COVID-19 and The Gastrointestinal System

CME

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Outline

- Risk Factors
- Gastrointestinal Manifestations
- Diagnostic Testing and When?
- Gastrointestinal Complications
- Acute Management Principles
- Vaccination and IBD
- Implications for Endoscopy
- Long COVID with GI Symptoms

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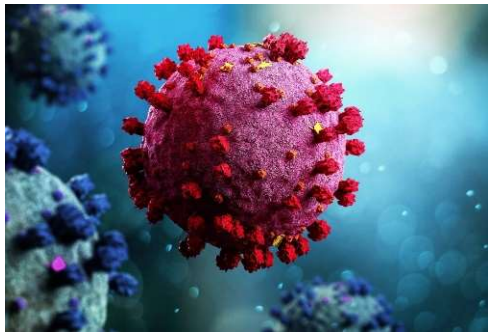
Introduction

- Usually URTI/Pulmonary involvement

- Gastrointestinal involvement common[1,2,3]
  - ACE2 expression in intestine
  - Receptor for SARS-CoV-2 virus
  - Symptoms due to direct viral attack as well as tissue damage from immune response



Risk Factors

- General risk factors:[4]
  - Age, Diabetes mellitus, Chronic Cardiovascular or Respiratory disease, Cancer
- Glucocorticoids[5,6,7]
  - Widely accepted
  - Increase risk of severe COVID-19 infection
  - OR: 6.9 (95% CI, 2.3–20.5)
  - Prednisone ≥20mg/day
- Inflammatory Bowel Disease (IBD)[5,8,9]
  - No independent increase risk of infection or severity
  - No additional risk from Immunomodulators and anti-TNF biologics

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Risk Factors

- Proton Pump Inhibitors?[10]
  - Single cross sectional survey
    - Dose dependent increase in likelihood of infection
    - No additional risk with H2RA's
    - Heavy scrutiny, independently reproduced but still in press
    - Likely residual confounding

TABLE 2. Results from the multivariable logistic regression model on reporting a positive COVID-19 test (N=53,130)

Variable	Positive COVID-19 test (n=3,386)	aOR [95% CI][a]
PPI exposure:		
No current PPI use	752 (2.1)	Reference
Once daily PPI use or less	2,436 (16.4)	2.15 [1.90–2.44][b]
Twice daily PPI use	198 (11.7)	3.67 [2.93–4.60][b]
H2RA exposure:		
No current H2RA use	2,828 (6.3)	Reference
Once daily H2RA use or less	415 (5.6)	0.85 [0.74–0.99][c]
Twice daily H2RA use	143 (12.4)	0.86 [0.66–1.11]

Note: data are presented as n (% of row).

aOR, adjusted odds ratio; CI, confidence interval; H2RA, histamine-2 receptor antagonist; PPI, proton pump inhibitor.

a The multivariable logistic regression model included PPI use, H2RA use, age, sex, race/ethnicity, education level, marital status, employment status, total household annual income, body mass index, current smoking status, alcohol use per week, U.S. region, insurance status, usual source of care, and presence of Rome IV irritable bowel syndrome, celiac disease, gastroesophageal reflux disease, liver cirrhosis, Crohn's disease, ulcerative colitis, diabetes, and HIV/AIDS.

b p<.001

c p=.032

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GI Manifestations

- GI symptoms in 30-65%[11-16]
- 15-20% present with isolated GI symptoms[11-16]

Table 1

Gastrointestinal Symptoms on Presentation of Hospitalized Patients With COVID-19 (N = 318)

Gastrointestinal symptoms	n (%)
Any gastrointestinal symptoms	195 (61.3)
Loss of appetite	110 (34.8)
Diarrhea	107 (33.7)
Nausea	84 (26.4)
Vomiting	49 (15.4)
Abdominal pain	46 (14.5)
Weight loss	30 (9.4)
Constipation	3 (0.94)
Melena	2 (0.63)
Reflux	2 (0.63)
Dysphagia	1 (0.31)
Odynophagia	1 (0.31)
Hematochezia	1 (0.31)

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GI Manifestations

- Diarrhoea associated with more favourable prognosis[17-19]

- Italian Cohort Study[19]
  - n=190 hospitalised patients
  - Lower risk of mortality (OR=0.38, 95% CI 0.17-0.86)

- Potential Mechanism:[17-19]
  - Preferential targeting of intestinal mucosa in some patients
  - Milder disease course c.f respiratory symptoms

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Hepatic Manifestations

- Elevated transaminases[20]
  - Particularly AST but can be a mixed picture
  - 25-60%
- Usually mild and transient[20]
- Potential mechanisms:[20]
  - Direct viral infection of hepatocytes
  - Immune-mediated inflammation
  - Pneumonia-associated hypoxia
  - Drug-induced hepatotoxicity (e.g antibiotics)

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GI Symptoms: When to Test?

- Outpatients with new onset GI symptoms >24 hours[21]
  - Risk stratification important

- Established GI disease with symptoms suggestive of a flare
  - e.g Ulcerative Colitis/Crohn's disease

- Stool testing important
  - Particularly for *C.difficile* exclusion in at risk patients
  - Implications for management (e.g Loperamide)

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Gastrointestinal Complications[20,22,23]

- Acute Liver Injury

- Acute Cholecystitis
  - Widely reported
  - Usually Acalculous
  - Aetiology unclear ?gallbladder hypomotility

- Acute Pancreatitis
  - Widely reported especially in context of critical illness
  - Necrotising pancreatitis also reported
  - Aetiology poorly understood ?direct vs indirect

- Ileus and feeding intolerance
  - 46-56% in ICU patients
  - Multifactorial: usually on sedatives/opiates

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