



Acute Pancreatitis Caused by COVID-19 in a Child: A Case Report

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Abstract

Coronavirus disease 2019 (COVID-19) occurs in children as well as adults and it is mainly associated with symptoms of respiratory and gastrointestinal infections. The patient was a 13-year-old child who had no symptoms of a respiratory infection and complained of abdominal pain and vomiting. A COVID-19 polymerase chain reaction (PCR) test was requested, which was positive. Based on laboratory test results indicating high serum amylase and lipase levels and imaging findings, acute pancreatitis was diagnosed, and after supportive treatment, the patient was discharged in good general condition. During the SARS-CoV-2 pandemic, children who refer to medical centers with gastrointestinal symptoms and pancreatitis should be checked for COVID-19.

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Background

Coronavirus disease 2019 (COVID-19) is usually mild in children and adolescents up to 18 years of age and it is asymptomatic in 16% of cases. It has been reported that 65% of cases have fever, 54% have upper respiratory tract infection, 25% have lower respiratory tract infection, 22% have gastrointestinal symptoms, and 28% have headache.¹ The most common gastrointestinal symptom is vomiting or diarrhea in 17% of children.² The incidence of acute pancreatitis in children and adolescents is 3-13 cases per 100 000 people per year. Viral and bacterial infections, bile duct diseases, medications, systemic diseases, trauma, metabolic diseases, and hyperlipidemia are among the causes of acute pancreatitis in this age group.^{3,4} We report a rare case of a 13-year-old child with COVID-19 who referred with symptoms of acute pancreatitis.

Case Presentation

Our patient is a 13-year-old boy weighing 40 kg who referred to the pediatric emergency department of Imam Ali hospital in Karaj with a complaint of abdominal pain. The pain started suddenly and intermittently from the day before the visit and was accompanied by non-bilious and non-bloody vomiting. It was more severe in the epigastric region and radiated to the patient's back, which was exacerbated by lying down and the patient tended to lean forward. He had no complaints of fever or other symptoms. There was no specific underlying disease or recent trauma

or medication use in investigating medical history of the patient. According to the parents, the child's grandmother was recently suspected of having COVID-19 and our patient was in contact with her. At the initial examination, he did not have fever, tachypnea, tachycardia, and hypotension. On palpation of the abdomen, significant tenderness was evident in the epigastrium and right upper quadrant. Surgical consultation was requested to evaluate causes of the acute abdomen. Considering the child's recent contact with his grandmother and coronavirus pandemic, a SARS-CoV-2 polymerase chain reaction (PCR) test was requested and a sample was taken from the oropharynx. Following a positive PCR test for COVID-19 on the second day of hospitalization, a chest X-ray was requested to check pulmonary parenchymal involvement. Fortunately, there was no involvement and the lungs were healthy. PCR test for other common viruses that cause pancreatitis (adenovirus, cytomegalovirus, Epstein-Barr virus, enteroviruses, Herpes simplex virus, mumps virus, rotavirus) was requested and results were negative. On abdominal ultrasound, a normal pancreas was reported and no abnormalities were reported in the abdomen (Figure 1). Laboratory evaluations are listed in Table 1.

The patient's echocardiography was also reported to be normal (ejection fraction=80%) and there was no evidence of inflammation or involvement of the heart. In surgical consultation, other causes of the acute abdomen were evaluated and rejected. According to the results of



Figure 1. Sonography of the Patient's Pancreas. Arrows show margins of the pancreas with normal size.

the tests and the patient's clinical symptoms, the diagnosis of acute pancreatitis was made. Depending on the patient's condition, he was fasting and supportive treatment was started. According to blood cell count, PCR test result, blood culture result, and rejection of bacterial causes of pancreatitis, an antibiotic therapy (meropenem) was started. In addition to a significant increase in serum amylase and lipase, a high level of serum D-dimer was also observed in results, and subcutaneous enoxaparin was started to prevent the risk of thrombosis.

Discussion

Acute pancreatitis should be diagnosed if the patient presents with at least two of the following three criteria: abdominal pain, serum amylase and lipase levels higher than three times the normal range, and imaging findings indicating inflammation and involvement of the pancreas.⁵ Vomiting was another symptom mentioned by the patient but the body temperature was normal on examination and there were no complaints of fever. Two-thirds of children with acute pancreatitis vomit, and fever is seen in 30% of these children.⁶ Although it is not uncommon to encounter normal imaging findings at the time of diagnosis of pancreatitis,⁷ we requested abdominal ultrasound and chest x-ray to rule out other differential diagnoses of acute abdomen. Prior to our report, only one case of pancreatitis has been reported worldwide in a 7-year-old child with COVID-19, in which abdominal pain and vomiting along with increased lipase level and abnormal imaging findings led to the diagnosis of pancreatitis.⁸

Various causes have been described for acute pancreatitis in children. The most common causes in the first attack of acute pancreatitis are idiopathic (31%), drug-related poisoning (23%), gallstones (18%), and viral/systemic infections (17%).⁹ In our report, following a positive PCR test for COVID-19 and excluding other causes of acute pancreatitis (no history of specific drug use, no

history of trauma, no history of underlying diseases, no bacterial and viral causes of pancreatitis considering negative blood culture, significantly high erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) levels at admission, no fever, and normal ultrasound of abdomen and pancreas), SARS-COV-2-associated pancreatitis was diagnosed. The patient's antibiotic therapy was discontinued and the patient's condition gradually improved with supportive treatment. The patient's abdominal pain and nausea completely resolved, and D-dimer was periodically checked in the patient during hospitalization. After one week of supportive treatment

Table 1. Laboratory Findings

	The First day of admission	Discharge day
White blood cell	22.09×10 ⁹ /L	4.2×10 ⁹ /L
Polymorphonuclear leukocytes	88.9%	61.5%
Lymphocyte	4.5%	17.6%
Monocyte	2.6%	15%
Eosinophil	4%	5.9%
Hb	15.2gm/dl	13.1gm/dl
Platelets	328×10 ³ /L	205×10 ³ /L
Blood sugar	105 mg/dL	95 mg/dL
CRP	2	---
ESR	29 mm/h	18mm/hr
Amylase	2362 U/L	97.1 U/L (N≤100)
Lipase	1786 U/L	62 U/L (N≤38)
Triglyceride	72 mg/dL	80mg/dL
Cholesterol	105 mg/dL	100 mg/dL
Serum Ca	10.4 mg/dL	9.5 mg/dL
Serum Na	140 meq/L	---
Serum K	4.5 meq/L	---
LDH	352.3 U/L	220 U/L
D-dimer	1590 ng/mL	438.9 ng/ml (N≤ 500)
PT	14.1 Sec	13.5 Sec
PTT	37.4 Sec	32 Sec
INR	1.2	1
Fibrinogen	375 mg/dL	350 mg/dL
AST	35	-
ALT	32	-
SARS COV-2 PCR	Positive	Negative
ABG	pH: 7.39, PCO2: 35.6 mm Hg, HCO3: 21.2 meq/L	-
S/E	Normal	-
U/A	Normal	-
U/C	Negative	-
BUN	10 mg/dL	12 mg/dL
Cr	0.86 mg/dL	0.7 mg/dL

in the hospital and the normalization of laboratory tests, the patient was discharged in good general condition, and he returned for follow-up and D-dimer testing 72 hours after discharge.

Considering the course of the disease, most patients with acute pancreatitis experience its recurrence after five months, which is more common in male gender, overweight individuals, and pancreatic necrosis cases during the first acute attack.⁹ Therefore, the patient was advised to refer to the emergency room in case of abdominal pain, nausea, vomiting, or any other complaints after discharge.

Conclusion

During the SARS-CoV-2 pandemic, children who refer to medical centers with gastrointestinal symptoms and pancreatitis should be checked for COVID-19.

Ethical Approval

Informed consent was obtained from the parents of the patient.

Conflict of Interest Disclosures

No conflict of interest was declared by the authors.

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