

Covid-19: Face Mask Protection in the Pediatric Setting

Ioannis XINIAS, Antigoni MAVROUDI, Fotios KIRVASSILIS,
Charalampos ANTACHOPOULOS, Emmanouel ROILIDES

Third Pediatric Department, Hippokration Hospital, Thessaloniki, Greece



ABSTRACT

We report our experience regarding a pediatric patient-case who had a covid-19 infection, which was initially considered a common viral infection and was managed accordingly for the first 36 hours while being hospitalized. Wearing a simple surgical face mask was the only protective measure which our personnel has adopted. All staff members were tested for covid-19 infection with swab specimens from the nasopharynx and pharynx and were found to be negative in 7-10 days after coming into contact with the patient.

Thirty-one days after contact with the covid-19 patient, no one of the staff members had respiratory symptoms, and therefore, they all returned to work. This case shows the importance of face-mask wearing to prevent the transmission various of respiratory infections, including that caused by the novel SARS-CoV-2 microorganism.

Keywords: Covid-19, face mask, protection.

INTRODUCTION

Recently, a new coronavirus was detected in a group of patients in China after an outspread of an unfamiliar type of pneumonia. Transmission of the novel coronavirus (SARS-CoV-2) causing coronavirus disease 2019 (COVID-19) was reported for the first time in December 2019 (1, 2). Very soon, the virus began to be easily transmitted from person to person (3). Face masks are personal protective tools used to prevent the spread of respiratory infections and transmission of respiratory viruses and other microorganisms (4). □

CASE PRESENTATION

The case reported here is a two-year old female patient suffering from Spinal Muscle Atrophy (SMA), who was living in an area with a covid-19 outbreak in Northern Greece. The toddler was referred to our hospital with suspected SARS-CoV-2 infection due to upper respiratory symptoms including cough, fever, running nose, and shudder.

Initial laboratory investigation, firstly at a local hospital, showed a viral infection of the upper respiratory tract. A real-time PCR in nasopharyngeal and pharyngeal swabs specimens were subsequently applied for SARS-CoV-2 infection. Awaiting the results of the PCR test, the child de-

Address for correspondence:

Ioannis Xinias, Associate Professor of Pediatrics
Konstantinoupoleos 49, 54642 Hippokration Hospital, Thessaloniki, Greece
Tel. +302310992877
Email: xinias@email.com

Article received on the 11th of January 2021 and accepted for publication on the 25th of January 2021

veloped some respiratory distress, which prompted an emergency referral to our hospital, *i.e.*, the 3rd Pediatric Department, Hippokraton Hospital of Thessaloniki, Greece, for further evaluation and management.

The duration of transportation with an ambulance from the local hospital to our department took three-and-a-half-hours, and in the meantime, the result of the PCR SARS-CoV-2 testing was negative. Therefore, the patient was managed as having a common viral upper respiratory tract infection.

The patient arrived at the pediatric ward of our department two hours after she had remained for evaluation in the emergency outpatient clinic. During the toddler's hospital stay for 36 hours, the staff involved in the patient's care comprised mainly doctors and nurses, who were all wearing a simple surgical mask and were washing their hands as usual.

During hospitalization of the toddler, symptoms persisted and subsequently worsened, prompting a re-evaluation by a second real-time PCR test for covid-19 in nasopharyngeal and pharyngeal swab specimens.

This second PCR test performed in our unit was surprisingly positive for SARS-CoV-2 infection. Therefore, we reviewed the previous contacts of the patient and found that 18 people had close contact with her for at least the last 36 hours. All those people were contacted and then quarantined for 14 days. Moreover, some of them received a preventive chloroquine regimen. One of them had severe side effects and stopped the drug before the regimen completion.

The 18 staff members were tested for covid-19 infection with swab specimens from the nasopharynx and pharynx using real-time PCR, and they were all found to be negative in 7-10 days after they had come into contact with the infected patient.

Thirty-one days after the contact with the covid-19 patient, no one of the staff members had respiratory symptoms, and they all returned to work. □

DISCUSSION

The world-wide spread of covid-19 has become a critical health issue. Nevertheless, more knowledge is yet to be acquired and researchers are making a great effort to find effi-

cient drugs by performing randomized control trials deemed necessary before utilization (5).

Public health efforts are most needed to restrict the virus outbreak via human to human transfer, which seems to be the best approach in the current situation (6, 7).

The Australian government has initially responded to the covid-19 outbreak by releasing about 500.000 face masks to health care workers (8). The Hellenic government released the lockdown on May 2020, following the first covid-19 outbreak, but recommended the citizens to wear a face mask in commercial centers, buildings and stores, public vehicles, and in every situation involving close human contacts. Other countries have already issued directions about face-mask wearing by their citizens (9).

A report from China showed the importance of face-mask wearing in public transport (10).

The European Control Disease Center (ECDC) released a new instruction for face-mask wearing for all asymptomatic individuals who were occupying small spaces in public vehicles, at workplaces, etc (11). These guidelines additionally support our belief that universal face-mask wearing is necessary for the novel covid-19 pandemic era, as so as in a pediatric setting. □

CONCLUSIONS

Scientific evidence so far suggests that face mask-wearing may help to reduce the excretion of respiratory droplets from infected individuals even when being asymptomatic and therefore, to limit the spread of respiratory viral infections, including that of covid-19. Our experience, besides current guideline instructions and reported data, shows the efficacy of face mask-wearing by health care providers to prevent the spread of the novel SARS-CoV-2 microorganism and to reduce its transmission in a health-care setting. Additional measures, including regular hand-washing and hand disinfection, may have had an additional preventive effect. □

Conflicts of interest: none declared.

Financial support: none declared.

Acknowledgments: the authors would like to thank all trainee doctors and nursing staff of our department for the excellent medical and nursing services they provided for the patient whose case presentation was described in the present article.



REFERENCES

1. **Zhu N, Zhang DY, Wang WL, et al.** A novel coronavirus from patients with pneumonia in China, 2019. *N Engl J Med* 2020;382:727-733. Doi: 10.1056/NEJMoa2001017.
2. **Naser Ghandi A, Allameh SF, Saffarpour R.** All about COVID-19 in brief. *New Microbes New Infect* 2020;100678. Doi: 10.1016/j.nmni.2020.100678.
3. **Huang CL, Wang YM, Li XW, et al.** Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 2020;10223:497-506. Doi: 10.1016/S0140-6736(20)30183-5.
4. **Desai AN, Mehrotra P.** Medical Masks. *JAMA* 2020. 10.1001/jama.2020.2331. [Epub ahead of print]. Doi: 10.1001/jama.2020.2331.
5. **Gao J, Tian Z, Yang X.** Breakthrough: Chloroquine phosphate has shown apparent efficacy in treatment of COVID-19 associated pneumonia in clinical studies. *Biosci Trends* 2020;14:72-73. Doi: 10.5582/bst.2020.01047.
6. **Zhou D, Zhang P, Bao C, et al.** Emerging Understanding of Etiology and Epidemiology of the Novel Coronavirus (COVID-19) infection in Wuhan, China. 2020. Doi: 10.20944/preprints202002.0283.v1.
7. **Lai CC, Shih TP, Ko WC, et al.** Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) and coronavirus disease-2019 (COVID-19): The epidemic and the challenges. *Int J Antimicrob Agents* 2020;55. Doi: 10.1016/j.ijantimicag.2020.105924.
8. **Kirby T.** Australian Government releases face masks to protect against coronavirus. *Lancet Respir Med* 2020;8:239. Doi: 10.1016/S2213-2600(20)30064-3.
9. **Paul Tugwell.** Greece to Gradually Start Lifting Lockdown Measures on May 4. Bloomberg 27 April 2020. <https://www.bloomberg.com/news/articles/2020-04-27/greece-to-gradually-start-lifting-lockdown-measures-on-may-4>.
10. **Liu X, Zhang S.** COVID-19: Face masks and human-to-human transmission. *Influenza Other Respir Viruses* 2020. Doi: 10.1111/irv.12740.
11. **European Centre for Disease Prevention and Control.** Using face masks in the community. Reducing COVID-19 transmission from potentially asymptomatic or pre-symptomatic people through the use of face masks. *ECDC Technical Report*. 2020;Stockholm: ECDC 2020. <https://www.ecdc.europa.eu/en/publications-data/using-face-masks-community-reducing-covid-19-transmission>.

