

Long COVID: A Case of Concomitant Pancreatic Insufficiency with Inflammatory Bowel Disease

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Introduction

- ❖ Although SARS-CoV-2 typically affects the respiratory tract, causing flu-like symptoms and lung pathology, it can generate cytokine storms in a subset of individuals, resulting in multiorgan dysfunction. The interaction between angiotensin-converting enzyme 2 (ACE2) receptors and SARS-CoV-2 has been linked with the pathogenesis and associated outcome of SARS-CoV-2-related illness. ACE2 receptors are expressed throughout the gastrointestinal tract, higher in the ileum, colon, and pancreas (exocrine glands and islet cells) compared to the lungs [1-2]. Thus, theoretically, all these organs are potential targets for SARS-CoV-2.

Case Presentation

- ❖ A 69-year-old female with metabolic syndrome, hypothyroidism, and no prior history of pancreatic or inflammatory bowel disorders initially presents with a 1-week history of intermittent pale, foul-smelling, watery stool that floats, associated crampy abdominal pain, and flatulence.
- ❖ She denies any nausea, vomiting, hematochezia, or melena. The patient denies a family history of pancreatic or inflammatory bowel disorders. Physical examination, initial diagnostic workup including laboratory results, abdominal CT scan, and enteric bacterial panel fecal testing were unremarkable except for elevated fecal lactoferrin and low Pancreatic Elastase-1 levels. The patient was placed on Imodium, Lomotil, and hyoscyamine.
- ❖ Over the course of 3 months, her symptoms progressively worsened with 4-5 episodes of loose bowel per day, (3/10) abdominal pain relieved by defecation, fatigue, and a cumulative unintentional 25lb weight loss. She's non-responsive to loperamide, diphenoxylate/atropine, hyoscyamine, or dicyclomine.
- ❖ Repeat stool tests showed elevated calprotectin levels, with no evidence of celiac disease or immunoglobulin A deficiency. Colonoscopy shows a solitary adenomatous polyp, acute sigmoiditis, and sigmoid diverticulosis; biopsy suggests either segmental colitis with associated diverticulosis or an infectious process.
- ❖ After failing several treatments, this patient has shown significant improvement with sulfasalazine, cholestyramine, and a low FODMAP diet.
- ❖ Currently, the patient is stable on pancreatic lipase, Lip-Prot-Amyl (CREON).

Discussion and Conclusion

- ❖ Gastrointestinal manifestations of COVID-19 include diarrhea, vomiting, abdominal pain, and GI bleeding, which may or may not present with respiratory symptomatology, with diarrhea being the most common. Lui et al. and Wang et al. both found that 17% of patients with severe COVID-19 (pneumonia or oxygen saturation of 93%) had a pancreatic injury, while Lui et al. note only approximately 2% of patients with non-severe COVID-19 had a pancreatic injury [3-4].
- ❖ Diarrhea is a common gastrointestinal manifestation of pancreatic insufficiency, inflammatory bowel disease, and SARS-CoV-2 infection, occurring in about 11.3% of patients diagnosed with SARS-CoV-2 infection [5].
- ❖ Stool viral RNA was detected in 38.5% and 8.7% of patients with and without diarrhea, respectively [6].
- ❖ Pancreatic Elastase-1 fecal test has a 90.2% specificity and 72.2% sensitivity for severe exocrine pancreatic insufficiency

- ❖ SARS-CoV-2 exerts a cytopathic effect when it enters the bowel, resulting in upregulating proinflammatory cytokines and changes in gut flora. In COVID-19 individuals with persistent diarrhea, the inflammatory biomarker, fecal calprotectin, is usually elevated. A similar finding was also noted in our patient. Fecal calprotectin and fetal lactoferrin are two biomarkers that offer a reliable, highly effective, and non-invasive means of diagnosing and monitoring inflammatory bowel disease [7].
- ❖ Several studies note isolated cases of SARS-CoV-2 associated endocrine pancreatic insufficiency and Inflammatory Bowel Disease, but limited data exist on both co-occurring, especially exocrine insufficiency.
- ❖ Based on the analysis of the biopsy results and fecal findings, it is conclusive that the patient is experiencing severe pancreatic insufficiency with concomitant inflammatory bowel disease (Crohn's Disease) and COVID-19 as the inciting element.

Table 1: Laboratory

Findings

COMPONENT	REFERENCE RANGE:	RESULTS
Pancreatic Elastase-1 ****	Normal: >200 mcg/g Moderate Pancreatic Insufficiency: 100-200 mcg/g Severe Pancreatic Insufficiency: <100 mcg/g	<15 mcg/g (Low)
Lactoferrin, QUANT:	Baseline (normal) 0.00 - 7.24 ug/mL(g) Elevated: >7.24 ug/mL(g)	79.83 ug/mL(g) (High)
IgA*	70 - 400 mg/dL	241 mg/dL (Normal)
Calprotectin, Stool	Normal: <50 mcg/g Borderline: 50-120 mcg/g Elevated: >120 mcg/g	153 mcg/g (High)
Tissue Transglutaminase IgA Antibody	<7 U/mL	0.5 U/mL (Normal)
TSH*	0.27 - 4.20 uIU/mL	1.35
Salmonella sp PCR*	None Detected	None Detected (Normal)
Shigella sp/Enteroinvasive E. coli (EIEC) PCR	None Detected	None Detected (Normal)
Campylobacter sp (jejuni and coli) PCR*	None Detected	None Detected (Normal)
Shiga toxin 1/Shiga toxin 2 genes PCR*	None Detected	None Detected (Normal)
Clostridium difficile toxin by PCR*	Negative	Negative (Normal)
Ova and parasite	Negative	Negative (Normal)
<i>IgA- Immunoglobulin, TSH- thyroid stimulating hormone, PCR- Polymerase chain reaction, sp-species +++Repeat test showed similar findings</i>		

Significance

- ❖ Underscore the importance of long-term COVID-19 health surveillance and complication registry (Local and Global)
- ❖ In patients with persistent diarrhea post-COVID-19 infection, the differential diagnosis should include exocrine pancreatic insufficiency and/or inflammatory bowel disease.
- ❖ Explore the potential of SARS-CoV-2 infection as a new source of viral pancreatitis.
- ❖ Reinforce the possibility of SARS-CoV-2 inducing autoantibodies, potentially leading to immune-mediated disease or autoimmune conditions.

Reference

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