirus infectivity as others did, why in a 19 hour journey of a train to Tibet the coronavirus was not able to spread and infect any people during its period of peak viral shedding and transmissibility and in such a narrow and closed space. Based on the facts of two examples, we suggest that the research from the other side of COVID-19 may not only help to uncover the different aspects of COVID-19 mystery, but also provide important information and valuable methods to stop or slow the tempestuous worldwide pandemic of COVID-19.

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Introduction

Since the outbreak of COVID-19 at the end of 2019, numerous investigations have been carried out to reveal the cause of the disease, discover the ways of the virus to spread and infect human cells, and develop methods of treating the disease and protecting people from infection [1, 2]. These efforts are undoubtedly necessary and very important for the fight against COVID-19. However, the other side of the problem in COVID-19 research is seems neglected.

Let's see an example. On February 9, 2020, the Centre for Health Protection (CHP) in Hong Kong reported that nine persons were infected with the novel coronavirus from just one meal after sharing a hot pot in a family gathering of 19 relatives from three family clusters on January 26 [3]. The nine infected persons were of different ages from 22 to 91-year-old and both men and women. It was interesting that, although so many persons were infected at a time indicating that the virus was of high infectivity in the hot pot atmosphere, there were other 10 members of the relatives without infection of COVID-19 in the family dining gathering. As we know that the most common ways of the novel coronavirus to spread are through respiratory droplets and via contact with an infected person. During the dining, not only the two ways of infection should be unavoidable for the 10 uninfected persons, but they might also have the chance to take foods that were contaminated by the infected patients' saliva due to the Chinese round table dining style. Why

they were not infected; did they eat and drink something different from the other nine persons; did they have natural abilities or other physical characteristics to immune the novel coronavirus; did they present antibody of the virus after the hot pot? No investigation on these questions was reported.

Another case was more interesting. On January 22, a 34-year-old male person left Wu Han for Tibet just before the locking down of Wu Han city. He first went to Xi Ning City of Qing Hai province by the train of Z264, and then transferred to another train Z265 at 19:31 on Jan.23 and arrived in Lhasa at 16:45 on Jan 24. Since feeling signs of illness, he went to a designated hospital of COVID-19 treatment in Lhasa on January 25 to be isolated for tests and treatment, and then he was confirmed as a patient of COVID-19 on Jan 29. The Health Commission of Tibet Autonomous Region immediately performed an epidemiological investigation on all the three hundred passengers of that train and 14 days isolated medical observation on the 32 passengers in the same carriage of the infected patient [4]. It was mystical that none of the three hundred passengers including the 32 close contacts was infected. The train Z265 is an air conditioning closed one with much narrower space than the Diamond Princess Cruise ship, so the people riding in the same compartment of the infected person had many chances of close contact and accepting aerosol infection during a 19 hours overnight trip.

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According to a report on the temporal dynamics in viral shedding and transmissibility of COVID-19, the highest viral shedding and transmissibility of COVID-19 was on or just before symptom onset [5]. So, the date of the patient in his journey to Tibet was exactly the period of his peak viral shedding and transmissibility. The passengers were of different ages, sex, and physical conditions. But why they were not infected as the passengers in the Diamond Princess Cruise ship, what kind of factors blocked the virus to spread in the train and its infection to people? The whole journey of train Z265 is at an altitude of over three thousand meters, the train would usually release oxygen after passing through the Ge Er Mu station and climbing up to four thousand meters high so that the oxygen content in the carriage would be about 80% of that at the sea level. Were high altitude, low atmospheric pressure and diffuse oxygen environment the contributing factors, or something else? No investigation on these questions was reported as well. People should not only rejoice the fact that no other persons were infected by the patient in the Tibet area but also ask and investigate why.

Conclusion

The above-mentioned questions propose the other side of the problems in COVID-19 research. Investigations on these questions may provide us information about what kind of factors would block the novel coronavirus to spread and infect people in closed and narrow

environments, and in what circumstances people would have the capability to against infection of COVID-19. Such investigations not only lead us to another approach for uncovering the mystery of COVID-19 but may also help to find out solutions for the urgent problem of stopping or slowing the tempestuous worldwide pandemic of COVID-19.

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