

## Case report: High amylase and lipase in COVID-19 Pediatric patients

FAHAD MISHAL ALHARBI

Consultant, Pediatrics Emergency Medicine  
Security Forces Hospital-Riyadh-KSA

Consultant Disaster Medicine, Brown University-USA

ELSHARIF AHMED BAZIE<sup>1</sup>

Specialist, Pediatrics Emergency Medicine  
Security Forces Hospital-Riyadh-KSA

WEJDAN HAMED ABDULLAH ALSHAMMARI

Pediatrics Resident-Security Forces Hospital Riyadh-KSA

### Abstract

*Pneumonia and acute respiratory distress syndrome caused by COVID-19 reported in China in 2019 for the first time. Most of the patients with SARS-CO-2 had mild symptoms like myalgia, headache, and gastrointestinal symptoms.*

*We are presenting a 10 years and 6-month-old boy with vomiting and anorexia found to have high amylase and lipase level with positive SARS – CO-2 PCR test.*

*In this pandemic of COVID-19 patients with gastrointestinal manifestation, acute pancreatitis must be in our mind.*

**Keywords:** Amylase, Lipase, COVID-19, Pediatrics

### INTRODUCTION

Pneumonia and acute respiratory distress syndrome caused by COVID-19 reported in China In 2019 for the first time. [1].

Pediatric populations commonly present with fever (36%-80%), dry cough (19%-65%), tachycardia (42%), tachypnea (29%), and less

---

<sup>1</sup> Corresponding author: elsharifbazie@gmail.com

commonly diarrhea, vomiting, and abdominal pain (4%-10%) [2]. Most of the patients with SARS-CO-2 had mild symptoms like myalgia, headache, and gastrointestinal symptoms[3].

Common causes of acute pancreatitis in children are trauma, acute infection, and mechanical obstruction of the common bile duct by roundworms, also the etiology in the majority of cases most time is unknown.[4]

The complications of acute pancreatitis in children include diabetes mellitus, retroperitoneal hemorrhage, pseudocyst formation, and hypocalcemic tetany.[4]

Treatment of uncomplicated acute pancreatitis should be conservative if the diagnosis can be made without operation[4].

### **CASE REPORT:**

Our patient is a medically free boy of 10 years and 6 month old presented to the emergency department with persistent vomiting which became coffee ground appearance , associated with watery diarrhea , nausea and anorexia. No fever or respiratory symptoms.

On examination: vital signs were BP: 108/74, P: 112, T: 36.7°C, RR: 24, WT 30KG. He appeared uncomfortable, but nontoxic. our patient was mild dehydrated with normal abdominal examination other than epigastric tenderness.

Investigations: SARS-COV-2[COVID-19] PCR was Positive, Lipase 251.50 IU/L[13-60 IU/L], Amylase 123 U/L[13-53 U/L] , C-Reactive protein (CRP) 10.46 MG/L , Lipide profile was normal, Complete blood count was normal, Renal and Liver functions were normal, blood glucose 4.6 mg/dl, Blood Culture No Growth

Patient was admitted, rehydrated and antibiotics given till blood culture result. He was discharge in good condition.

### **DISCUSSION**

Lipase is enzyme releases from pancreatic injury also many studies mentioned other causes for lipase elevation in very ill patients like pancreatic hypoperfusion from shock, mechanical ventilation, pulmonary disease, and renal failure [5].

Acute pancreatitis with elevated lipase occurs in 1/10,000 per year[6]. The causes of acute pancreatitis in children is: viral infections in 8-10%, biliary obstruction 10-30%, medications 5\_25%, and trauma in 10\_20%.[6]

Many worldwide studies showed elevated lipase levels with the possibility of pancreatic injury as complications of SARS-CoV-2 infection[7\_9]. Recently a study done in China showed elevated lipase levels in 52 patients with COVID-19[10]. In many studies, the course of elevated lipase level on COVID-19 was not stressed clinically[11].

Pancreatic injury and involvement of viral diseases were reported in many studies as a cause for high lipase enzyme level[11], but it was not clear if it was from direct pancreas involvement or due to systemic inflammatory reaction following viral infection[12,13].

Direct COVID-19 viral affection of the pancreas and elevation of lipase enzyme levels was reported [14,15]. the mechanism for that is the entrance of the viruses to the gastrointestinal tract epithelium via ACE -2 receptors which also found in the alveoli, by this pathophysiology the explanation of the thromboembolism in COVID-19 and pancreatic involvement was explained [15].

A large study was done in the United States of America(USA) showed a high lipase level in patients with COVID-19 is not due to pancreatitis and also they reported 48% of their patients had non-pancreatic high lipase level, 12% colitis, and 18% had gastroenteritis[17]. Also other studies in the USA, none of their patients met the criteria of acute pancreatitis[16].

Our patient had a high level of lipase and amylase with a gastroenteritis clinical picture but did not meet the criteria of acute pancreatitis.

## REFERENCES

- 1- Rothan H.A., Byrareddy S.N. The epidemiology and pathogenesis of coronavirus disease (COVID-19) outbreak. *J Autoimmun.* 2020;109
- 2- Streng A., Hartmann K., Armann J., Berner R., Liese J.G. COVID-19 bei hospitalisierten Kindern und Jugendlichen: Ein systematischer Review zu publizierten Fallserien (Stand 31.03.2020) und erste Daten aus Deutschland [COVID-19 in hospitalized children and adolescents] *Monatsschr Kinderheilkd.* 2020:1–12. [Published online ahead of print, 2020 April 21.
- 3- Dong Y, Mo X, Hu Y, Qi X, Jiang F, Jiang Z. Epidemiology of COVID-19 among children in China. *Pediatrics.* 2020 doi: 10.1542/peds.2020-0702. Accessed 16 May, 2020.
- 4- <https://pediatrics.aappublications.org/content/19/6/1002>
- 5- Muniraj T, Dang S, Pitchumoni CS. PANCREATITIS OR NOT?--Elevated lipase and amylase in ICU patients. *J Crit Care* 2015;30(6):1370–5.
- 6- Pohl J.F., Uc A. Paediatric pancreatitis. *Curr Opin Gastroenterol.* 2015;31(5):380–386.

- 7-Liu F, Long X, Zhang B, Zhang W, Chen X, Zhang Z: [ACE2 expression in pancreas may cause pancreatic damage after SARS-CoV-2 infection](#). Clin Gastroenterol Hepatol. 2020, 18:2128-2130. [10.1016/j.cgh.2020.04.040](#)
- 8- Anand ER, Major C, Pickering O, et al. Acute pancreatitis in a COVID-19 patient. Br J Surg 2020;107(7):e182.
- 9- Hadi A, Werge M, Kristiansen KT, et al. Coronavirus Disease-19 (COVID-19) associated with severe acute pancreatitis: Case report on three family members. Pancreatology 2020;20(4):665–7.
- 10- Aloysius MM, Thatti A, Gupta A, et al. COVID-19 presenting as acute pancreatitis. Pancreatology 2020. [Epub ahead of print May 8, 2020.]
- 11-de-Madaria E, Siau K, Cardenas-Jaen K. Increased amylase and lipase in patients with COVID-19 pneumonia: Don't blame the pancreas just yet! Gastroenterology 2020. [Epub ahead of print April 21, 2020.]
- 12-Thaweerat W. Current evidence on pancreatic involvement in SARS-CoV-2 infection. Pancreatology 2020. [Epub ahead of print May 27, 2020.]
- 13-Parenti D.M., Steinberg W, Kang P. Infectious Causes of acute pancreatitis. Pancreas. 1996;13(4):356–371.
- 14- Capua I, Mercalli A, Pizzuto M, Romero-Tejeda A, Kasloff S, DeBattisti C. Influenza A viruses grow in human pancreatic cells and cause pancreatitis and diabetes in an animal model. J Virol. 2013;87(1):597–610.
- 15- Bikdeli B., Madhavan M.V., Jimenez D., Chuich T., Dreyfus I., Driggin E. COVID-19 and Thrombotic or thromboembolic disease: implications for prevention, antithrombotic therapy, and follow-up. J Am Coll Cardiol. 2020 doi: 10.1016/j.jacc.2020.04.031.
- 16- Banks PA, Bollen TL, Dervenis C, et al. Classification of acute pancreatitis—2012: Revision of the atlanta classification and definitions by international consensus. Gut 2013;62(1):102–11.
- 17- Jin DX, Yang AL, Suleiman SL, et al. Marked serum lipase elevations are associated with longer hospitalizations in patients with non-pancreatic hyperlipasemia. Gastroenterology. 2019;156(6):S-1033–S-1034.