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lung diseases, but the risk in critical COVID-19 was increased. The appearance of erythrocytes, leukocytes, and OB in feces represented the gastrointestinal damage, and indicated an increased risk of death in case of the exclusion of underlying diseases in the gastrointestinal tract. It is known that gastrointestinal ulcer and bleeding is common in critical patients, especially in those with respiratory failure.^{6,7} High possibility of multiple organ dysfunction syndrome in critical COVID-19 cases can increase the risk of secondary damage in gastrointestinal tract, resulting in the occurrence of abnormal fecal examination. Meanwhile, the occurrence of gastrointestinal damage can prompt gastrointestinal dysfunction which accelerate the process from multiple organ dysfunction syndrome to death. Consequently, the abnormal fecal examination results may be used as risk factors of mortality in patients with COVID-19, especially for critical cases.

Among the gastrointestinal symptoms relative to COVID-19, diarrhea is confirmed as the most common one. However, it is not sufficient to simply focus on these gastrointestinal symptoms. For gastrointestinal evaluation, a fecal examination is a simple and economic test that may provide valuable information about gastrointestinal damage and prognostic risk.

Supplementary Material

Note: To access the supplementary material accompanying this article, visit the online version of *Gastroenterology* at www.gastrojournal.org, and at <https://doi.org/10.1053/j.gastro.2020.05.043>.

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Conflicts of interest

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Most current article

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Reply. We thank Drs Liu, Xiang, and Deng for their correspondence regarding our recent manuscript “Gastrointestinal Symptoms and COVID-19: Case-Control Study from the United States.”¹ In their letter titled “Focusing on Gastrointestinal Symptoms in COVID-19 Is Far from Enough,” the authors suggest that in patients with coronavirus disease-2019 (COVID-19), stool-based testing for leukocytes and erythrocytes/occult blood, rather than patient-reported gastrointestinal symptoms, should be considered. We reviewed their data with interest but remain unconvinced that stool-based testing adds value to the clinical diagnosis of diarrhea among patients with known or suspected COVID-19.

In our study, conducted among outpatients with respiratory symptoms being evaluated for COVID-19 during the height of the pandemic, the presence of gastrointestinal symptoms (diarrhea or nausea/vomiting) was associated with a 70% increased risk of testing positive for severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The authors note that control patients in our study—patients who tested negative for COVID-19—were not limited to a specific disease state. This is correct. The primary value of our study is that it demonstrates that the clinical presence of gastrointestinal symptoms can substantially alter the pretest probability of COVID-19 among patients who have not yet been tested and therefore not yet diagnosed with COVID-19 or with other conditions. Multiple other studies have confirmed that gastrointestinal symptoms, either in combination with respiratory disease or alone, are a hallmark of presentation for many patients with COVID-19,^{2–4} and widespread awareness of these symptoms now informs decisions regarding whom to test.

We see major barriers to implementing stool-based testing among patients with suspected COVID-19. First, handling these otherwise unnecessary biospecimens might increase risk for spreading of SARS-CoV-2. Second, the stool-based testing described by Liu et al—fecal leukocytes, erythrocytes, and occult blood—is notoriously inaccurate.^{5–7} Even within their own data, it is unclear whether such stool markers indicate critical illness from any cause or COVID-19 specifically. Although it seems possible that fecal leukocytes and/or occult blood might help to classify disease severity once COVID-19 is diagnosed, there are already well-

established clinical prediction scores that identify critically ill patients at the greatest risk for death, such as the Acute Physiologic Assessment and Chronic Health Evaluation or the Simplified Acute Physiology Score. These scores are based on readily available clinical data and do not require stool samples.

In sum, our study found that the presence of gastrointestinal symptoms (diarrhea with or without nausea/vomiting) predicted a positive test for SARS-CoV-2 among patients with respiratory symptoms at the height of the COVID-19 pandemic. At this time, we do not believe that there is a diagnostic or prognostic role for stool-based testing among patients with known or suspected COVID-19.

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 Most current article

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Striving to Protect Patients and Health Care Professionals in Endoscopy Units During Pandemics: From SARS to COVID-19



Dear Editors:

We would like to begin by commending Professor Repici and all Italian health care professionals for their hard-fought efforts in curbing the rise of coronavirus disease-2019 (COVID-19). In their article entitled “Endoscopy units and

the COVID-19 Outbreak: A Multi-Center Experience from Italy,”¹ we get a glimpse of real-world data from 41 endoscopy units in a part of the world that was heavily afflicted by the novel coronavirus.

Despite the surge of COVID-19 cases causing a huge burden to health care systems worldwide, it is reassuring that policies to enhance patient safety, avoid nosocomial outbreaks, and ensure rational use of personal protective equipment² can protect patients and health care professionals alike. All but 1 surveyed endoscopy unit decreased their normal endoscopy activity owing to COVID-19 and 70% of units adopted a triage for risk stratification. Urgent endoscopies were still being performed confirming that emergency services were not hampered even at the height of the pandemic, although it would be informative if the authors could elaborate more on the procedure types. In Italy, only 6 of 968 (0.006%) endoscopy health care professionals required hospitalization for severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) in the units surveyed, and none of these were attributable to endoscopy performed in COVID-19–positive patients. These numbers are even more remarkable given that 22% of these units performed procedures on COVID-19–positive patients with only surgical masks.

Despite these heartening results, there are several points we would like to highlight. First, we find the minimal number of endoscopy units prohibiting the accompaniment of caregivers slightly concerning. In Hong Kong, our public health authority has activated the Emergency Response Level since January 25, 2020; among other measures, this provision suspends visiting in all public hospitals except on compassionate grounds to mitigate the risk of cross-infection. Exceptions should be made only for patients who require specific assistance and translation services.³ It would be interesting to know the reasons behind such a low uptake for this measure in Italy. Second, the intention to follow-up patients after endoscopy seems difficult to implement in actual practice, with only one-quarter of endoscopy units doing so for suspected cases and only 1 unit doing so for asymptomatic patients. Third, approximately 70% of units were still performing screening colonoscopy for fecal immunochemical test positive patients. This issue is contentious, with the American Gastroenterological Association⁴ and European Society of Gastrointestinal Endoscopy/European Society of Gastroenterology and Endoscopy Nurses and Associates⁵ statements differing somewhat, with the former providing evidence to support a delay of ≤ 6 months and the latter opting for an individualized risk stratification that considers the risk of COVID-19 infection and disease-related mortality and/or morbidity. When our unit became the epicenter of the SARS outbreak back in 2003, all elective endoscopy was essentially stopped. Based on our prior experience, we now limit endoscopy only to potentially life-threatening situations, such as gastrointestinal bleeding and cholangitis, but allow some flexibility for clinical teams to decide on a case-by-case basis for time-sensitive cases such as in patients with cancer. Ultimately, whether fecal immunochemical test positive patients should have endoscopy performed would depend