Corticosteroid use in inflammatory bowel disease (IBD) patients may lead to worse IBD related outcomes after COVID-19 infection

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Introduction & Aims

There is growing but limited data on the effects COVID-19 has on the disease course of IBD. COVID-19 can enter epithelial cells of the gut via ACE receptors causing cell dysfunction, inflammation, and dysbiosis. Thus, we set out to evaluate IBD outcomes during and three months after COVID-19 infection.

Methods

- Performed a retrospective case series comparing IBD patients in remission versus not in remission diagnosed with COVID-19
- Single tertiary care center from March 2020 to March 2021
- COVID-19 diagnosis was made by positive rapid antigen and/or PCR
- Analyzed demographics, medications, need for hospitalization, changes to immunosuppressive therapy, and IBD severity and remission status noted by endoscopic scoring or Physician Global Assessment
- Compared outcomes at the time of COVID-19 diagnosis and 3 months post infection.

Results

Table 1. Demographics of IBD patients

	Remission (SD) N=30	Not in remission (SD) N=27	P-value
Demographics			
Age	40.2 (16.3)	35.5 (13.7)	0.25
Sex			
Male	46.7%	33.3%	0.42
Female	53.3%	66.7%	0.42
Race			
White	70%	74%	0.78
Black	20%	18.5%	1.00
Asian	10%	3.7%	0.61
Hispanic	0%	3.7%	0.47

Results

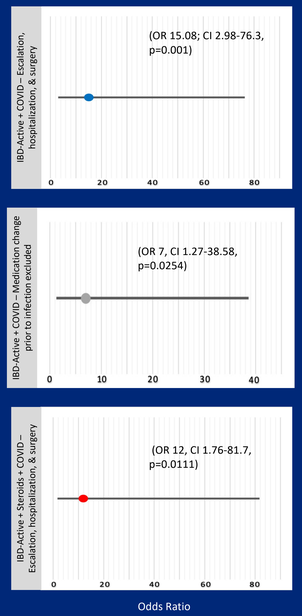
Table 2. IBD Characteristics

IBD Characteristics	Remission N=30	Not in Remission N=27	P-Values
Crohn's disease	73.3%	63.0%	0.57
Ulcerative colitis	26.7%	37%	0.57
IBD medication use			
None	6.7%	0%	0.49
5-ASA	23.3%	14.8%	0.51
Immunomodulator			
6MP/AZA	3.3%	11.1%	0.34
MTX	10%	7.4%	1.00
Corticosteroids	0%	40.7%	**0.00001**
Budesonide	0%	18.5%	**0.02**
Prednisone	0%	22.2%	**0.01**
Biologics	73.3%	96.3%	**0.03**
Vedolizumab	16.7%	22.2%	0.74
Anti-TNF	43.3%	51.9%	0.60
Ustekinumab	13.3%	22.2%	0.49
Tofacitinib	0%	0%	1.00

Table 3. IBD and COVID related outcomes 3 months after diagnosis of COVID

	Remission N=30	Not in Remission N=27	P-Values
IBD Related Outcomes at 3 months			
Experience IBD flare	10%	51.8%	**0.005**
IBD medication held	13.3%	29.6%	0.13
Escalation of immunosuppressive therapy	10%	44.4%	**0.0032**
Initiation of new steroid therapy	6.7%	22.2%	0.19
Hospitalization/IBD surgery	0%	18.5%	**0.02**
COVID-19 Related Outcomes			
Hospitalization	13.3%	7.4%	0.67
ICU with intubation	0%	0%	1.00
Any COVID-19 therapy	3.3%	14.8%	0.18
Death	0%	0%	1.00

Results



Patients not in remission were significantly more likely to need escalation in treatment and had more IBD related hospitalization and surgery at 3 months (18.5% vs 0%, p=0.02).

After excluding patients who had changes in IBD medications 90 days prior to COVID-19 diagnosis, there was still an increased risk for treatment escalation after infection with COVID-19.

Patients not in remission on steroids at time of COVID-19 infection had an increased risk of escalation of IBD related medications, hospitalization, and surgeries than patients not in remission who were not on steroids.

Figure 1. Factors associated with escalation in treatment, hospitalizations, and surgeries after infection with COVID-19.

Conclusions

COVID-19 likely has minimal impact on the clinical course of IBD patients in remission. It remains unclear what the effects are on those not in remission, especially those on corticosteroids during COVID-19 infection.

Corticosteroid use is associated with impaired immune response and may lead to dysbiosis by downregulation of protective mucin gene expression as shown in animal models. Infection with COVID-19 in patients on steroids may contribute to an increased risk of dysbiosis and subsequent disease flare.

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