Lesson of the Month

Gastrointestinal effects of an attempt to “disinfect” from COVID-19

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Case Summary

In April 2020 during the COVID-19 pandemic, a 41-year-old female presented to the emergency department with recurrent vomiting and abdominal pain that had been ongoing for two days and additional hematemesis for several hours. The past medical history was unremarkable, except for bariatric gastric bypass surgery performed in 2016. During detailed inquiry the patient reported, she had intentionally taken 10 ml of Ethanol-containing hand disinfectant orally per diem for a period of over three weeks in fear of being infected with COVID-19. The product had been obtained from a regular pharmacy and had been produced locally according to WHO standards for hand disinfectant [1].

Upper gastrointestinal endoscopy was performed and showed superficial mucosal damage in the oesophagus (Figure 1A), slightly increased mucosal redness in the stomach and 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, while 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 underneath and within the surface epithelium.
Biopsies sampled from small bowel mucosa demonstrated 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 sanitizers is unintentional, however, the incidence of intentional ingestion is rising according to the 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 sanitizers per os over a period of several weeks, in order to prevent herself from infection with a global pandemic viral disease.

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 bottom note. 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 sub-lethal ingestion.

The changes of the oesophageal mucosa are on gross inspection reminiscent of eosinophilic oesophagitis, whereas histology closely resembles “sloughing esophagitis” (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 nicely illustrated by the combination of injury (superficial necrosis with erosion) and repair (crypt hyperplasia, goblet cell loss, reactive nuclear changes), as is well know from so-called “chronic erosions” occurring in the stomach.

The patient’s symptoms subsided within few days after termination of treatment. Control endoscopy performed one week later disclosed normal mucosa.
In conclusion, repetitive sub-lethal intentional ingestion of chemicals in an attempt to „disinfect“ from COVID-19 leads to severe corrosive damage of oesophageal, gastric and small intestinal mucosa. This treatment, even when considered by governmental authorities, has not only no proven anti-viral effect, it conversely implies major health risks.

**Figure Legends**

**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; original x100).

**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 bordering epithelium (B, original x100).
References

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Author Contributions

Lukas Binder Performed the endoscopy, wrote the manuscript.

Christoph Högenauer Performed the endoscopy, reviewed the manuscript.

Cord Langner Performed the histology, wrote the manuscript.
