

Figure 2 Left: digital cholangioscopic image, revealing the polyp in the distal common bile duct after large balloon dilation (15 mm) and retracting it outside of the bile duct using the dedicated cholangioscopy snare. Right: endoscopic image following cholangioscopy-assisted cold snare resection, with complete resection and mild, self-limiting oozing.

potential of these metaplastic intraductal lesions remains unclear, complicating selection of the most optimal surveillance strategy.

While the usefulness of dedicated DSOC-compatible snares has been illustrated in the context of migrated plastic stents,⁵ our case highlights its therapeutic potential in treating intraductal neoplasia.

CONFLICT OF INTEREST

MICHEL BRONSWIJK RECEIVED grants from Prion Medical, Taewoong as well as Takeda, and holds consultancy agreements with Prion Medica, Taewoong. Ann Reekmans declares no conflict of interest. Schalk van der Merwe holds the Cook and Boston-Scientific chair in interventional endoscopy and holds consultancy agreements with Cook, Pentax and Olympus.

Michiel Bronswijk,^{1,2,3}  Ann Reekmans^{3,4} and Schalk Van der Merwe³

¹Department of Gastroenterology, Imelda General Hospital, ²Imelda Clinical GI Research Center, Bonheiden, ³Department of Gastroenterology and Hepatology, University Hospitals Leuven, Leuven and ⁴Department of Gastroenterology and Hepatology, ASZ Aalst, Aalst, Belgium
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Graft-versus-host disease-like reactions in the gastrointestinal tract in a patient with SARS-CoV-2 infection

A middle-aged man with respiratory failure associated with a severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection was referred. He had a history of hypertension, hyperthyroidism, and bronchial asthma. After being successfully weaned from venovenous extracorporeal membrane oxygenation support, he gradually developed watery diarrhea (approximately 4 L/day). Stool cultures excluded common gastrointestinal bacterial and protozoal pathogens. There was no history of drug use that could lead to intestinal damage (e.g., non-steroidal anti-inflammatory drugs). He underwent endoscopy (Fig. 1a–d), which revealed remarkable villous atrophy, mucosal sloughing in the duodenum and terminal ileum, edematous mucosa in the stomach, mucosal sloughing, and edematous mucosa with tortoise shell-like appearance throughout the colon.

Biopsy specimens obtained from the terminal ileum revealed extensive crypt loss and crypt abscess with lymphoplasmacytic infiltration, and those from the transverse colon revealed mucosal sloughing and multiple apoptotic bodies per crypt with lymphoplasmacytic and eosinophilic infiltration (Fig. 2a–c). His endoscopic and histological findings were similar to those of patients with graft-versus-host disease (GVHD).^{1–3} Consequently, we diagnosed the gastrointestinal impairment cause as an acute GVHD-like reaction, which may have occurred from cytokine-storm-related events caused by coronavirus disease 2019 (COVID-19).⁴ Intravenous corticosteroid administration (1 mg/kg/day) was initiated, leading to partial improvement of diarrhea. Infliximab (5 mg/kg), which is used for the steroid-refractory GVHD treatment,⁵ was added, leading to remarkable diarrhea improvement. Endoscopy revealed evident improvement of the gastrointestinal damage.

From a pathogenetic perspective, COVID-19 mimics acute GVHD, characterized by the cytokine storm and hyperactivation of the immune response.⁴ To date, there have been no reports focusing on COVID-19-related gastrointestinal impairments that present as a GVHD-like reaction. This case demonstrated novel endoscopic and histological findings in the gastrointestinal tract, similar to those of patients with GVHD, which improved remarkably after therapy with infliximab and corticosteroid. We should analyze more cases to clarify the pathophysiology.

Authors declare no conflict of interest for this article.

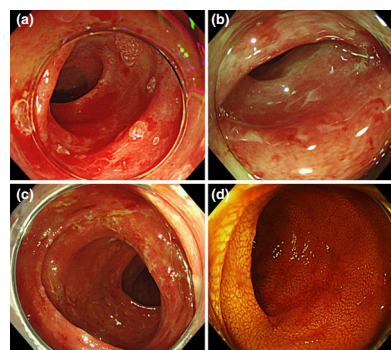


Figure 1 Endoscopic images. Remarkable villous atrophy and mucosal sloughing in the duodenum (a) and terminal ileum (b). Mucosal sloughing in the transverse colon (c) and edematous mucosa with tortoise shell-like appearance in the sigmoid colon (d).

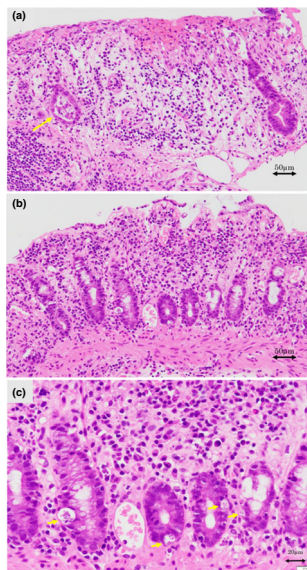



Figure 2 Histological images. (a) Extensive crypt loss and crypt abscess with lymphoplasmacytic infiltration in the terminal ileum (arrow: crypt abscess; HE $\times 200$). (b, c) Mucosal sloughing and multiple apoptotic bodies per crypt with lymphoplasmacytic and eosinophilic infiltration in the transverse colon (b, HE $\times 200$; c, arrows: apoptotic bodies; HE $\times 400$). HE, hematoxylin-eosin.

Patient Consent: The authors have obtained consent from the family of the patient.

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Noritaka Ozawa,¹ Kenji Yamazaki¹  and Ryoji Kushima²

¹Department of Gastroenterology, Gifu Prefectural General Medical Center, Gifu and ²Department of Clinical Laboratory Medicine and Diagnostic Pathology, Shiga University of Medical Science, Shiga, Japan

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Detection of mid-gastrointestinal bleeding caused by Meckel's diverticulum using a novel telemetric sensor capsule in a non-fasting patient

The state-of-the-art procedure for inspection of the small bowel and detection of causes of bleeding is considered to be video capsule endoscopy (VCE).¹ However, an important limitation of this procedure is that it requires a fasting patient in order to ensure adequate visibility.²

The HemoPill acute (Ovesco Endoscopy, Tübingen, Germany) is a novel non-imaging telemetric sensor capsule that shows great promise because it does not require fasting prior to its oral administration.^{3,4} Instead of a camera, it uses an optical sensor for blood detection (Fig. 1a). The HemoPill indicator (HI) depicts the results on a receiver (Fig. 1b). A value of ≥ 0.8 indicates presence of blood within the first 10 min of examination. For the remaining examination time, blood is detected at a HI-threshold of ≥ 1.0 .⁵

This capsule may be indicated in situations when we want to exclude or confirm acute gastrointestinal bleeding by avoiding conventional endoscopy, e.g. increased risk of infection or unstable patient. However, we here used it to provide further assessment of an acute bleeding situation.

A 52-year-old male patient presented with anemia (hemoglobin 9.9 g/dL) due to episodes of severe hematochezia. He underwent esophagogastroduodenoscopy, colonoscopy and CT-angiography, however, none of these procedures could identify the source of bleeding.

After these procedures, the patient was stable and had eaten. Several hours later, his hemoglobin dramatically dropped (6.4 g/dL) and VCE was not possible. Therefore, we administered the HemoPill acute which detected blood after 6 h 58 min (HI = 1.1) (Fig. 2a). The time of blood detection indicated a bleeding source at the level of the ileum/terminal ileum. Subsequent VCE revealed a bleeding Meckel's diverticulum (Fig. 2b). The patient underwent segmental ileal resection (Fig. 2c).



Figure 1 (a) The HemoPill capsule. Size: 7.0 mm \times 26.3 mm. The black arrow is pointing at the measuring slot for blood entry. On one slot side, light of different wavelengths is emitted by LEDs. On the other side, intensity of the light is measured. According to different absorption properties of various substances passing through the slot, a HemoPill indicator (HI) is calculated and mapped on a display of a wireless receiver. (Source: Ovesco Endoscopy AG, Tübingen, Germany). (b) The wireless HemoPill receiver for real-time data display.