

Lesson Of The Month

Gastrointestinal effects of an attempt to avoid contracting COVID-19 by 'disinfection'

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Case summary

In April 2020 during the coronavirus disease 2019 (COVID-19) pandemic, a 41-year-old female presented to the emergency department with recurrent vomiting and abdominal pain that had been ongoing for 2 days and haematemesis that had been present for several hours. The past medical history was unremarkable, except for bariatric gastric bypass surgery performed in 2016. During detailed inquiry, the patient reported that she had intentionally taken 10 ml of ethanol-containing hand disinfectant orally each day for a period of > 3 weeks for fear of being infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The product had been obtained from a regular pharmacy and had been produced locally according to World Health Organization standards for hand disinfectant.¹

An upper gastrointestinal endoscopy was performed, and showed superficial mucosal damage in the oesophagus (Figure 1A), slightly increased mucosal redness in the stomach, and a severely injured small-bowel mucosa with extensive fibrinous exudates (Figure 2A).

Histology

Biopsies taken from the oesophagus showed acute corrosive injury of the squamous epithelium with a 'two-toned appearance' (Figure 1B). The upper half appeared compact and markedly eosinophilic with condensed fading nuclei, whereas the underlying mucosa was intact and showed only mild reactive changes. There was intracellular oedema leading to balloon cell formation. Active inflammation and vacuolisation were focally present at the interface between necrosis and intact mucosa, indicating the beginning of epithelial sloughing.

The gastric mucosa showed pre-existing mild chronic inactive *Helicobacter*-negative gastritis with mild atrophy and mild complete intestinal metaplasia. Neutrophils clustered beneath and within the surface epithelium.

Biopsies taken from the small-bowel mucosa showed subacute superficial necrosis with active

inflammation and erosions covered by fibrinopurulent debris (Figure 2B). The stroma was condensed, with reduced numbers of lymphocytes and plasma cells. Neutrophils were present in varying amounts, and were mainly restricted to the stroma. The epithelium at the margins of the erosions appeared flattened and showed reactive nuclear changes. The crypts were hyperplastic, the number of goblet cells within the crypt epithelium being reduced.

Comment

In most cases, the intake of ethanol-containing hand sanitisers is unintentional; however, the incidence of intentional ingestion is rising according to the

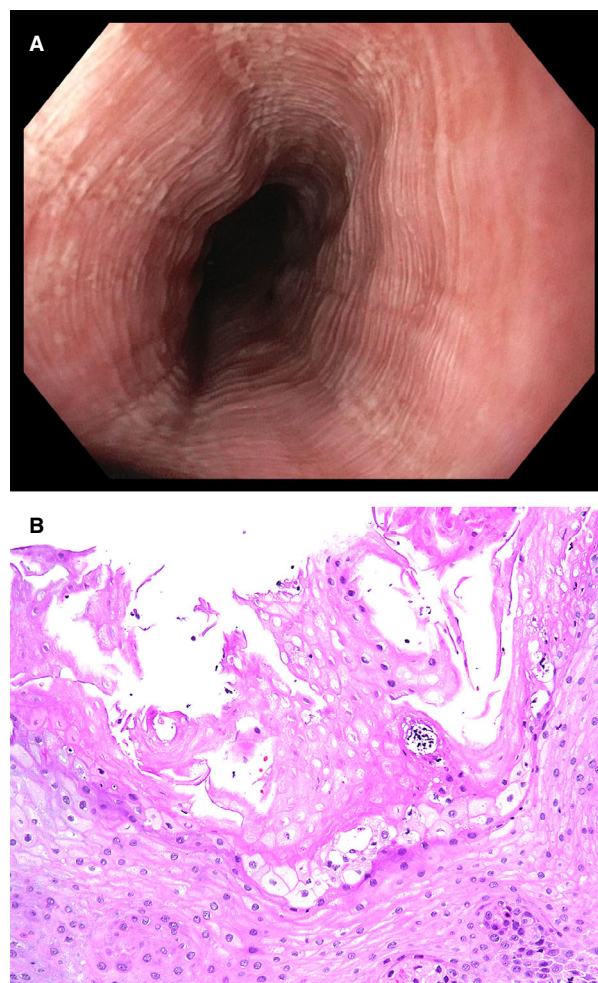


Figure 1. Oedema and increased friability of oesophageal mucosa with linear furrows and concentric ring formation (A). Histology demonstrates a 'two-toned appearance' with early epithelial sloughing (B).

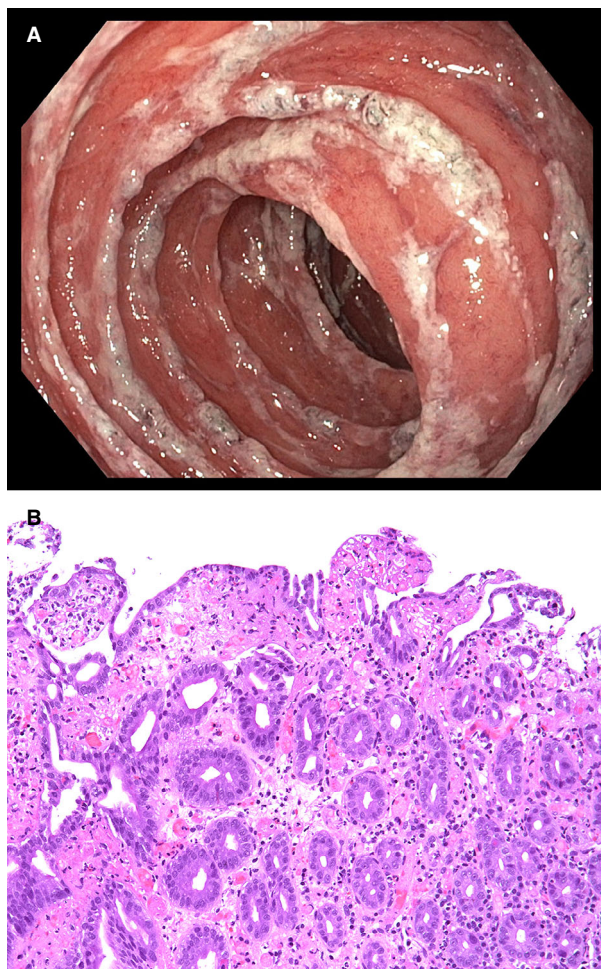


Figure 2. Severe superficial injury of the jejunal mucosa with fibrinous exudates, but no signs of active bleeding (A). The corresponding biopsy shows subacute necrosis with marked reactive changes of the adjacent epithelium (B).

American Association of Poison Control Centre's National Poison Data System.² The presented case is the first documented case of a patient taking hand sanitisers by mouth over a period of several weeks, in order to prevent being infected with a global pandemic virus.

In general, the histological changes of corrosive injury of the gastrointestinal tract are poorly described,³ and most textbooks refer to this damage only as a footnote. It is well known that the degree of damage varies according to the amount and exact nature of the ingested substance, as well as the concentration and contact time. Our case is particularly interesting, as it shows the consequences of repetitive sublethal ingestion.

The changes in the oesophageal mucosa are, on gross inspection, reminiscent of eosinophilic

oesophagitis, whereas the histology closely resembles 'sloughing oesophagitis' (oesophagitis dissecans superficialis), which has been attributed to chronic debilitation and medications injuring the mucosa.⁴ The subacute character of the changes observed in the small bowel is well illustrated by the combination of injury (superficial necrosis with erosion) and repair (crypt hyperplasia, goblet cell loss, and reactive nuclear changes), as is well known from so-called 'chronic erosions' occurring in the stomach.

The patient's symptoms subsided within few days after termination of treatment. Control endoscopy performed 1 week later disclosed normal mucosa.


In conclusion, repetitive sublethal intentional ingestion of chemicals in an attempt to avoid contracting COVID-19 by 'disinfection' leads to severe corrosive damage to the oesophageal, gastric and small-intestine mucosa. This treatment, even when considered by governmental authorities, not only has no proven antiviral effect, but actually involves major health risks.

Conflict of interests

The authors declare no conflict of interest.

Author contributions

L. Binder: performed the endoscopy, and wrote the manuscript. C. Högenauer: performed the endoscopy, and reviewed the manuscript. C. Langner: performed the histology, and wrote the manuscript.

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