

Background

- Multiple meta-analyses have shown that over 15% patients with COVID-19 have at least one gastrointestinal complaint, most commonly diarrhea.
- The effects on the gastrointestinal system are thought to be mediated by the high expression of angiotensin-converting enzyme 2 (ACE2) and cellular serine proteases (TMPRSS2) in enterocytes, which cause altered intestinal permeability.
- The purpose of this study was to determine the incidence of diarrhea as it relates to COVID-19 infection and to determine if having concomitant diarrhea had a significant impact on disease course.

Methods

- A retrospective chart review of 164,730 patients in a hospital system older than 18 years of age who had a positive SARS-CoV-2 test from March 2020 to February 2022 was completed.
- Diarrhea was determined using ICD code or patient's symptoms and confounding variables such as IBD, IBS, Celiac, Clostridium difficile, and pancreatic insufficiency were excluded.
- Demographic clinical characteristics and outcomes, including inpatient admission and mortality, were compared in patients with and without diarrhea.
- The Mann-Whitney test and Fisher's exact or Chi-square test was used for continuous and categorical variables respectively and multivariate logistic regression was used to evaluate for significant differences in disease outcome between the two groups.

Results

Demographics	Total Patients	With Diarrhea	Without Diarrhea	P-value
Total patients, n (%)	164,730	14,648 (8.89%)	150,082 (91.11%)	-
Age, Mean ± SD	49.09 ± 19.09	54.189 ± 18.50	48.59 ± 19.03	< 0.0001
Female	89,391 (54.28%)	8,059 (55.02%)	81,332 (54.20%)	< 0.058
Race/Ethnicity				< 0.001
White	93,407 (56.70%)	8,153 (55.66%)	85,254 (56.80)	
Asian	2,456 (1.49%)	152 (1.04%)	2,304 (1.54%)	
Pacific Islander	9,158 (5.56%)	859 (5.86%)	8,299 (5.53%)	
Hispanic	45,353 (27.53%)	4,656 (31.79%)	40,697 (27.12%)	
Native American	3,086 (1.76%)	438 (2.99%)	2,648 (1.76%)	
Unknown/other	11,270 (6.84%)	390 (2.66%)	10,880(7.25%)	
Use of Immunomodulators	6,552 (3.98%)	1,566 (10.69%)	4,986 (3.32%)	< 0.001
Use of Outpatient Antibiotics	19,414 (11.79%)	3,518 (24.02%)	15,896 (10.59%)	< 0.001
COPD (Chronic Obstructive Pulmonary Disease)	7,718 (4.69%)	1,304 (8.90%)	6,414 (4.27%)	< 0.001
Hypertension	35,462 (21.53%)	6,096 (41.62%)	29,366 (19.57%)	< 0.001
Cancer	4,185 (2.54%)	622 (4.25%)	3,563 (2.37%)	< 0.001
Chronic Kidney Disease	10,069 (6.11%)	1,991 (13.59%)	8,078 (5.38%)	< 0.001
Coronary Artery Disease	12,213 (7.41%)	2,127 (14.52%)	10,086 (6.72%)	< 0.001
Obesity	12,102 (7.35%)	2,394 (16.34%)	9,708 (6.47%)	< 0.001

Discussion

- Of the 164,730 patients included, 8.89% had diarrhea at the time of SARS-CoV-2 and 20.16% of inpatient admissions for SARS-CoV-2 were associated with diarrhea
- Patients who had diarrhea and COVID-19 were sicker, having more comorbid conditions than those without diarrhea in our cohort.
- On multivariate analysis, after controlling for age, gender, race, comorbidities that could impact patient outcome, use of immunomodulators and outpatient antibiotics:
 - Diarrhea was an independent risk factor for inpatient hospitalization (OR 2.39, CI 95% 2.28-2.51, P< 0.001)
 - Diarrhea was an independent risk factor for inpatient mortality (OR 1.15, CI 96% 1.06-1.26, P= 0.001)
- Attention should be given to not only respiratory complaints of COVID-19, but also gastrointestinal complaints, as they are an indicator of poor prognosis and mortality.

References

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