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LETTER

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Gastrointestinal endoscopy trends in a designated hospital for specified infectious diseases in Japan during the dawn of the "living with COVID-19" era

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Abstract: January 2020 marked the very early period of SARS-CoV-2's arrival in Japan. At the time, we immediately and strictly adopted the use of enhanced PPE, including a N95, gown, gloves, eye protection, and an apron, during every endoscopic procedure for every patient, with or without COVID-19. One reason why we use enhanced PPE for every patient is because all endoscopic procedures should be considered aerosol-generating procedures, and another reason is that asymptomatic patients with COVID-19 cannot be identified during a pandemic. The volume of endoscopic screening/surveillance endoscopies decreased markedly, but therapeutic endoscopies did not decrease. In contrast, urgent endoscopic hemostasis has increased more than ever. The most common reason for the increase might be that the lack of protective equipment and the need for medical staff to deal with an unknown virus, creating a pandemic panic in emergency medicine.

***Keywords*:** COVID-19, GI endoscopy, hemostasis, acceptance of emergency patients

Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), referred to as COVID-19, has become a global pandemic. Globally, as of October 21, 2022, there have been 623,893,894 confirmed cases of COVID-19, including 6,553,936 deaths, reported to the WHO (*1*). Since the outbreak of COVID-19 in Japan in January 2020, the pandemic has struck in 7 waves. Lockdowns cannot be instituted in Japan due to legal constraints. A "state of emergency" has been declared four times and "priority preventive measures" were declared twice by the national government in Tokyo. After that, the Omicron strain became the main strain, and the rate of severe cases decreased although the number of temporarily infected people increased. In addition, a vaccine was developed and made widely available, and now the fourth round of vaccination is in progress. Recently, COVID-19 measures have been lifted in various situations, and endoscopic medicine is returning to its normal state while always remaining mindful of the risk of infection. As of October 22, 2022, 21,960,404 people had been infected, including 46,230 deaths, and 20,468,671 people were discharged from the hospital or released from medical treatment (*2*).

The National Center for Global Health and Medicine (NCGM) in Shinjuku is one of six National Centers in Japan, and it is the only one with a general hospital. Our mission is to function as a general hospital both as an emergency and critical care facility and as a regional site for cancer treatment; we also serve as a designated hospital for local and global outbreaks of infectious diseases. In light of these missions, the NCGM accepted the first patient with COVID-19 in Japan from a charter flight returning from Wuhan in January 2020. As COVID-19 spread rapidly around the country, a major concern has been the ability of hospitals to accept, admit, and care for patients with or without COVID-19.

The number of endoscopic procedures at the NCGM deceased each time a "state of emergency" was declared or "priority preventive measures" were instituted (Figure 1). Given the global shortage of protective equipment and insufficient information about SARS-CoV-2 and COVID-19 during the 1st wave of the pandemic, postponement or cancellation of endoscopies was strongly recommended except for emergency procedures (*3-5*) to prevent the spread of infection and protect healthcare workers. Reflecting that context, and especially during the first "state of emergency," about 80% fewer upper and lower gastrointestinal (GI) endoscopic procedures were performed at the NCGM compared to the same period in 2019. The number recovered somewhat the day after the first "state of emergency" was lifted, but every time a state was declared or measures were instituted, endoscopic procedures had to be curtailed to allocate medical supplies (manpower and beds) to COVID-19 patients instead of other patients. The number has repeatedly

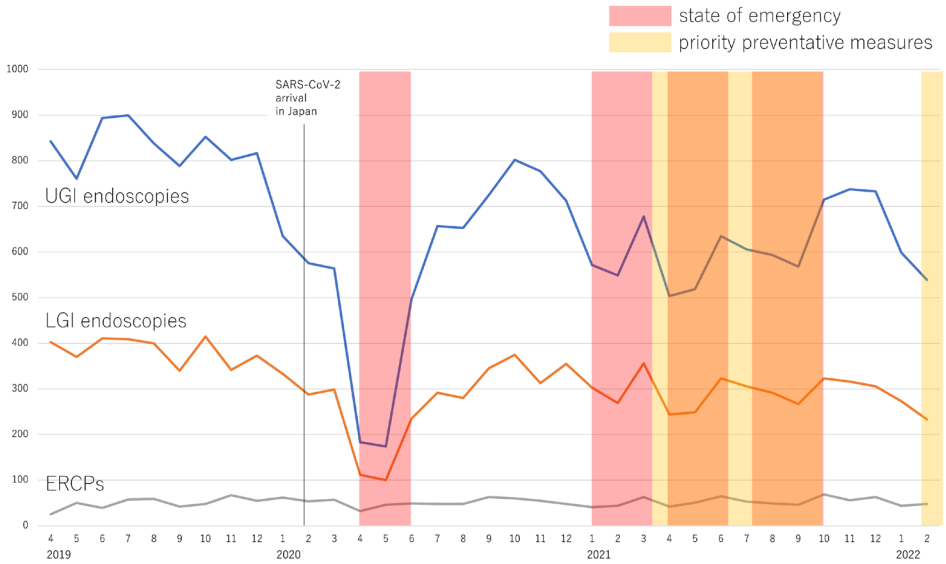

Figure 1. The number of GI endoscopies at the National Center for Global Health and Medicine (NCGM) during the COVID-19 pandemic.

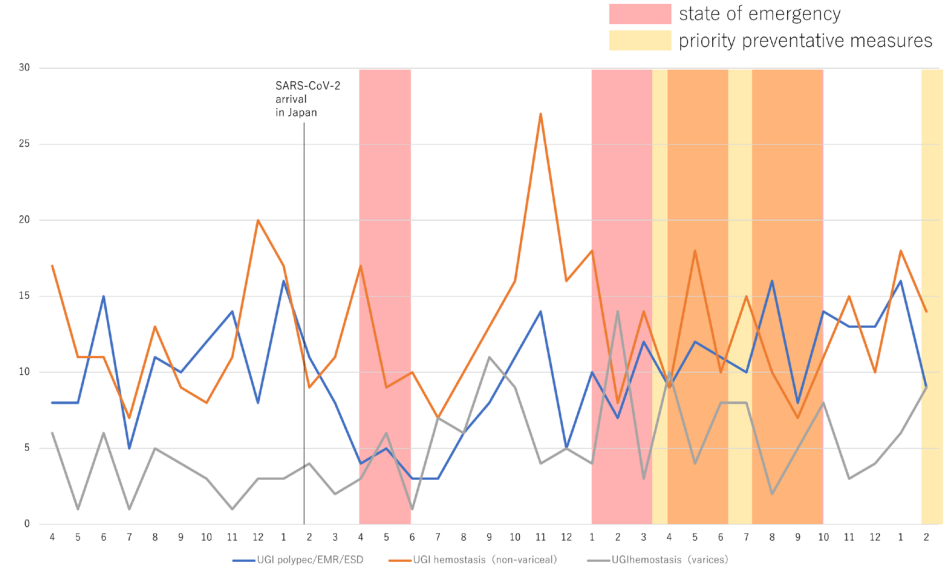

Figure 2. Trends in UGI procedures at the National Center for Global Health and Medicine (NCGM) during the COVID-19 pandemic.

increased and decreased, and the monthly average has remained low despite recovering. In contrast, the number of endoscopic retrograde cholangiopancreatography (ERCP) procedures has maintained at a certain level, probably because the procedure is often unavoidable to save the patient's life. The number of GI endoscopic procedures for screening/surveillance decreased most; the common reasons for the decreased number were the number of outpatients, cancellations by patients, and adherence to the guidelines of academic societies.

We investigated trends in therapeutic upper GI endoscopies such as endoscopic surgery for esophageal and gastric neoplasms (endoscopic mucosal resection (EMR) and endoscopic submucosal dissection (ESD)), hemostasis (for varices and non-variceal GI bleeding), and other conditions (such as removal of foreign matter, dilation, stent placement, and gastrostomy). Urgent endoscopic hemostasis has increased more than ever (Figure 2). There are more than 15 tertiary hospitals (most of which are University Hospitals) in the Tokyo metropolitan area, and the NCGM has traditionally had the highest acceptance of emergency patients with severe GI bleeding (such as in 2019, before the dawn of the "living with COVID-19" era). In 2020, the dawn of the "living with COVID-19" era, the NCGM accepted the largest number of emergency patients with

severe GI bleeding alongside St. Luke's International Hospital. The 2021 rankings have not been published, but the NCGM accepted 50 patients more than it did in 2020. The COVID-19 pandemic has highlighted the problem of ambulance "re-routing" in Japan. When a hospital is not willing to accept a patient, that patient is referred to as a "refused emergency patient;" in such instances, "the ambulance crew may contact 4 or more medical facilities" and "await acceptance for 30 minutes or longer." Since the dawn of the "living with COVID-19" era, the NCGM has received more requests for acceptance of "refused emergency patients" than ever, and especially during the 1st wave of the pandemic. Several hospitals in Tokyo had to closed due to infection clusters and perhaps because of inadequate PPE supplies. Urgent endoscopies have increased significantly.

We also investigated urgent and semi-urgent GI endoscopies undergone by patients with COVID-19. Since January 2020, 17 patients with COVID-19 (ages 7-95) have required GI endoscopy, and a total of 27 endoscopic procedures have been performed. Despite the high risk of infection, urgent endoscopy in a negative pressure room was required for 6 patients with life-threatening GI bleeding (2 patients with a variceal rupture due to alcoholic liver cirrhosis, 3 patients with an acute hemorrhagic gastroduodenal ulcer, and 1 patient with overt obscure GI bleeding (OGIB)). Five of the 6 patients with life-threatening GI bleeding were rescued by endoscopic hemostasis, but one patient died of massive bleeding from a gastric variceal rupture. Once the specified quarantine period had passed, 11 patients with active but non-life-threatening GI bleeding received semi-urgent endoscopy after receiving prioritizing proton pomp inhibitors. No one has died of GI bleeding, but 3 patients died of COVID-19. Nineteen physicians were exposed to SARS-CoV-2 as endoscopists or assistants, but no one was infected. During outbreaks in Tokyo (and especially the 3rd and 4th waves of the pandemic), some patients who had received outpatient endoscopy contacted us one or two days later to inform us that they had an asymptomatic SARS-CoV-2 infection. Thanks to impeccable hand hygiene and enhanced PPE, none of the medical staff, including the reception staff, cleaners, and porters, was infected, either.

The COVID-19 pandemic has posed several medical challenges to human beings. Now is the time to reconsider how to cooperate and transcend the boundaries of departments, hospitals, people, and countries to survive this new era. As Dr. Kokudo, who is the president of the NCGM, says, "We stand on the side of people". We will continue to work as a team to complete our mission and go forward.

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