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Gastroenterology Practice in COVID-19 Pandemic

Lu Xia, MD, PhD
Department of Gastroenterology
Shanghai Jiahui International Hospital
Shanghai, China
drxialu@126.com

Kaichun Wu, MD
Department of Gastroenterology
Xijing Hospital, Fourth Military Medical University
Xi'an, China
kaicwu@fmmu.edu.cn

The pandemic of coronavirus disease 2019 (COVID-19), caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), first reported in China in mid-December 2019, now affects the whole world. As of March 23, 2020, more than 332,930 laboratory confirmed cases globally and more than 14,510 deaths in over 100 countries had been reported1. Global research work on COVID-19 ranges from finding out where the virus came from, the modes of transmission, quick diagnosis and the treatment.

COVID-19 is mainly manifested as pneumonia and can also cause digestive symptoms and damage to digestive organs[2]. The main clinical issues related to the digestive system include whether there is a fecal-oral transmission route, management of gastrointestinal (GI) symptoms related to COVID-19, and adverse reactions of the therapeutic drugs, nutrition support in COVID-19 treatment and the infection control of digestive endoscopy during COVID-19 epidemic.

Clinical Practice in Gastroenterology in COVID 19 Epidemic

Patients with COVID-19 may complain of digestive symptoms such as poor appetite, nausea, vomiting, diarrhea, abnormal liver enzymes, or exacerbation of symptoms or disease activity for pre-existing digestive diseases such as inflammatory bowel disease (IBD)3-5. Loss of smell following a viral infection is the second most common cause of smell loss, probably accounting for about 12% of all cases, ENT surgeons across the globe have shared reports that they have seen patients reporting anosmia suggesting the role of anosmia and hyposmia as a potential COVID-19 related symptom is presented. About 40% of anosmia cases occur after the infection, according to a statement published online on March 21 by ENT UK6,7. As the SARS-CoV-2 can be isolated in feces by culture and rRT-PCR8,9, attention should be paid to feces contaminated environment that may lead to contact or aerosol transmission and the protection from the fecal contamination should be provided to medical staff treating the suspected COVID patients with GI problems10.

During the epidemic in China, patients admitted to emergency, general, and digestive specialist clinics are obligated to check for suspected COVID-19 by reporting exposure history, taking body temperature, doing NP swab for PCR and chest CT to control cross-infection. Medical staff should have corresponding knowledge, improve the triage and consultation process, and pay attention to the screening of potential COVID-19 patients. Physicians should implement the first diagnosis responsibility system to achieve early diagnosis, early isolation, and standardized management. Any patients coming to hospital with fever will be screened by isolated fever clinic. Suspected and confirmed cases, no matter if they have GI diseases, should be isolated and treated at designated hospitals with effective isolation, protection and prevention conditions in place. A suspect case should be treated in isolation in a single room. Confirmed cases can be treated in the same room. Take Wuhan, the hardest-hit city in central China's Hubei Province as example, there are 14 temporary hospitals transformed from the city's venues, were the key to prevent the spread of the virus. They housed over 13,000 beds exclusively for patients with mild symptoms and provided timely treatment. Wuhan's best tertiary 48 hospitals were designated to treat critical patients. There is

a consensus published by the Chinese Society of Gastroenterology under the Chinese Medical Association for gastroenterologists in China guiding some major issues in digestive system related to COVID-19[8].

To reduce the clinical visits, most of the health providers in China opened the online consultation for the patients who need professional advice and the follow up consultation of chronic disease management nationwide. The online consultations are free to patients to encourage the patients accept new model of clinical service.

Main clinical manifestations of COVID-19 in digestive system

The impact of COVID-19 on digestive system results in a variety of symptoms and changes, more common in middle-aged and elderly people. The most common clinical manifestations are fever (88.7%) and cough (67.8%). The digestive system manifestations include loss of appetite (39.9% to 50.2%), diarrhea (2.0% to 49.5%), nausea (1.0% to 29.4%), vomiting (3.6% to 15.9%), abdominal pain (2.2% to 6.0%) and gastrointestinal bleeding (4.0%) which may occur in severe cases. On admission, 39.1% of patients had liver enzyme abnormalities of varying degrees, and 39.9% showed elevated lactate dehydrogenase. Although published literature and data from various centers differ, GI symptoms and manifestations are a clinical component of COVID-19[5,11].

The pathogenesis of COVID-19 related damages is unknown to the digestive system. Limited autopsy and puncture pathology report damage in the esophagus, stomach, intestine, and liver[12]. In addition to hypoxia caused by pneumonia, inflammation of the systemic system, and adverse drug reactions, direct viral binding and entering to human cells through angiotensin converting enzyme Ⅱ (ACE2) may induce the damage. ACE2 is expressed in respiratory organs, esophagus, small intestine and the colon as well[13]. Whether SARS-CoV-2 directly affects target organs of the digestive tract through ACE2 and causes corresponding symptoms needs further study.

COVID-19 related diarrhea

COVID-19 related diarrhea most often occurred 1 to 8 days after the onset, with a median time of 3.3 days. Some patients had diarrhea as the first symptom, and the diarrhea lasted for 1-14 days with 34.3% of diarrhea appearing watery. There were 6.9% of patients who showed abnormal stool test, and 5.2% were positive for white blood cells in the stool microscopically[2,4,5]. When COVID-19-related diarrhea is diagnosed or suspected, it should always be distinguished from drug-induced diarrhea and other comorbidities as many of the antiviral agents such as arbidol, chloroquine phosphate, lopinavir and ridcivir even including traditional Chinese medicine may cause adverse reactions like diarrhea.

Nutrition support in the COVID-19 treatment

About 80% of patients with COVID-19 are mild without eating problem. For patients with severe COVID-19 with gastrointestinal symptoms, nutritional assessment can be performed. If the patient has gastrointestinal lesions and cannot tolerate enteral nutrition, parenteral nutrition can be added to maintain a normal energy supply. Once the risks affecting enteral nutrition are removed, enteral nutrition should be restored as soon as possible, and oral eating should be encouraged[11].

For those who cannot orally intake (such as receiving mechanical ventilation), the nasogastric tube for enteral nutrition is necessary. If the patient is at high risk of aspiration or cannot tolerate nasogastric tube feeding, a nasojejunal tube can be placed for feeding. If parenteral nutrition is used before the patient's enteral nutrition is implemented, the initial treatment of enteral nutrition should be based on low energy, small doses, multiple feedings, and gradually transition to full energy to reduce gastrointestinal reactions or intolerance.

Liver injury

The incidence of liver injury in COVID-19 can reach 39.1% to 43.4%. Lab tests on admission day showed 39.1% of patients had slight increase in alanine aminotransferase (ALT), aspartate transaminase (AST), or bilirubin. In addition, the proportion of patients with abnormal liver function was significantly higher in critical cases than that of non-critical ones (67.4% vs. 34.1%)[14,15]. The liver damage of COVID-19 may be due to transient hepatocyte damage of this coronavirus. Whether or not SARS-CoV-2 impairs the liver and bile duct cells expressing ACE2 is not clear. Antiviral therapy drugs been tried to treat COVID-19 such as lopinavir, ritonavir, ribavirin, or traditional Chinese medicine may cause drug-induced liver injury. So do the antipyretic and analgesics used for antipyretics, combined with antibiotics used for bacterial infections such as quinolone, cephalosporins. Other reasons for hepatic impairment may exist during COVID-19 such as dyspnea resulted in chronic hypoxia. Most of the COVID-19-related liver injuries are in mild degree (not more than two times above the normal value), and only need close watch without intervention.

There is only one case reported a patient with hepatocellular carcinoma (HCC) who underwent liver transplantation and experienced COVID-19 infection during the perioperative period[16,]. While recipients of liver transplants need to be under the treatment of immune suppressants, which makes the patients higher susceptibility to SARS-CoV-2 infection. Moreover, the mortality of liver-transplanted recipient with COVID may be significantly higher than that of the general population (no data supported yet).

IBD in COVID-19 epidemic

All population is generally susceptible to SARS-CoV-2. There is no data reported the incidence of SARS-CoV-2 infection in IBD patients but patients with inflammatory bowel disease (IBD), in particular those on immune suppressive agents or biologics might be immune-compromised, should follow all relevant guidelines to minimize exposure to COVID-19. There are 40 cases of COVID-19 in IBD patients reported globally according to the updated data in SECURE-IBD Registry on March 23, 2020 including two deaths. Overall outcome so far appear similar to general epidemiology of COVID[17]. During the active phase of IBD, patients may show symptoms such as fever and diarrhea, and may also overlap with the symptoms of SARS-CoV-2 infection. Therefore, it is particularly important for patients with IBD to be well informed with knowledge of COVID-19 and self-management during the epidemic besides the basic precautions for protection[18].

The Chinese IBD Committee, branch of the Chinese Society of Gastroenterology has published a consensus about the management of patients with IBD during the epidemic of COVID-19 in early February, with recommendations including the susceptibility of IBD patients to SARS-CoV-2 infection, management strategy for patients with active IBD and in remission, safety of the medication and endoscopy, deal with IBD patients infected with SARS-CoV-2 or attacked by COVID-19. Some academic organizations such as ECCO and CCF also published the related recommendations[19,20]. For IBD patients on steroids, immunosuppressants and/or biologics, it is strongly recommended that unnecessary travel and mass gatherings should be avoided. Physicians or nurses should also consider the access of health care for IBD patients during the special epidemic prevention period and provide adequate patient education through different platforms such as telephone, online consultation, social media with either the knowledge of IBD or the prevention of COVID-19.

Digestive endoscopy service in COVID-19 Epidemic

Digestive endoscopy will directly contact with the mucosal secretion or luminal discharge, and will irritate the throat, which can cause choking, coughing, gagging and vomiting. High-pressure will induce the aerosol formation and spraying to the environment. Some procedures requiring general anesthesia or even tracheal intubation will be in even higher risk[21]. In the COVID-19 epidemic area, it is recommended to suspend elective procedures. Emergency endoscopic procedures should be retained. Indications for emergency endoscope include diagnosis and treatment of acute gastrointestinal bleeding, removal of foreign bodies in the digestive tract, obstructive cholangitis, and endoscopic treatment of biliary pancreatitis.

The endoscopic center of the epidemic area is conditionally arranged according to the clean area, buffer zone, and polluted area, and the staff flow should be separated from the patient flow. Prior to any procedure, COVID-19 screening is performed first, including body temperature, blood routine, lung CT, nasopharyngeal swab nucleic acid test, SARS-CoV-2 specific antibody test, etc. If the initial screening is negative, the medical staff should wear surgical masks or medical protective masks, disposable hats, gowns and shoe covers, goggles and / or protective face shields, and rubber gloves according to the secondary protection standards. If COVID-19 is diagnosed or suspected, patients should be arranged for diagnosis and treatment in an isolated endoscopic operating room, if possible, in a negative pressure procedure room. Medical staff should add a comprehensive respiratory protective device (if no, 360° mask is required to protect the head and neck), double rubber gloves, etc. Patients who are unable to be screened for COVID-19 due to emergency are treated as suspected cases. After the diagnosis and treatment, the inspection equipment and operating room are disinfected according to standards.

For the patients with indications for endoscopic diagnosis, other options include capsule endoscopes or disposable endoscopes which do not need to be cleaned and disinfected.

COVID-19 is a new infectious disease, and its global understanding is continuously deepening and evolving. According to a survey of 2,209 GI physicians nationwide in China, the rate of awareness or correct knowledge of COVID-19 induced damage in the digestive system is about 31% -35%, suggesting insufficiency of the relevant knowledge and dynamic progress of COVID-19 in physicians[22].

There are currently no proven therapies or vaccines for COVID-19, but dozens of potential options are under clinical trial and more than 30 vaccines have been developed and are in the pre-clinical trial stage and two in clinical trial. The intense communication and information sharing has led to research actions faster than ever before during the outbreak. As the epidemic spreads around the globe, only the international cooperation, investing in health, and engaging communities are keys to effectively tackle the pandemic to fight COVID-19.

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References

1. General information about COVID 19: Coronavirus disease 2019 (COVID-19) Situation Report - 63, WHOhttps://www.who.int/emergencies/diseases/novel-coronavirus-2019/situation-reports/
2. Wang D, Hu B, Hu C, et al. Clinical Characteristics of 138 Hospitalized Patients With 2019 Novel Coronavirus-Infected Pneumonia in Wuhan, China. JAMA, 2020,[Epub ahead of print]
3. Holshue ML, DeBolt C, Lindquist S, et al. First Case of 2019 Novel Coronavirus in the United States. N Engl J Med, 2020,382(10):929-936
4. Guan WJ, Ni ZY, Hu Y, et al. Clinical Characteristics of Coronavirus Disease 2019 in China. N Engl J Med, 2020, published online. DOI:10·1056/NEJMoa2002032
5. Chen N, Zhou M, Dong X, et al. Epidemiological and clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: a descriptive study. Lancet, 020,395(10223):507-513.

6. Lüers JC, Klußmann JP, Guntinas-Lichius O. The Covid-19 pandemic and otolaryngology: What it comes down to? Laryngorhinootologie. 2020 Mar 26. doi: 10.1055/a-1095-2344. [Epub ahead of print]
7. Advice for patients with new-onset anosmia during COVID-19 pandemic. ENT UK at The Royal College of Surgeons of England. Mar 27, 2020
8. Zhu N, Zhang D, Wang W, et al. A novel coronavirus from patients with pneumonia in China, 2019. N Engl J Med, 2020,382(8):727-733.
9. Holshue ML, DeBolt C, Lindquist S, et al. First Case of 2019 Novel Coronavirus in the United States. N Engl J Med. 2020; 382(10):929-936
10. Mao R, Liang J, Shen J,et al. Implications of COVID-19 for patients with pre-existing digestive diseases. Lancet Gastroenterol Hepatol 2020, S2468-1253(20)30076-5. doi: 10.1016/S2468-1253(20)30076-5. [Epub ahead of print]
11. Consensus of Diagnosis and Treatment of digestive disorders related to COVID-19. Natl Med J Chin, 2020; 40: E001. Published Online
12. Zhe X, Lei S, Yi JW, et al. Pathological findings of COVID-19 associated with acute respiratory distress syndrome. Lancet Respir Med. 2020[2020-02-18]. pii: S2213-2600(20)30076-X. doi: 10.1016/S2213-2600(20)30076-X. [Epub ahead of print]
13. Chen HY, Xuan BQ, Yan YQ, et al. Profiling ACE2 expression in colon tissue of healthy adults and colorectal cancer patients by single-cell transcriptome analysis. medRxiv 2020[2020-02-15].
14. Wang SH, Han P, Xiao F, et al. Manifestations of liver injury in 333 hospitalized patients with coronavirus disease 2019. Chin J Dig, 2020, 40(3): DOI:10.3760/cma.j.issn. 0254-1432.2020.03.000
15. Zhang C, Shi L, Wang FS. Liver injury in COVID-19: management and challenges. Lancet Gastroenterol Hepatol 2020; published online March 4. https://doi.org/10·1016/S2468–1253(20)30057–1.
16. Qin J, Wang H, Qin X,et al. Perioperative Presentation of COVID-19 Disease in a Liver Transplant Recipient. Hepatology. 2020 Mar 27. doi: 10.1002/hep.31257. [Epub ahead of print]
17. Updates and data from Secure-IBD Registry. Mar 24, 2020. https://covidibd.org/updates-and-data/
18. IBD committee of Chinese Society of Gastroenterology. Managing IBD patients during the outbreak of COVID-19. Chin J Dig, 2020, 40(00) : E001-E001. DOI: 10.3760/cma.j.issn.0253-1432.2020.0001
19. Crohn's Colitis Foundation. What IBD patients should know about the 2019 novel coronavirus (COVID-19). https://www.crohnscolitisfoundation.org/what-ibd-patients-should-know-about-2019-novel-coronavirus-covid-19 (accessed March 3, 2020).
20. ECCO. 1st and 2nd Interview COVID-19 ECCO Taskforce, published March 13 and March 20, 2020 online.
21. Repici A, Maselli R, Colombo M, et al. Coronavirus (COVID-19) outbreak: what the department of endoscopy should know. Gastrointest Endosc. 2020 Mar 13. pii: S0016-5107(20)30245-5. doi: 10.1016/j.gie.2020.03.019. [Epub ahead of print]
22. Liu H, Wang B, Liu KJ, et al. A survey study on gastroenterologists' knowledge about COVID-19. Chin J Dig, 2020, 40(3):DOI:10.3760/cma.j.issn.0254-1432.2020.03.0007

WGO has compiled some additional resources related to COVID-19 for our global community of Gastroenterologists, Hepatologists, Endoscopists, related disciplines and healthcare workers. To view those relevant links, please visit the COVID-19 Resources Page!

Contact Us

World Gastroenterology Organisation
555 East Wells Street, Suite 1100, Milwaukee, WI 53202-3823
Tel: +1 414 918-9798 | Fax: +1 414 276-3349 | Email:
info@worldgastroenterology.org

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