Post Infection COVID Conundrum

Nastassja Williams, MSN, APRN, FNP-BC
Digestive Health Center
Northwestern Memorial Hospital, Chicago, IL
Disclosures

All individuals in control of the content of continuing education activities provided by the Annenberg Center for Health Sciences at Eisenhower are required to disclose to the audience any real or apparent commercial financial affiliations related to the content of the presentation or enduring material. Full disclosure of all commercial relationships must be made in writing to the audience prior to the activity. All staff at the Annenberg Center for Health Sciences at Eisenhower and the Gastroenterology and Hepatology Advanced Practice Providers have no relationships to disclose.
Nastassja Williams, MSN, APRN, FNP-BC
No financial relationships to disclose.
Coronavirus Disease 2019 (COVID-19)

- Developed beginning of December 2019 in Whuan Hubei province of China and has spread all over the world
- Caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV2)
- Most common symptoms at onset of illness are fever, fatigue, dry cough, myalgia and dyspnea
- Less common symptoms such as headache, abdominal pain, diarrhea, nausea and vomiting
- Proportion of patients complaining of gastrointestinal symptoms is variable between 3.4%-17%
- (SARS-CoV2) RNA reported detectable in 50% of patients stool samples of which 50% had diarrhea
- Anorexia and generalized abdominal reported even 10-20 days after negative blood tests and negative PCR of respiratory samples
  - Main reason may be due to the long persistence of COVID-19 in the gastrointestinal tracts after primary treatment


Seyyed Mohammad Miri 1, Fatemeh Roozbeh 2, Ali Omranirad 3 and Seyed Moayed Alavian 4.
Panic of Buying Toilet Paper?

- Study in China reported diarrhea instead of classic viral symptoms like fever
- SARS-CoV-2 confirmed from biopsy and stool specimen in GI tract
- Disinfection of infected patients’ vomitus, feces, and other bodily fluids is very important for both healthcare providers and family members
- Highly recommended for self-isolated patients to disinfect of toilets after each usage by COVID-19 patients
- Before the respiratory symptoms, many patients infected with COVID-19 presented with diarrhea, nausea, vomiting and abdominal pain

COVID-19 Prevalence of Gastrointestinal Symptoms

- Review of data 2,023 patients found
  - Anorexia 46.5%
  - Vomiting 44%
  - Nausea 21.3%
  - Diarrhea 12.9%
  - GI Bleeding 9.6%
  - Abdominal pain 6%

- Review of 15 studies of 2,800 patients
  - Diarrhea 7.5%
  - Nausea 4.5%
  - Anorexia 4.4%
  - Vomiting 1.3%
  - Abdominal pain/ belching/reflux < 0.5%

Underlying Mechanism for GI Symptoms in COVID-19

Angiotensin-Converting Enzyme 2 (ACE2)

- Spike glycoprotein (vital protein structure of the SAR S-CoV-2) binds to the host cell-ACE2 receptor interfering with and suppressing the host’s immune response
- Receptors in the lungs, myocardium, proximal kidney tubule, and urothelial bladder cells
- Receptors expressed in the digestive tract, including, the mucosal surface of the oral cavity and tongue, esophagus, and absorptive enterocytes of the ileum and colon
- Expression is approximately 100-fold higher in the gastrointestinal tract (particularly the colon) than in the respiratory system
- Evidence of fecal shedding of viral RNA 11 days after respiratory symptoms subside
- Further supports viral replication in the digestive tract and potentially a fecal-oral transmission

Prospective study Hong Kong involved 15 patients with COVID-19 hospitalized with laboratory-confirmed SARS-CoV-2 infection

The gut microbiome of patients with COVID-19 is characterized by enrichment of opportunistic pathogens and depletion of commensals bacteria that produce protective responses in the gut

Gut dysbiosis persists during the COVID-19 disease course, even after clearance/recovery of SARS-CoV-2 infection

Decrease Lactobacillus and Bifidobacterium and the importance of treatment with probiotics for COVID-19 has also been emphasized in the guidance given from China’s National Health Commission
Post COVID-19 Irritable Bowel Syndrome
ROME IV IBS Diagnostic Criteria

IBS is defined as recurrent abdominal pain, on average, at least 1 day per week in the last 3 months, associated with 2 or more of the following criteria:

• Related to defecation
• Associated with a change in stool frequency
• Associated with a change in stool form (appearance)

(Courtesy of Cabot Health, Bristol Stool Chart: https://commons.wikimedia.org/wiki/File:Bristol_stool_chart.svg.)

Rome IV Postinfectious IBS Diagnosis Criteria

Rome IV IBS Diagnostic Criteria

IBS is defined as recurrent abdominal pain, on average, at least 1 day per week in the last 3 months, associated with 2 or more of the following criteria:

- Related to defecation
- Associated with a change in stool frequency
- Associated with a change in stool form (appearance)

(Courtesy of Cabot Health, Bristol Stool Chart: https://commons.wikimedia.org/wiki/File:Bristol_stool_chart.svg.)


Post Infectious IBS

Long COVID “Long-Haulers”

- Post-COVID is a condition, recognized by the National Institutes of Health and the Centers for Disease Control and Prevention, is defined by a wide-range of symptoms of illness weeks or months after an initial coronavirus infection
- Patients who recover from the disease with or without medical treatment still suffer from symptoms
- More research is needed

CDC list of symptoms

- Tiredness or fatigue
- Difficulty thinking or concentrating (sometimes referred to as "brain fog")
- Headache
- Loss/Change of smell or taste
- Dizziness on standing
- Palpiations
- Chest pain or stomach pain
- Difficulty breathing or shortness of breath
- Cough
- Joint or muscle pain
- Diarrhea
- Symptoms that get worse after physical or mental activities

Table 2. Proposed diagnostic criteria for post-COVID-19 FGIDs/DGBI

<table>
<thead>
<tr>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fulfilling Rome IV criteria for any FGID/DGBI in the past 3 mo, with symptom onset at least 6 mo before diagnosis associated with:</td>
</tr>
<tr>
<td>• Previous COVID-19 infection confirmed by SARS-CoV-2 real-time PCR performed at regional reference laboratories</td>
</tr>
<tr>
<td>• Symptom development immediately after resolution of acute COVID-19 infection</td>
</tr>
<tr>
<td>Should not meet criteria for FGIDs before onset of acute illness</td>
</tr>
</tbody>
</table>

Rome IV Algorithm for Post Infectious IBS

Figure 1. Rome IV diagnostic algorithm for postinfection irritable bowel syndrome.
Proposed Treatment Algorithm for PI-IBS

Figure 6. An expert consensus-based proposed treatment algorithm for PI-IBS

*Based on the experience of the of the experts, as most of the PI-IBS are M-IBS and D-IBS, this should be first step and it is expected to be effective;
**base the sequence of treatment on predominant symptoms, preference of patient and availability of treatment; the order of medications reflect the balance between the evidence in IBS in general and expected side effects;
***these medications are not expected to induce either constipation or diarrhea.

Impact of COVID-19 on Patients With IBS and Depression & Anxiety

COVID-19 pandemic increase physiological distress and gastrointestinal symptoms

• Study 55 patients with IBS+Depression+Anxiety
  – 92% increase stress
  – 81% increased anxiety
  – 67% depressive symptoms
  – 48% increased abdominal pain
  – 45% increase in diarrhea
  – 44% increase constipation

Kamp KJ, PhD; Levy RL, PhD; Munson SA, PhD; Heitkemper MM, PhD Impact of COVID-19 on Individuals With Irritable Bowel Syndrome and Comorbid Anxiety and/or Depression. Journal of Clinical Gastroenterology: March 12, 2021 - Volume - Issue - doi: 10.1097/MCG.0000000000001515.
Summary

- SARS-CoV2 affects the GI system with an inflammatory response and may cause prolonged symptoms due to the long persistence of COVID-19 in the gastrointestinal tract after primary treatment.
- Evidence of fecal shedding therefore potential for oral-fecal transmission.
- Post infectious IBS symptoms are real we should be vigilant as providers in those patients with COVID-19.
- Treatment is symptom based.
- COVID-19 pandemic increase physiological distress and gastrointestinal symptoms in patients with IBS.
THANK YOU

Questions?

EMAIL: NLUKASIK@NM.ORG