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Swift contact tracing can prevent transmission—Case report of an early COVID-19 positive case



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ABSTRACT

This is a case study of a positive COVID-19 case who was diagnosed and isolated early on in the infection. However, her seventeen close contacts who were quarantined and under observation remained negative indicating no viable chain of transmission despite high-risk contact. We further discuss the importance of effective contact tracing coupled with strict isolation or quarantine in breaking the chain of transmission.

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Case study

A young female in her mid-twenties boarded a first-class compartment of a train to reach Jodhpur in the third week of March — about one week before the declaration of first lockdown in India. For the next five days, she stayed with her fifteen membered joint family. On the sixth day, she was approached for contact tracing as one of her co-passengers had been found to be positive and she gave her informed written consent for the same. She did not have any history of fever, cough or shortness of breath and was completely asymptomatic. Her nasopharyngeal swab sample was tested for RT-PCR and was found to be positive for SARS-CoV-2 RNA. Thus she is considered as the index case for the current epidemiological description.

She was immediately isolated at AIIMS Jodhpur on day 6 itself and was under continuous medical observation for development of any symptoms or complications. All throughout there was no history of respiratory symptoms of any kind. Her chest X-ray, routine hematological parameters, hepatic and renal function tests were within normal limits. Her follow-up nasopharyngeal swabs continued to test RT-PCR positive on days 14 and 19. She was finally discharged after two consecutive negative test results obtained on days 23 and 24 post-admission (Fig. 1).

A detailed contact history revealed seventeen high-risk contacts, who were approached for contact tracing. A high-risk contact was defined as any individual with whom she had physical contact or living in the same household. Detailed definitions of high and low-risk contacts are described in Fig. 2. Four of her contacts were above fifty years of age — father (51 years), grandmother 1 (70 years), grandmother 2 (80 years) and grandfather (88 years). None of the contacts had any respiratory symptoms. Similarly, none of her contacts reported any history of travel outside Jodhpur. Their nasopharyngeal swabs tested RT-PCR negative for SARS-CoV-2. All were advised home quarantine for the next fourteen days. Repeat testing was not done as none of the high-risk contacts developed any symptoms. There were no low-risk contacts identified during the contact tracing.

Discussion

This case highlights the importance of exhaustive contact tracing, coupled with timely testing and strict isolation/quarantine, for controlling the spread of COVID-19 infection. The index case had a high-risk exposure to a symptomatic COVID-19 positive individual in the closed train compartment for a duration of about 15 h. She was identified through contact tracing and isolated on the sixth day post-exposure.

The incubation period of SARS-CoV-2 is estimated to be about 5–6 days (range 1–14 days) [1]. While symptomatic disease is

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sensitivity and specificity of the test are dependent on many factors, there are ample reports acknowledging non-reliance on RT-PCR for COVID-19 diagnosis. In light of variation of findings from various studies, a sensitivity of 70% and specificity of 95% has been conservatively suggested [3]. In our case, the presence of a positive RT-PCR beyond 14 days maybe because of prolonged shedding of non-viable viral particles which otherwise may also not be potent in disease transmission. There are reports of some positive cases who after testing negative, again tested positive [4] – maybe due to a similar mechanism of shedding of non-viable viral RNA.

Similarly, the negative tests in all the high-risk contacts may be a false negative result due to early phase of infection. Such negative RT-PCR tests has also been reported in symptomatic patients early on in the natural history of disease [5].

The information regarding COVID-19 is rapidly evolving. Effective contact tracing coupled with prompt and strict case isolation has the potential to control the outbreak [6]. The National Centre for Disease Control (NCDC), Government of India has given detailed guidelines on contact tracing for COVID-19 summarised in Fig. 2. WHO has issued an interim guidance and has also reiterated the importance of contact tracing coupled with rapid testing and isolation in targeting transmission levels and breaking the chain of infection [7].

Conclusion

Case-study presented here highlights the importance of swift contact tracing such that transmission could be interrupted. Not all positive cases spread infection, especially in the absence of symptoms and early on in the incubation period. A thorough contact

tracing coupled with isolation/quarantine will go a long way in prevention of transmission.

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