A 6 months old infant with fever, dyspnea and poor feeding, diagnosed with COVID-19

Ramezan Jafari [a,b], Luca Cegolon [c,d], Mohammad Torkaman [e], Mandana Kashaki [f], Fatemeh Dehghanpoor [a], Fatemeh Cheraghalipoor [a], Mohammad Javanbakht [g,*]

[a] Department of Radiology, Baqiyatallah University of Medical Sciences, Tehran, Iran
[b] Health Research Center, Baqiyatallah University of Medical Sciences, Tehran, Iran
[c] Local Health Unit N. 2 "Marca Trevigiana", Public Health Department, Treviso, Italy
[d] Institute for Maternal & Child Health, IRCCS "Burlo Garofolo", Trieste, Italy
[e] Department of Pediatric, Faculty of Medicine, Baqiyatallah University of Medical Sciences, Tehran, Iran
[f] Shahid Akbarabadi Clinical Research Development Unit (ShACRDU), Iran University of Medical Sciences (IUMS), Tehran, Iran
[g] Nephrology and Urology Research Center, Baqiyatallah University of Medical Sciences, Tehran, Iran

ARTICLE INFO

Keywords
Infant
Fever
Dyspnea
COVID-19

On 6th March 2020, a 6 months old male infant weighing 3650 g was admitted to the accident & emergency service (A&E) of Baqiyatallah hospital in Tehran (Iran) for dyspnea (without cough), poor feeding for 3 days, body temperature of 37.1 °C, heart rate of 120 beats per minute (bpm) and a respiratory rate of 55/minute. Before becoming symptomatic the child was normally breastfed. Since he was born premature at 28 week and weighed 870 g because of maternal hypertension, the child had remained under observation in neonatal intensive care unit (NICU) for 10 days following birth by emergency cesarean section.

The child's vaccination status verified on hospital admission was compliant with the immunization schedule of his age. Physical examination showed notable chest indrawing and bilateral chest crackles. The child was febrile, tachypnoeic and hypoxic (81% O_2 saturation in room air). The most significant laboratory findings were lymphopoenia ($1{,}0 \times 10^9$ cells/L) and increased C reactive protein (CRP = 18.1 mg/L) (Table 1).

Chest X ray (CXR) showed ill-defined ground-glass opacities (GGO) in the mid and upper zones of both lungs. Thoracic computerized tomography scan (CT) confirmed bilateral ill-defined GGO, suggestive of atypical viral pneumonia.

A real-time reverse transcription polymerase chain reaction (RT-qPCR) confirmed SARS-CoV-2 infection both in the child and in his asymptomatic mother. Blood and urine cultures of the child were negative. The child was isolated in a room with negative pressure and was started on broad spectrum antibiotic treatment with vancomycin (10 mg/kg *I.V.* every 8 hours) and meropenem (20 mg/kg *I.V.* every 12 hours) for 14 days and oseltamivir (3 mg/kg/dose twice per day, orally) for 5 days. Oxygen support was given to the patient for 7–8 days by oxygen hood and nasal canula, to be gradually weaned off afterwards; mechanical ventilation was not necessary. The mother remained asymptomatic throughout hospitalization of her child, and her chest CT scan was normal.

Following O_2, fluids, electrolyte supplements and treatment with oseltamivir, which was part of Iran's national protocol for the management of COVID-19 pneumonia at that time, the general conditions of the child progressively improved, until O_2 saturation reached 98%, his body temperature decreased to 36.1 °C, his heart rate reduced to 102 bpm, his respiratory rate diminished to 34/minute, lymphocyte count increased to 3.3×10^9 cells/L and CRP decreased to 3.4 mg/L (Table 1). The child progressively started to tolerate breastfeeding, but since it was insufficient full formula feeding was added. As two consecutive RT-qPCR were negative, the child was discharged from hospital 14 days since admission. Following discharge, both the child and his mother were quarantined at home for two weeks. As his father tested negative at

* Corresponding author. Baqiyatallah University of Medical Sciences, Nephrology and Urology Research Center, Tehran, Iran.
E-mail address: mhmjvbt81@gmail.com (M. Javanbakht).

Accepted 11 June 2020

Table 1
Clinical features of the 6 months old infant affected by COVID-19, at admission and discharge (after 14 days in hospital). N = number.

Clinical Parameters	Admission	Discharge
Symptoms	Cough, poor feeding	None
Body temperature (Celsius degrees)	37.1	36.7
Heart Rate (N. beats/minute)	120	102
Respiratory rate (N/minute)	55	34
O_2 saturation (%)	81	98
Lymphocyte count (cells/L)	$1{,}0 \times 10^9$	$3{,}3 \times 10^9$
C Reactive Protein (mg/L)	18.1	3.4

RT-qPCR, and considering the child had no siblings, no further public health measures were enforced.

This was the first infant case of COVID-19 diagnosed in Iran, one of the countries with highest disease prevalence in the world. Most COVID-19 cases occur in individuals 30–69 years old, with children younger than 10 less likely to develop symptoms. However, droplet transmission and close contact with an infected mother are risk factors for the transmission of SARS-CoV-2 to breastfeeding infants. Since COIVD-19 clinical infection is relatively rare in infants, it can be easily misdiagnosed. Therefore, caregivers should be adequately trained to detect and interpret the clinical and radiological manifestations of COVID-19 in infants, promptly managing the disease to contain the transmission of SARS-CoV-2 within the health care settings and the patients' households.

Funding

None.

Ethics approval and consent to participate

This case report has been described in accordance with the ethical standards laid down in the "Declaration of Helsinki of 1964".

Consent for publication

Written informed consent was obtained from parents for the publication of this case report.

Authors 'contributions

RJ, LC, MT, MK, FD, FCH and MJ wrote the original draft.

Declaration of competing interest

The authors declare that they have no competing interests.

Acknowledgements

Thanks to guidance and advice from "Clinical Research Development Unit of Baqiyatallah Hospital".