

## SARS-CoV-2 in the bile of a patient with COVID-19-associated gallbladder disease

We read with great interest the article by Ding et al. [1], who reported tips and advice for gastrointestinal (GI) endoscopy during the coronavirus disease 2019 (COVID-19) outbreak. The authors recommended two protective measures for the performance of GI endoscopy: evaluation of the risk of COVID-19 in patients and endoscopy staff, and the wearing of level-3 personal protective equipment.

Most of us, including endoscopists, think that respiratory samples are the only source of the infective agent of COVID-19, the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) virus. However, we encountered an interesting case of COVID-19 in which SARS-CoV-2 was detected in the bile.

In January 2020, an elderly woman was admitted to our center with fever (38.5 °C), cough, and shortness of breath persisting for 3 days. Given that PCR and antibody assays for SARS-CoV-2 had not been developed at that time, the diagnosis of COVID-19 was made clinically on the basis of her medical history, complete blood count, and chest computed tomography (CT) findings (i.e. ground-glass opacity and consolidation in both lungs). Appropriate timely treatment was administered, including antiviral agents (ribavirin and arbidol hydrochloride), methylprednisolone, and high-flow oxygen therapy.

Although the patient's symptoms improved gradually and her chest CT showed less consolidation and fibrosis, she remained hospitalized and continued to require oxygen therapy because of oxygen desaturation. Around 2 months after admission, she developed fever,

nausea, vomiting, and right upper abdominal pain, with abnormal liver function tests. Magnetic resonance cholangiopancreatography (MRCP) revealed choledocholithiasis. Moreover, PCR tests based on two sequential throat swabs proved negative for SARS-CoV-2. She subsequently underwent endoscopic retrograde cholangiopancreatography (ERCP), sphincterotomy, lithotripsy, and nasobiliary drainage, following which, she gradually recovered.

A week later, the patient was confirmed as having SARS-CoV-2 by a positive immunoglobulin G (IgG) assay [2, 3]. The bile collected with the endoscopic nasobiliary drainage tube was sent for viral gene sequencing and SARS-CoV-2 was identified. An anal swab was collected for SARS-CoV-2 PCR with a negative result. Finally, a few days later, the patient was discharged.

This case is noteworthy. The mechanism by which SARS-CoV-2 entered the biliary system remains unclear. In addition, although the SARS-CoV-2 genetic sequence was isolated from the bile and bile cannot be considered infectious, caution should be taken in processing such samples. Our findings may highlight the need for an important improvement in GI endoscopic procedures during the COVID-19 pandemic.

### Competing interests

The authors declare that they have no conflict of interest.

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