Case Report

Diarrhea as a Presenting Symptom of Coronavirus Disease 2019 in Children

Borhan Moradveisi[1], Pedram Ataee[1,2], Alireza Ghaffarieh[3], Avat Karimi[1], Nima Fattahi[4], Karim Nasseri[5]

From the Departments of [1]Pediatrics and [3]Anesthesiology, Faculty of Medicine, Kurdistan University of Medical Sciences, [2]Liver and Digestive Research Center, Research Institute for Health Development, Kurdistan University of Medical Sciences, Sanandaj, [4]Pediatrics, Endocrinology and Metabolism Population, Sciences Institute, Tehran University of Medical Sciences, Tehran, Iran, [3]Massachusetts Eye and Ear Infirmary, Harvard University, Boston, Massachusetts, USA

Abstract

Gastroenteritis is common among children and is usually caused by bacterial, viral, or parasitic gastrointestinal infections. The occurrence of gastroenteritis as the only symptom of coronavirus disease 2019 (COVID-19) is an uncommon condition. We present a 16-month-old girl that has recently been admitted to our hospital with vomiting, diarrhea, and lethargy, who was ultimately diagnosed with COVID-19. This case shows that the clinical manifestations of COVID-19 can be misleading in children.

Keywords: *Coronavirus disease 2019, COVID-19, diarrhea, gastroenteritis, vomiting*

Introduction

The coronavirus disease 2019 (COVID-19) has become a worldwide pandemic and is growing rapidly. Based on a systematic review, due to unknown reasons, it has milder symptoms and a better prognosis in children as compared to adults.[1] Although diarrhea and vomiting are among the symptoms of COVID-19 in 8.8% and 6.4% of confirmed COVID-19 pediatric patients, respectively,[2] these symptoms are uncommonin the absence of other more common symptoms such as fever, cough, sore throat, sneezing, myalgia, and fatigue.[3] We report a 16-month-old (girl) confirmed case of COVID-19 who presented to us with gastroenteritis, in the absence of other COVID-19 symptoms.

Case Report

Written consent was obtained from the patient's parents to publish the case report. The patient was a 16-month-old girl with known hemangioendothelioma and congenital hypothyroidism who was admitted to Besat Hospital, Sanandaj, Iran, on March 21, 2020. She had a history of vomiting and diarrhea and was ill. She had begun having watery diarrhea 3 days earlier, accompanied by vomiting 2 days later. At the time of presentation, physical examination revealed an ill-appearing infant with a blood pressure of 95/50, heart rate of 128 beats/min, respiratory rate of 30 breaths/min, and a temperature of 37.3°C. Examination also showed cold skin, dry mucous, sunken eyes, and capillary refill time of 3 s. The urine output was also reduced. She had abdominal distension and hepatomegaly, but there was no abdominal tenderness. She had been treated with levothyroxine (1.5 µg/kg) since birth and had received prednisolone (2.5 mg twice daily) for the last 2 months.

She was admitted to the pediatric intensive care unit, and fluid therapy was commenced for her moderate dehydration. Laboratory test results were as follows: white blood cells 16,400/mm^3 (neutrophils 60%, lymphocytes 27%, monocytes 10%, eosinophils 2%, and basophils 1%), hemoglobin 10.1 g/dL, platelets 390000/mm^3, blood urine nitrogen 26 mg/dL, creatinine 0.4 mg/dL, calcium 7 mg/dL, sodium 143 mmol/L, potassium 4.3 mmol/L, blood sugar 139 mg/dL, erythrocyte sedimentation rate 46 mm/h, and positive C-reactive protein (quantitative).

By the 3rd day of admission, diarrhea and vomiting had stopped, abdominal distension had increased, and temperature had risen to 38°C. Hence, the patient underwent pelvic and abdominal sonography, upright abdominal radiography, and chest X-ray. Ultrasonography reported a large amount of free fluid in the abdomen and pelvis,

How to cite this article: Moradveisi B, Ataee P, Ghaffarieh A, Karimi A, Fattahi N, Nasseri K. Diarrhea as a presenting symptom of coronavirus disease 2019 in children. Adv Biomed Res 2020;9:35.

Received: 26 April 2020
Revised: 16 June 2020
Accepted: 23 June 2020
Published: 28 August 2020

Address for correspondence:
Dr. Karim Nasseri, Department of Anesthesiology, Faculty of Medicine, Kurdistan University of Medical Sciences, Sanandaj, Kurdistan, Iran.
E-mail: nasseri_k@muk.ac.ir

Access this article online

Website: www.advbiores.net

DOI: 10.4103/abr.abr_90_20

Quick Response Code:

bowel loops were distended by gas, the size of the liver had increased, and numerous echogenic lesions were seen; other abdominal and pelvic organs were normal in size and shape. There were no air–fluid levels in the upright abdominal radiography [Figure 1]. The posteroanterior chest radiography showed areas of lung inflammation at the left basilar and perihilar areas indicating the presence of pneumonia [Figure 2]. At this stage, she was suspected of COVID-19, and chest computed tomography (CT) scan was ordered. A small amount of pleural effusion was detected on the CT scan. There were also several linear and plate-shaped foci in the upper lobes of both lungs and several opacities in the apical segments of the lower lobes of both lungs [Figure 3]. A nasopharyngeal swab was taken, which came out positive for COVID-19 upon performing the polymerase chain reaction (PCR) assay. The patient was admitted for 10 days in pediatric intensive care unit; on the 6th day of admission, specific treatment for COVID-19 was initiated for the patient based on the Iranian protocol for COVID-19 disease that includes hydroxychloroquine plus Kaletra. All the patient's symptoms were revealed in the last days of admission. Afterward, the patient was discharged with stable vital sign and well-being.

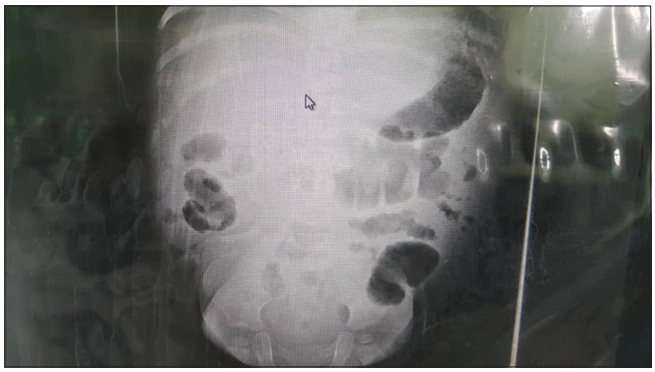

Figure 1: Upright abdominal plane radiography, distention of abdomen without air-fluid level

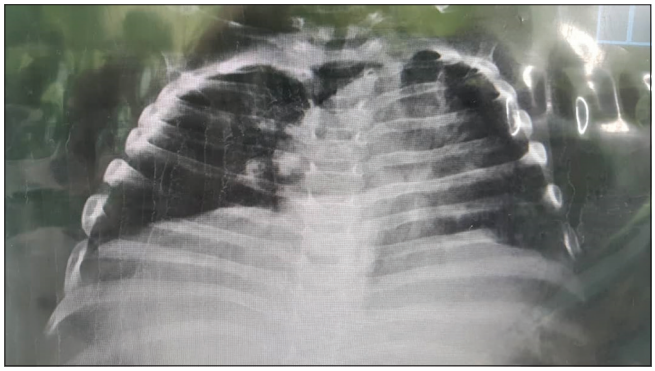

Figure 2: Area of lung inflammation at left basilar and perihilar areas are also present

Figure 3: Chest computed tomography scan. Several opacity foci are in the apical segment of the lower lobe of both lungs

After confirmation of COVID-19, a more extensive and focused evaluation was started for all the family members, and anyone known to have had contact with the patient. The other four family members had no signs or symptoms but were positive for COVID-19 PCR. All of them were placed under home quarantine for 3 weeks, with daily monitoring of signs and symptoms of COVID-19. Treatment was initiated for the patient based on the Iranian protocol for COVID-19 disease that includes hydroxychloroquine plus Kaletra.[4]

Discussion

We report a 16-month-old (girl) confirmed case of COVID-19 who presented to us with vomiting, diarrhea, and lethargy, in the absence of other COVID-19 symptoms. These symptoms are uncommon in the absence of other more common symptoms such as fever, cough, sore throat, sneezing, myalgia, and fatigue. The manifestation of COVID-19 in children varies from asymptomatic, mild-to-moderate forms with fever, dry cough, nasal congestion, and runny nose, to more serious forms that cause respiratory failure. Some patients have additional gastrointestinal symptoms such as abdominal discomfort, nausea, vomiting, diarrhea, and abdominal cramps.[5]

Gastroenteritis is the most common digestive disorder among children, and almost all children experience at least one episode within the 5 first years of life.[6] Children with underlying diseases may be at increased risk. Human adenoviruses 40 and 41 are the major etiological agents of acute gastroenteritis among children in Iran.[7] Viral gastroenteritis presents with the following signs and symptoms, watery diarrhea, nausea, vomiting or both, abdominal cramps and pain, fatigue, headache, and low-grade fever.[6] Qiu *et al*. retrospectively studied the data on 36 pediatric patients with confirmed COVID-19 and indicated that 53% had moderate pneumonia, 19% had acute upper respiratory symptoms, and 28% were asymptomatic. In these 36 patients, the most common symptoms were fever (36%), dry cough (19%), sore throat (6%), pharyngeal congestion (3%), dyspnea or tachypnea (3%), and vomiting or diarrhea (6%).[8] In another retrospective study, Sun *et al.* reported eight severely or critically ill pediatric patients with positive PCR for COVID-19. In their study, the most common symptoms were fever (100%), tachypnea (75%), cough (75%),

expectoration (50%), and nausea/vomiting (50%).[9] Thus, fever was the lone sign that was present in all eight patients. In both the aforementioned reports, the clinical manifestations were respiratory symptoms and fever. It seems that the presentation of gastroenteritis without respiratory symptoms and fever is either rare or completely new. The absence of fever in our patient could be related to the corticosteroid taken for her underlying disease. Fever is a substitute indicator for disease action in many infectious and inflammatory disorders.[10] Corticosteroids suppress this fever by inhibiting the synthesis of leukotrienes, prostaglandins, and thromboxanes.[11] Therefore, this was not surprising to see the patient present with no or low-grade fever in spite of her critical condition.

In summary, although COVID-19 exhibits a milder course and better prognosis among children compared to adults, it could become severe in patients who are at high risk due to underlying illnesses, including those taking corticosteroids for a long time. Moreover, we should remember that it can present with uncommon and misleading symptoms.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient (s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initial s will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Ludvigsson JF. Systematic review of COVID-19 in children show milder cases and a better prognosis than adults. Acta Paediatr 2020;109:1088-95.
2. Lu X, Zhang L, Du H, Zhang J, Li YY, Qu J, *et al*. SARS-CoV-2 infection in children. N Engl J Med 2020;382:1663-5.
3. Dong Y, Mo X, Hu Y, Qi X, Jiang F, Jiang Z, *et al*. Epidemiological characteristics of 2143 pediatric patients with 2019 coronavirus disease in China. Pediatrics 2020;16:16.
4. Karimi A, Rafiei Tabatabaei S, Rajabnejad M, Pourmoghaddas Z, Rahimi H, Armin S, *et al*. An algorithmic approach to diagnosis and treatment of coronavirus disease 2019 (COVID-19) in children: Iranian expert's consensus statement, Arch Pediatr Infect Dis 2020;8:e102400.
5. Kargar M, Zare M, Najafi A. Molecular epidemiology of rotavirus strains circulating among children with gastroenteritis in Iran. Iran J Pediatr 2012;22:63-9.
6. Sanaei Dashti A, Ghahremani P, Hashempoor T, Karimi A. Molecular epidemiology of enteric adenovirus gastroenteritis in under-five-year-old children in Iran. Gastroenterol Res Pract 2016;2016:2045697.
7. Hong H, Wang Y, Chung HT, Chen CJ. Clinical characteristics of novel coronavirus disease 2019 (COVID-19) in newborns, infants and children. Pediatrics & Neonatology 2020:61,:131-132.
8. Qiu H, Wu J, Liang H, Yunling L, Song Q, Chen D. Clinical and epidemiological features of 36 children with coronavirus disease 2019 (COVID-19) in Zhejiang, China: An observational cohort study. Lancet Infect Dis 2020;20;6,689-96. [Doi: 10.1016/S1473-3099(20)30198-5].
9. Sun D, Li H, Lu XX, Xiao H, Ren J, Zhang FR, *et al*. Clinical features of severe pediatric patients with coronavirus disease 2019 in Wuhan: A single center's observational study. World J Pediatr 2020:16:251–259
10. Aronoff DM, Neilson EG. Antipyretics: Mechanisms of action and clinical use in fever suppression. Am J Med 2001;111:304-15.
11. Vestjens SM, Spoorenberg SM, Rijkers GT, Grutters JC, van de Garde EM, Meijvis SC, *et al*. Antipyretic effect of dexamethasone in community-acquired pneumonia. Eur Respir J 2015;46:570-3.