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## Acute Pancreatitis Emerged by COVID-19 in a Pediatric Patient

Eren Yıldız,<sup>1</sup> Yavuz Tokgöz<sup>2</sup><sup>1</sup>Department of Pediatrics, Kastamonu University Faculty of Medicine, Kastamonu, Turkey<sup>2</sup>Department of Pediatric Gastroenterology, Hepatology and Nutrition, University of Health Sciences, Kecioren Training and Research Hospital, Ankara, Turkey

### ABSTRACT

The COVID-19 outbreak continues to spread rapidly all over the world. COVID-19 is generally considered a respiratory disease. However, apart from the typical respiratory symptoms, gastrointestinal symptoms, such as diarrhea, nausea, vomiting, and abdominal pain, particularly in children, are increasingly encountered. A five-year-old male patient was admitted to the pediatric emergency service with complaints of severe abdominal pain and loss of appetite. Amylase and lipase blood levels were measured high. The patient was hospitalized with the diagnosis of acute pancreatitis. Polymerase chain reaction test for COVID-19 was performed and it was found positive. Other etiological causes were excluded in the differential diagnosis. In this case report, an extremely rare pediatric COVID-19 case presenting with isolated acute pancreatitis without any other risk factors is presented. SARS-CoV-2 should be considered when investigating the etiology of acute pancreatitis.

**Keywords:** Acute pancreatitis, COVID-19, child



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#### Address for correspondence:

Dr. Eren Yıldız, Department of Pediatrics, Kastamonu University Faculty of Medicine, Kastamonu, Turkey

Phone: +90 530 141 46 84

E-mail: eren70@gmail.com

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### INTRODUCTION

For many years, coronaviruses have been considered to cause mild respiratory infections in humans.<sup>[1]</sup> However, with the emergence of SARS-CoV strains in 2003 and MERS-CoV strains in 2012, it was observed that they may acquire quite fatal features. Emerged in China in 2019 and referred to as the novel type of coronavirus or SARS-CoV-2, the strain spread across the world faster than the previous strains. The disease caused by this strain was named COVID-19.

It was later shown that gastrointestinal symptoms are also encountered frequently in this disease, in which pulmonary system involvement was prioritized when it was first defined.<sup>[2]</sup> The association of acute pancreatitis (AP) with COVID-19 has just begun to be defined. Although rare, AP was reported in children with COVID-19. However, SARS-CoV-2 was not detected as an etiological cause in the pediatric patient who presented with the classical clinical features of AP. Thus, this case report aims to share the experience of this extremely rare pediatric COVID-19 case.

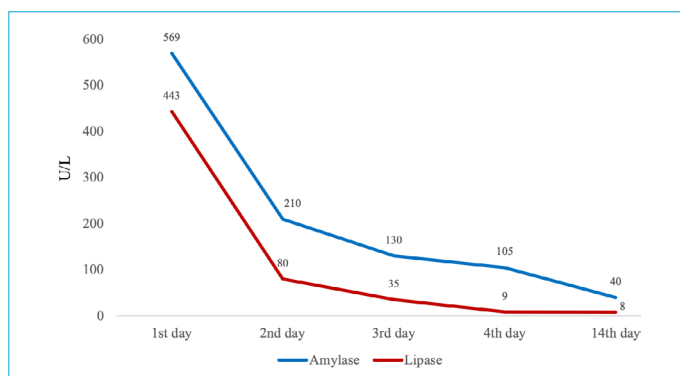
### CASE REPORT

A five-year-old male patient was admitted to the pediatric emergency service with severe abdominal pain and loss of appetite. In the first physical examination, there was tenderness in the epigastric and left upper quadrants. Other system examinations were normal. The patient's vital signs were determined as 36.8°C fever, blood pressure 100/60 mmHg, 75/min rhythmic pulse. Laboratory examinations at the time of diagnosis are summarized in Table 1. Abdominal ultrasonography and abdominal computed tomography were performed as imaging examinations, and pancreatic structures were shown to be normal. The patient was hospitalized with

**Table 1.** Laboratory examinations at the time of diagnosis

	Value	Referans Range
White-cell count (per mm <sup>3</sup> )	11360	4500-15500
Total neutrophils (per mm <sup>3</sup> )	8370	1500-8500
Total lymphocytes (per mm <sup>3</sup> )	2150	1500-7000
Platelet count (per mm <sup>3</sup> )	339000	15000-40000
Hemoglobin (mg/dl)	13.4	11.4-15.5
Amylase (U/L)	569	0-88
Lipase (U/L)	443	7-78
C-reactive protein (mg/L)	0.28	<5
Procalcitonin (ng/ml)	0.04	<0.2
Glucose (mg/dl)	85	60-100
Alanine aminotransferase (U/L)	9	0-45
Aspartate aminotransferase (U/L)	24	15-60
Total Bilirubin (mg/dl)	0.3	0.3-1.0
Direct Bilirubin (mg/dl)	0.08	< 0.20
Alkaline Phosphatase (U/L)	174	93-309
Creatinine (mmol/L)	0.37	0.2-0.6
Calcium (mg/dl)	9.6	8.8-10.8
Total cholesterol (mg/dl)	117	<170
Triglycerides (mg/dl)	48	30-100

the diagnosis of AP. Serology tests for influenza A-B viruses, mumps virus, measles virus, EBV, hepatitis viruses applied for a possible viral etiology were negative. Trauma and anatomical anomalies were excluded in the differential diagnosis. A polymerase chain reaction test for COVID-19 was performed in the combined nasopharyngeal and oropharyngeal swab sample, and it was found positive. Oral feeding of the patient was stopped and analgesic treatment was started along with intravenous fluid support. Antiviral or antibiotic treatments were not initiated. Amylase and lipase blood concentrations decreased in the follow-up of the patient. The course of the daily measurements of amylase and lipase levels are shown in Figure 1. As the symptoms subsided on the second day

**Figure 1.** The course of daily measurements of amylase and lipase levels.

of his hospitalization, a fat-restricted diet was started. The patient, whose symptoms completely disappeared, in the follow-up, was discharged.

## DISCUSSION

Pancreatic involvement has not been clearly demonstrated in pediatric COVID-19. In the study of Samies et al., AP was reported in three children diagnosed with COVID-19 who also had SARS-CoV-2 symptoms such as cough, fever, headache, and anosmia.<sup>[2]</sup> According to our current knowledge, a pediatric AP case who presented with an isolated clinic presentation and was subsequently diagnosed with COVID-19 has not been reported yet. Our patient had a complaint of abdominal pain suggestive of AP. Pancreatic enzyme blood levels had increased sevenfold than normal. No positive imaging findings were shown in our patient. The AP followed up on our patient was also mild and self-limiting. Among AP caused by viral etiologies in pediatric cases, our knowledge about AP caused by COVID-19 is rather limited. After ruling out other causes for our patient, COVID-19 was accepted as the main etiology.

The pathogenetic process of COVID-19 begins with the binding of the virus to the angiotensin-converting enzyme 2 (ACE-2) receptor on the surface of host cells. ACE-2 receptors are found in many parts of the body. A study showed that the mRNA level of ACE-2 is found in higher amounts in the pancreas than in the lungs. This receptor is expressed in exocrine glands and islet cells.<sup>[3]</sup> In the 2013 epidemic caused by the SARS-CoV virus, which comes from the same virus family and uses the ACE-2 receptor for cell entry, acute diabetes cases were reported due to pancreatic damage.<sup>[4]</sup> Theoretically, viral pancreatitis develops due to direct damage to pancreatic acinar cells secondary to inflammation. As an alternative pathogenetic mechanism, AP may develop in COVID-19 due to immune-mediated mechanisms.<sup>[5]</sup>

## CONCLUSION

In the light of these findings, it is recommended to consider SARS-CoV-2 while investigating the etiology of AP and to evaluate patients with AP-related gastrointestinal symptoms when approaching COVID-19 patients.

## Disclosures

**Informed Consent:** Written informed consent was obtained from the patient's family for the publication of the case report.

**Conflict of Interest:** None.

**Peer-review:** Externally peer-reviewed.

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