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Original Research Article

Review on COVID-19 and Inflammatory bowel disease

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Abstract:

The global outbreak of coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has raised concerns regarding its impact on chronic inflammatory conditions such as inflammatory bowel disease (IBD), which includes Crohn's disease (CD) and ulcerative colitis (UC). IBD is a chronic immune-mediated disorder of the gastrointestinal tract, often managed with immunosuppressive or biologic therapies that could theoretically increase infection risk. However, current evidence indicates that IBD patients are not at greater risk of contracting SARS-CoV-2 or developing severe COVID-19.

The angiotensin-converting enzyme-2 (ACE2) receptor, utilized by SARS-CoV-2 for cellular entry, is highly expressed in the gut, particularly in the ileum and colon, and its levels may be elevated in IBD. Despite this, studies have not shown increased viral susceptibility among IBD patients. Gastrointestinal symptoms such as diarrhea, nausea, and vomiting occur more frequently in COVID-19 but are generally mild in those with IBD.

During the pandemic, IBD management strategies emphasize maintaining disease remission while minimizing infection risk. Non-urgent endoscopic and surgical procedures should be deferred, and telemedicine should be prioritized for consultations. Outpatient infusions and laboratory monitoring continue under strict safety measures. Therapeutically, 5-ASA compounds and budesonide are safe to continue; corticosteroids should be tapered where possible, and immunomodulators, biologics, and JAK inhibitors should be temporarily withheld only in confirmed COVID-19 infection until full recovery.

Overall, the prognosis of IBD patients with COVID-19 is favorable, with most cases not requiring intensive care or ventilation. Evidence suggests that IBD itself and its treatments do not exacerbate COVID-19 risk or severity. Optimal care requires individualized risk–benefit assessment, adherence to infection-control protocols, and maintaining remission to prevent disease flares during the pandemic.

Keywords: COVID-19; Inflammatory bowel disease; SARS-CoV-2.

Introduction

An outbreak of an unknown disease called pneumonia occurred in Wuhan, Hubei province, China in late December 2019. Later, after a few days, the causative agent of this mysterious pneumonia was identified as a novel coronavirus (nCoV) by several independent laboratories. World Health Organization named the causative virus as severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) temporarily and coronavirus disease 2019 (COVID-19) as relevant infected disease. The Coronaviruses (CoVs) are a single-stranded RNA viruses, group of highly diverse, enveloped, and positive-sense. They cause several diseases involving respiratory, enteric, hepatic, and neurological systems with vary severity among humans and animals.

Human CoV infections have traditionally caused a low percentage of annual respiratory infections. There are HCoV-OC43, HCoV-229E, HCoV-NL63, and HCoV-HKU1, which cause mild respiratory illness. Over the past 2 decades, two novel CoVs, severe acute respiratory syndrome CoV (SARS-CoV) and Middle East respiratory syndrome CoV (MERS-CoV), have emerged and cause severe human diseases. During the epidemic, SARS-CoV infect more than 8000 people worldwide with nearly 800 fatalities, representing its mortality rate around 10%. Whereas MERS-CoV infected over 857 official cases and 334 deaths, making its mortality rate approximately 35%. So far, SARS-CoV-2 is the seventh member of the family of CoVs that infects humans. The main symptoms of COVID-19 included fever, fatigue, and cough, which are similar to that of SARS-CoV and MERS-CoV infected cases. There are some overlapping and discrete aspects of the pathology and pathogenesis of these CoVs which cause severe diseases in humans.

Inflammatory bowel disease: Inflammatory bowel disease (IBD) is a condition characterized by presence of idiopathic intestinal inflammation or chronic condition resulting from inappropriate mucosal immune activation. IBD is a term for two conditions (Crohn's disease and ulcerative colitis) that are characterized by chronic inflammation of the gastrointestinal (GI) tract. Prolonged inflammation results in damage to the GI tract. IBD comprising Crohn's disease (CD) and ulcerative colitis (UC), is a condition in which the gastrointestinal immune system responds inappropriately. IBD is therefore often treated with immunosuppressing medications to control inflammation and prevent 'flares', a worsening of symptoms, which may be unpredictable

Currently, no data to suggest that IBD patients on corticosteroids, immunomodulators, biologics, and small molecules are at increased risk of contracting SARS-CoV-2 or developing COVID-19.

COVID-19 and Inflammatory bowel disease: COVID-19 and IBD seems to have a silent relationship as studies from recent evidence have shown that fecal samples of these patients were positive for the virus, however, they did not present any severe respiratory distress syndrome. In patients infected with COVID-19, many gastrointestinal symptoms such as diarrhea and nausea are more common compared to only COVID-19 patients. In addition, it was reported that while the COVID-19 test is negative for upper respiratory test, whereas stool samples remain positive for a few weeks after management. Interestingly, the angiotensin-converting enzyme-2 (ACE2) is the receptor for COVID-19 and it is being expressed in many organs including ileum, lungs, and testis. This protein is also expressed on gut epithelial cells and secreted to the gut lumen. The most common symptoms in COVID-19 are fever and respiratory symptoms. About 15% of patients experience gastrointestinal symptoms like, nausea, vomiting and anorexia and diarrhea being commonly present. However, in COVID-19 patients, gastrointestinal symptoms is seen in higher numbers. It has been seen that, two large IBD registries from China and Italy did not report any case of COVID-19 in their IBD patients. In one of the case series in Spain, 12 patients with COVID-19 out of cohort 1918 IBD patient was reported, out of which 9 (75%) patients had diarrhea (4-10 stools per day), in 5 (42%), being the only presenting symptom in 2 patients (17%). 4 patients developed diarrhea during the illness, and after initiation of hydroxychloroquine. Diarrhea was self-limiting and resolved after discontinuation of drug of all these cases. 2(17%) patients experience symptoms of nausea and/or vomiting.

Pathogenesis of COVID-19 and IBD: Angiotensin-converting enzyme 2(ACE2) is expressed constitutively by epithelial cells of the lung, intestine, kidney and blood vessels, which is present in the terminal ileum and colon in concentrations, amongst highest in the body. In the COVID-19 pathogenesis ACE-2 receptors plays a very important role. ACE-2 receptors are found abundantly in gastrointestinal tract, lower respiratory tract and pneumocytes. ACE-2 receptor also plays an important role as a regulatory mechanism and electrolyte balance in inflammation as it is a part of renin-angiotensin-aldosterone system (RAAS) in which most commonly affected regions are colon and terminal ileum. Normally in the terminal ileum and colon ACE 2 receptors are highly expressed, seeing much higher in IBD patients. Surface S protein cleavage is facilitated by protease on COVID-19 which enable its adherence to ACE-2 receptor. IBD also upregulates various cytokines including interferon gamma later shown to upregulate ACE 2 receptors. Other than ACE 2 receptor, cellular transmembrane, high concentrations of a soluble form of ACE 2 is present in circulation in IBD which is derived from cleavage of the transmembrane receptor. However, IBD patients do not seems to be at risk of COVID-19. A recent study reported no increase in ACE 2 receptors or TMPRSS2 in IBD patients as compared to controls. Coronaviruses bind to their target cells through ACE2, a monocarboxypeptidase best known for cleaving several peptides within the renin–angiotensin system (RAS) and other substrates. 50% of faecal samples were positive when performing analysis of the distribution of SARS-CoV-2 among different biological samples of patients with COVID-19 while one –fifth of patients remained positive in stools. Therefore, it could imply that SARS-CoV-2 can be spread through the faecal route, which is reason why some COVID-19 patients experience gastrointestinal symptoms. The tissue samples of IBD patients have revealed a significantly higher expression of ACE2 in Crohn's disease (CD) than in ulcerative colitis (UC) seen in proteomic analysis.

Crohn's disease and Ulcerative colitis: Crohn's disease (CD) and ulcerative colitis (UC), the main inflammatory bowel diseases (IBD) in humans, are chronic, immune-inflammatory diseases, the pathogenesis of which suggests a complex interaction between environmental factors and genetic susceptibility. These disabling conditions affect millions of individuals and, together with the drugs used to treat them, can put patients at risk of developing complications and other conditions. This is particularly relevant today, as coronavirus disease COVID-19 has rapidly spread from China to countries where IBD are more prevalent, and there is convincing evidence that COVID-19-mediated morbidity and mortality are higher in subjects with comorbidities. The primary objectives

of this Viewpoint are to provide a focused overview of the factors and mechanisms by which the novel severe acute respiratory syndrome coronavirus 2 [SARS-CoV-2] infects cells and to illustrate the link between such determinants and intestinal inflammation.

It is seen that Crohn's disease (CD) and ulcerative colitis (UC) have different risk and increase concerns with SARS-CoV-2. It is due to the involvement of the use of immunosuppressive agents, of which some might be viral infections. Risk of exposure to SARS-CoV-2 might also be triggered by receiving multiple infusions or medical procedures while admitting in medical hospital. However, despite all these factors many studies have proved that there is no increased risk of SARS-CoV-2 in patients with IBD. Proper measures should be taken to decrease remission in patients with IBD.

COVID-19 Risk in Inflammatory Bowel Disease: A number of patients with IBD who have been treated with biologic agents or immunomodulators (IMs) have been increasing worldwide. It has been seen in many studies that, patients on immunosuppressive agents were considered moderate to high-risk patients of COVID-19 pandemic. Therefore, many scientists have an idea of modification in discontinuing these agents. In addition, no evidence that IBD itself increases the risk of SARSCoV-2 infection. According to British Society of Gastroenterology inflammatory bowel disease COVID-19 risk grid, it has been classified into low, moderate and high risk.

Table 1: COVID-19 Risk in Inflammatory Bowel Disease

Low risk	Moderate risk	High risk
Social distancing	Strict social distancing	Shielding
5-ASA Rectal therapies Oral steroids (budesonide or beclometasone) Bile acid diarrhoea drugs (colestyramine, colesevelam, colestipol) Antidiarrhoeals (eg, loperamide)	Immunosuppressive agents (Mycophenolate mofetil, Thalidomide) Anti-TNF (infliximab, adalimumab) Biologic plus immunomodulators in stable patients (Ustekinumab, Vedolizumab). Calcineurin inhibitors (tacrolimus or ciclosporin) Janus kinase (JAK) inhibitors (tofacitinib) Prednisolone <20mg or equivalent per day.	Comorbidities (respiratory, cardiac, HTN or DM) Age ≥70 years old Oral steroids or Intravenous ≥20mg prednisolone. Starting of biologic and immunomodulator or systemic steroids within previous 6 weeks. Parenteral nutrition requirement

Therapeutic intervention of IBD:

1. **Outpatient therapy::** Before the pandemic, all consultations were done on outpatient basis only, there was no using of email, telemedicine or telephone. Faecal calprotectin tests were mostly performed in a laboratory with proper handwashing before and after examination. However, due to COVID-19 pandemic, telemedicine have started ruling for most patients (new and follow up), opening of urgent IBD clinic, email and telephone were mans of communication, tests were conducted at nearest laboratory clinics, home based faecal calprotectin tests, PPE use for all staff and patients began mandatory, air exchange and environmental cleaning between patients was observed, social distancing maintained in waiting area, patients were told come alone to prevent infections.
2. **Infusion centre::** All infusions accompanying persons were permitted before the starting of COVID-19 pandemic with social distancing between the seats. However, during the pandemic, infusions were converted at home for some patients if there is availability of resources. Precautions were maintained at every entrance in hospital, patients to come alone for infusions, patients contacts were verified, social distancing of 1-2m is mandatory, use of PPE kits for all involved in infusions. SARS-CoV-2-negative patients or patients who are asymptomatic should receive intravenous infusions as scheduled, however, suspected or positive for SARS-CoV-2 should be referred to the COVID-19 clinic. 30–60 min of rapid infusion protocols should be implemented, and if new subcutaneous biological agents are available, then it should be changed to new formulation.
3. **Faecal calprotectin (FC):** Before the pandemic, 89.0% of participants have routine access to testing of FC. However, due to COVID-19, a decrease in 33.7% was reported and a complete shutdown service of 12.3% was reported as the virus might be seen in stool.

There should be home testing option in this pandemic so that people can access to this service without delaying treatment.

4. **Bowel ultrasonography (US):** It is an easy, inexpensive and non-invasive technique to assess the presence of disease, inflammation activity and complications of disease like extramural and transmural disease like crohn's disease fistulas or abscesses.

3. **Endoscopy in IBD:** SARS-CoV-2 may cause fecal-oral transmission as SARS-CoV-2 RNA was detected in the feces. It is likely possible that replication of virus occurs in the intestinal epithelial cells as ACE2, is known to express in intestinal epithelial cells. Hence, regular endoscopy should be avoided in all IBD patients with no abdominal symptoms. However, endoscopy can be performed for patients who have moderate to severe symptoms. Endoscopy is an important part in the management of IBD. The infection rate of SARS-CoV-2 among health care workers is about 10% which is higher as compared to endoscopy personnel (4.3%). However, before the pandemic era, it ranged about 1.1 (in colonoscopies) to 3.0 (in esophagogastroduodenoscopy), for each 1000 procedures. Hence, endoscopy should only be performed in patients who have high risk.

Risk of endoscopy

High Risk.

Patients with fever, fatigue or respiratory symptoms, myalgia, diarrhea, loss of sense of smell or taste, close contact with COVID-19 patient, or travelling to outbreak areas.

Intermediate risk patients.

The remaining patients

Endoscopy room procedure:

1. Endoscopy should be performed in a negative-pressure room, according to the guidelines for infection control.
2. Standardized precautions should be followed in endoscopy department and medical staff should reach Biosafety level 2 (disposable gowns, N95 masks, goggles, caps, and shoe covers) in all procedures of GI endoscopy.
3. During this pandemic, we should be even careful of precautions to reach Biosafety level 3 protection includes PPE, respirators, plus negative-pressure rooms due to the SARS-CoV-2 virus aerosolization risk during endoscopy.
4. For at least 1 hour, the room should be kept empty before the next procedure in absence of negative pressure, and for 30 minutes in a negative-pressure room.
5. Patients with scheduled endoscopy should be contacted, by phone, the week before, and again 1-2 days before the procedure, to identify patients with suspected COVID-19 or at risk of being infected.
6. One patient checkpoint is mandatory at the hospital and at endoscopy unit, or every public entrance the nurse or endoscopist must be checked two times.

Different scenarios for endoscopy to be performed:

1. New diagnosis confirmation especially in a moderate-to-severe scenario when a first-line treatment of biologic is choosen, as well as larger dose of corticosteroids may increase risk of COVID-19 adverse outcome.
2. An acute flare-up severe in patients with ulcerative colitis;
3. Partial bowel obstruction in IBD patients, secondary to ileocolonic anastomotic stricture or neoplasia
4. Patients with jaundice and cholangitis with known primary sclerosing cholangitis (PSC) with dominant bile duct stricture

In Priority cases, endoscopy must be performed within 3 months in patients

- Flare-ups of mild to moderate origin.
- Longstanding IBD in surveillance for colorectal cancer with dysplasia.
- Endoscopic resection in patients with lowgrade or high-grade dysplasia.
- Patients symptomatic with moderate pouchitis and altered blood test.

For all the other cases, it can be delayed until 6 months after the infection rates decrease

- Mild pouchitis,
- IBD patients with flare-up not confirmed by biomarkers
- Longstanding IBD.

4. **Surgical Procedures:** Before the onset of pandemic, all surgical procedures were performed. However, due to ongoing chaos of COVID-19 only urgent and surgical cases were scheduled like oncological cases severe sepsis or perianal disease, Crohn's disease structuring, and severe ulcerative colitis. (Elective surgeries in patients with IBD have been cancelled in most centers. Whenever possible, urgent treatment of perianal sepsis should be done on an OPD basis. Complex IBD surgery should be must be regularly be in check on discussion with the IBD multidisciplinary team. Emergency surgery is needed in situations where patient is at risk of life and death such as severe bowel perforation, loop closed or severe ulcerative colitis. Surgery of non-urgent origin should be postponed everyone including health care workers. Timely surgery is one important part of IBD care. The postponement of elective surgery in patients with IBD with surgical indication allowing only oncological cases will cause a delay in elective surgery, will further leads to complications and increase more emergency procedures, so it has been to be kept in mind of this concern. It has been seen in some studies conducted in Milan region of Italy, where elective surgery which has been stopped for around 3 weeks, have cause a lot of concern leading to worse outcomes when IBD surgeries were performed. (JL de León-Rendón et al. General Aspects and Considerations in Inflammatory Bowel Disease During the COVID-19 Pandemic. Published online 2020 May 23. Spanish. doi: 10.1016 / j. rgmx.2020.05.001 Rev Gastroenterol Mex. 2020 July-September; 85 (3): 295–302.)

Non-elective surgery is indicated for some disease like intractable stenosis, high-grade dysplasia, colorectal cancer, and abdominal abscesses not amenable to interventional management. It is mandatory to test for COVID-19 test before any surgical procedure as there is high mortality rate and ICU admission. Chest CT can also be conducted if rapid PCR tests are not available. If neither test imaging test or rapid PCR test are not available, it must be considered that all patients are positive. During surgery, aerosolization risk is very high and body fluids contamination is a huge concern. This infectious virus was found through airway, blood, and feces. Continuous use of PPE is mandatory, during surgical procedures. Minimization of staff should be maintained and operating rooms with negative pressure should be selected. Laparoscopy avoidance is in debate as surgery done openly can lead to worse outcomes.

Table 2: Non-Elective Surgical Management

Ulcerative colitis	Crohn's Disease
Delayed in short term of Low-grade and high-grade dysphasia. Special attention should be given as there is risk of 19% and 42% in immediate colectomy. Accurate records of deferred procedures should be maintained properly once surgery starts. Rectal cancer and Invasive colon of asymptomatic or mild ulcerative colitis, are considered as a non-elective procedure. Urgent colectomy should be done for patients failing outpatient medical facilities.	**Perianal CD** If any signs of infection, pain or abscess occur, urgent examination to manage symptoms should be done under anesthesia. Fecal diversion should be considered if symptoms is not relieved by medical therapy. **Small bowel CD** Small bowel CD with active bleeding and abscess should be treated without opting surgery first. Surgery should be opted for patients with failure of non-operative management presentation. Strictureplasty or urgent small bowel resection should be considered for patients in ineffective medical therapy or not willing to continue medical therapy.

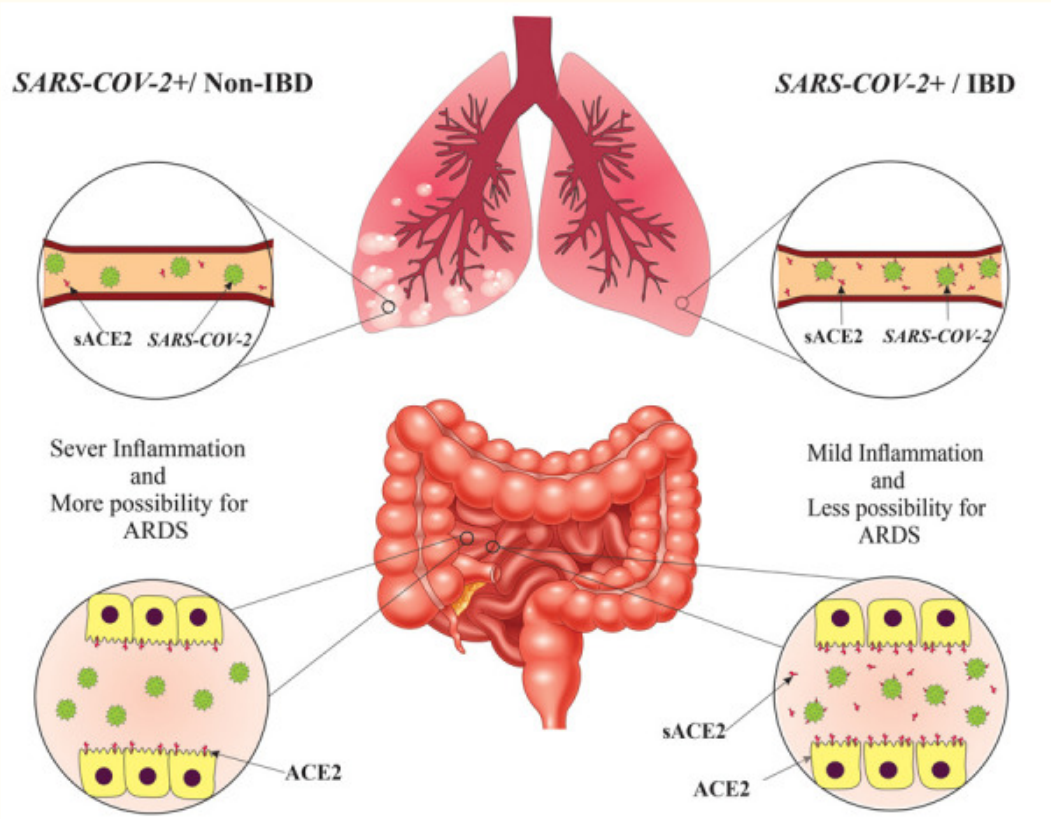

Figure 1: Schematic representation of ACE2 and sACE2 on epithelial cells and in blood circulation respectively in IBD and non-IBD patients. IBD; Inflammatory bowel disease, ARDS; Acute respiratory distress syndrome, and ACE2; Angiotensin-converting enzyme-2.

5. Pharmacological management

Table 3: Pharmacological management of COVID-19 with IBD & Non-IBD

COVID -19 IBW Medications	COVID - 19 IBW Management	General COVID-19 Medical treatment		Non- COVID-19 IBW Medications	Non- COVID-19 IBW Management
5-aminosalicylic acid compounds	No evidence of increased risk of viral infections Likely safe to continue	**RNA-dependent RNA polymerase inhibitors**	Remdesivir, Favipiravir, Ribavirin, Interferons,	5-aminosalicylic acid compounds	5-ASA mesalazine should be continued, as there is no increased risk of infection.
Budesonide (Cortiment, Budenofalk, Entocort)	Continue if required	**Protease inhibitors**	Lopinavir/ritonavir,Chloroquine, hydroxychloroquine, and azithromycin, Teicoplanin and other glycopeptides, Monoclonal or polyclonal antibodies and other therapies	**Budesonide** (Cortiment, Budenofalk, Entocort)	They are considered safer alternatives.
Corticosteroids	Taper dose where possible,	**Convalescent plasma**	Body temperature normal within 3 days, decrease in SOFA score, rise in	**Corticosteroids**	Minimized dose and tapered if >

	particularly if ≥20 mg Consider switch to budesonide if required		PaO2/FiO2, resolution of ARDS, success of weaning from mechanical ventilation, and decline in viral loads and increase in SARS-CoV-2–specific ELISA and neutralizing antibody titers		20 mg/day of prednisolone.
Immunomodulators (Thiopurines (azathioprine, mercaptopurine) Methotrexate	Temporarily withhold for at least 14 days with at least 3 days of no fever and clinical improvement.	**Herbal medications**	Stragali Radix (Huangqi), Glycyrrhizae Radix Et Rhizoma (Gancao), Saposhnikoviae Radix (Fangfeng), Atractylodis Macrocephalae Rhizoma (Baizhu), Lonicerae Japonicae Flos and Fructus forsythia (Lianqiao).	**Immunomodulators** Thiopurines azathioprine, mercaptopurine, methotrexate,)	To continue taking the drug if they are well controlled.
Anti-TNF (infliximab, adalimumab, golimumab)	Temporarily withhold for a minimum of 14 days with at least 3 days of no fever and clinical improvement	**Antimicrobial agents for potential co-infection**	Mycoplasma pneumoniae, Candida species, and viruses (influenza, rhinovirus, coronavirus, and HIV).	**Anti-TNF** (infliximab, adalimumab, golimumab)	Continue taking the current drug, dose reduction if possible. Do not switch from an IV biologic (e.g. IV infliximab) to a SC (e.g. SC adalimumab) if there is good response to the original drug,
Anti-Integrin (vedolizumab, Ustekinumab)	Temporarily withhold for a minimum of 14 days with at least 3 days of no fever and clinical improvement			**Anti-Integrin** (vedolizumab, Ustekinumab)	They are better alternatives due to mild systemic immunosuppressive activity. and not likely to develop immunogenicity and minimum reliant cotherapy. They are more preferred in elderly higher risk individuals.
JAK Inhibitors	Temporarily withhold for a minimum of 14 days with at			**JAK Inhibitors**	It may reduce interferon alpha production, important for cytokine antiviral immunity.

	least 3 days of no fever and clinical improvement				

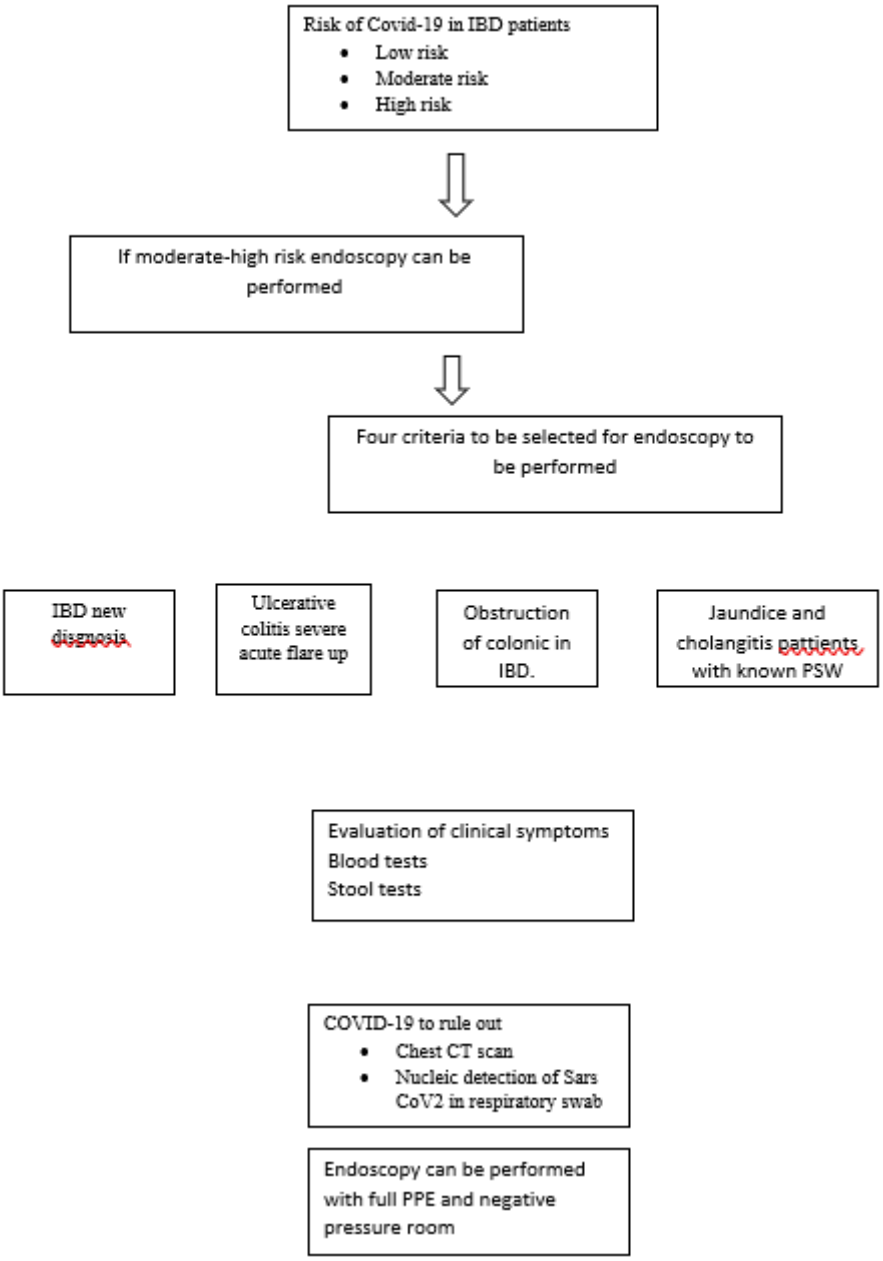

Figure 2: Flowchart for endoscopy in patients with IBD during COVID-19.

Prognosis of IBD during the COVID-19 Pandemic: There is good overall prognosis seen in patients with IBD and COVID-19 positive patients. However, approximately half of patients were under immunomodulator therapy, whereas 18% were on biologics. There was no need of ICU admission and ventilator support. Data from recent studies revealed that there is no increased risk for COVID-19 in patients with IBD. So, previous data did not agree that patients with immunomodulators or biologics therapy increases the risk of this infection.

Table 4: Dilemma of IBD drugs and COVID-19

Should drugs be stop in COVID-19 positive? with symptoms/without symptoms	Should drugs be stop in COVID-19 negative/not tested?
YES Postpone biologics administration Reduce/stop corticosteroids whenever possible Stop azathioprine/mercaptopurine therapy Stop azathioprine in patients in combination therapy with an anti-TNF Stop JAK inhibitors	**YES** Continue immunomodulators Continue biologics Continue JAK inhibitors Reduce corticosteroids whenever possible Keep infusions in an infusion center whenever possible
NO Do not continue prednisone at doses above 20mg/day Do not restart the treatment until nasopharyngeal swabs PCR-SARS-CoV-2 tests (if available) with a negative result	**NO** Don't reduce the dose of immunomodulators or biologics to prevent SARS-CoV-2 infection Don't switch infliximab to adalimumab in a stable patient, unless it is not possible to provide intravenous infusions Don´t assume that IBD patients are at increased risk of being infected
NOT SURE Patients taking oral budesonide and beclomethasone therapy treatment must be stop if tested positive IBD-related drugs protect against severe forms of COVID-19 (related to cytokine storm)	**NOT SURE** Patients with IBD, who are exposed to SARS-CoV-2 have a higher risk of developing symptomatic or severe COVID-19.

Take Home Message:

1. Please be safe during this pandemic and we will try our best to keep you safe during the COVID-19 pandemic. Please don't forget hospitals are reorganising everything to prevent infection.
2. Do not stop your medication as preventing disease flares is a priority. Your soon discharge is a priority but if you are not well, we will be there for you always.
3. A good supply of medications should be store to self-isolate and shield. Please do not take any medications like steroids without discussing with your physician.
4. If you are experiencing any flares, or any symptoms kindly contact your physician via email or through telephones.
5. Maintain hygiene by washing hands whenever in contact with infectious agents and avoid touching your face and eyes.
6. Avoid unnecessary travelling and contact with people so work from home if possible.
7. Please avoid smoking and taking of NSAIDS drugs as this increases the risk and severity of COVID-19 infection.
8. If you are experiencing any symptoms and living with household member you should:
    a) follow the recommendations of government about self-isolation and household quarantine
    b) If you are for COVID-19 positive, you should contact your physician.
    c) Your Steroids should be tampered with advice from physician and slowly not stopped abruptly.
    d) If your symptoms resolved after self-isolation and quarantine, contact your physician to restart your medication.

Conclusions

In this review, Majority of the studies have shown evidence that IBD does not increase the risk for COVID-19. However, medical treatments should be re-evaluated in SARS-CoV-2 positive IBD patients and corticosteroid therapy should be re-evaluated regardless of symptoms. A goal should be to treat active disease and maintain remission, while adopting the same protective measures as the general population. In addition, non-urgent surgeries and endoscopic procedures should be postponed. Some therapies, such as anti-TNFα, anti-IL-6, and JAK inhibitor, may conversely have a beneficial role in ameliorating severe COVID-19 disease, although this has yet to be proven. COVID-19 is the disease caused by the SARS-CoV-2 virus, but patients with IBD do not appear to be at a higher risk for infection with SARS-CoV-2 or development of COVID-19. Patients with IBD who infection with do not have should not discontinue their IBD therapies and should continue infusion schedules at appropriate infusion centers. Patients with IBD who have known SARS-CoV-2 but have not developed COVID-19 should hold thiopurines, methotrexate, and tofacitinib. Dosing of biological therapies should be delayed for 2 weeks of monitoring for symptoms of COVID-19. Patients with IBD who develop

COVID-19 should hold thiopurines, methotrexate, tofacitinib, and biological therapies during the viral illness. These can be restarted after complete symptom resolution or, if available, when follow-up viral testing is negative or serologic tests demonstrate the convalescent stage of illness. The severity of the COVID-19 and the severity of the IBD should result in careful risk–benefit assessments regarding treatments for COVID-19 and escalating treatments for IBD.

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