Journal of Nutrition and Food Security
Shahid Sadoughi University of Medical Sciences
School of Public Health
Department of Nutrition
Nutrition & Food Security Research Center

eISSN: 2476-7425 pISSN: 2476-7417 JNFS 2021; 6(1): 3-5 Website: jnfs.ssu.ac.ir

Is COVID-19 Infection Transmitted Through Food?

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ARTICLE INFO

CASE REPORT

Article history:
Received: 7 Sep 2020
Revised: 2 Dec 2020
Accepted: 2 Dec 2020

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ABSTRACT

Introduction: Coronavirus disease (COVID) has had a growing outbreak around the world. China reported COVID-19 infection for the first time in December 2019. Symptoms of this disease often include respiratory symptoms, but gastrointestinal symptoms (nausea, vomiting, and diarrhea) were also reported in COVID-19 infection. Coronavirus transmits through direct droplets, contact, or fomites. However, other modes of transmission include airborne, fecal-oral, blood-borne, and mother-to-child transmission. Furthermore, studies showed that the virus was excreted through the feces. **Case presentation**: In this study, we introduced two cases of the disease in a mother and her daughter, who were contaminated with the disease through contact with the contaminated food. **Conclusion**: Due to the possibility of oral-fecal transmission, food hygiene is recommended.

Keywords: *Covid-19; Food; Transmission*

Introduction

The recent pandemic of COVID-19 causes a serious threat to the health of the world's people. Patients with coronavirus infection usually have respiratory symptoms and fever, but other symptoms such as gastrointestinal (nausea, vomiting, and diarrhea) and liver involvement may also occur in some patients (Eslami and Jalili, 2020, Lee *et al.*, 2020).

Some reports suggested that the virus could be detected through feces using the polymerase chain reaction (PCR) method; so, a possibility of transmission exists through the fecal-oral route (Holshue *et al.*, 2020, Wang *et al.*, 2020, Yeo *et al.*, 2020). In children, gastrointestinal symptoms are more frequent than adults and rectal swabs showed positive results for sarscov-2 (Donà *et al.*, 2020). Based on the reports, the virus can survive for a mean of 25 days in specimens obtained from the intestine (van Doorn *et al.*, 2020). Therefore, we introduced two disease cases (the mother and her daughter), who were infected by coronavirus after eating the food prepared by an infected person. All investigated individuals (mother, daughter, and cook) had gastrointestinal symptoms with no respiratory symptoms.

This paper should be cited as: Khodabandeh M, Mirnia K, Eshaghi H, Borhani K. ***Is COVID-19 Infection Transmitted Through Food?*** *Journal of Nutrition and Food Security (JNFS)*, 2021; 6 (1): 3-5.

Case presentation

Our patients included a mother and her daughter. The mother was 35 years old and her daughter had 7 years of age. Both patients were in quarantine since the coronavirus pandemic was announced (approximately three months). They provided their necessities of life via the internet and by the courier store. Mother's sister prepared food two to three times a week. She put the food in a disposable container and sent it to them by a courier during the home quarantine period. These foods included rice, stew, and soup. The courier put the food in a basket in the elevator with no face-to-face contact. The mother took the food from the elevator and disinfected them with 70% alcohol before entering the house. About two and a half months after the quarantine, the daughter developed a fever, nausea, vomiting, and diarrhea. The next day after the symptoms were revealed in the daughter, similar symptoms were observed in the mother. The mother had a history of using PPI (Pantoprazole) from 6 months ago. According to the coronavirus pandemic, the patients' lab tests are represented in **Table 1**.

Nasopharyngeal COVID-19 PCR report was positive in both cases. Based on the reports, 4 days before representation of symptoms in the daughter, the mother's sister manifested gastrointestinal symptoms (fever, nausea, vomiting, diarrhea, and anorexia) and her COVID-19 PCR test was positive. Therefore, gastrointestinal manifestations were observed in all three cases.

Table 1. Blood and fecal tests of the mother and her daughter.

CASE	CBC (10^3UL)	Lymphocyte (%)	PMN (%)	Platelet (IU)	CRP (mg/l)	Stool	
						WBC (count)	RBC (count)
Mother	4600	12%	83%	246000	42	4-5	2-3
Daughter	3500	15%	80%	452000	37	8-10	6-8

Discussion

Regarding the participants, the mother and daughter had no contact with the food carrier and their only suspicious contact was consumption of the food prepared by the infected cook. It is important to note that in all three cases, the symptoms included gastrointestinal manifestations. In some studies, oral-fecal excretion of the virus increased the possibility of disease transmission following the consumption of infected food (Yeo *et al.*, 2020). Although most studies emphasized person-to-person transmission, transmission by seafood consumption was originally intended in Wuhan, China (Li *et al.*, 2020).Some studies showed that PCR from rectal swab was positive although the nasopharynx test was negative. In addition, virus shedding in stool was shown but the precise mechanism was unknown (Hindson, 2020). In our study, all cases had only fever and gastrointestinal symptoms (nausea, vomiting, and diarrhea) following COVID-19 infection. The possibility of oral-fecal transmission of COVID-19 infection can have great clinical significance.

Conclusion

Transmission from food should be estimated as an unknown route of transmission. It seems logical to be careful in consuming non-infectious food prepared by a healthy cook to prevent COVID-19 infection.

Acknowledgments

We would like to thank cooperation of patient's family.

Authors' contributions

we declare that all the authors were active in this manuscript. Khodabandeh M and Mirnia K were research designer. Borhani K and Eshaghi H collected the data. All authors have read and approved the final manuscript.

Conflict of Interest

The authors declare no conflict of interests.

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