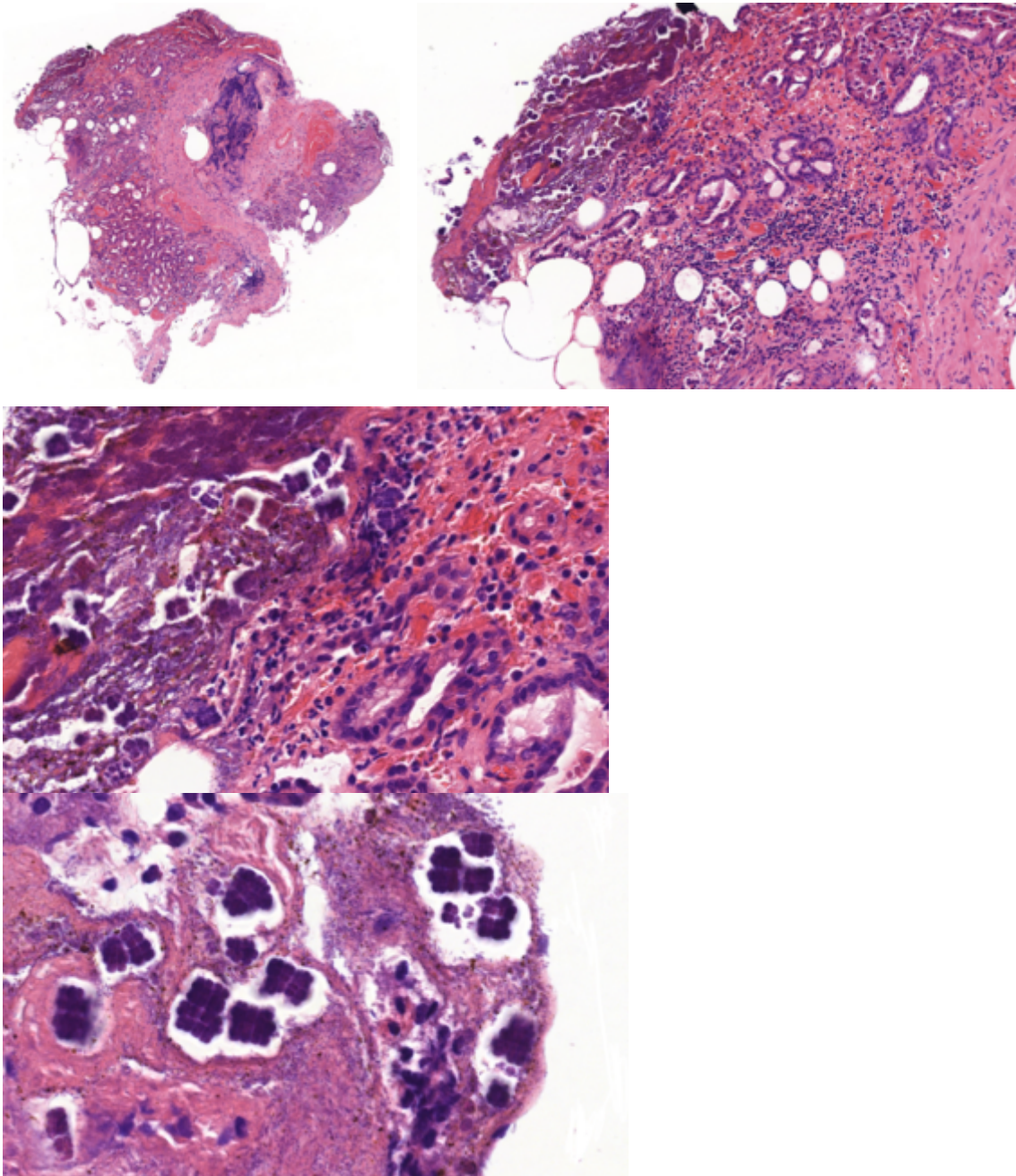


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Fundic biopsy from an 84-year-old woman with endoscopically tumor-like.

What is your diagnosis?



Diagnosis:

Emphysematous gastritis with *Sarcina ventriculi*.

Comment:

The patient with history of non-steroid anti-inflammatory drug-induced gastric erosions, hiatal hernia, Alzheimer's disease, and multiple decubital ulcers underwent endoscopy for recurrent, coffee ground vomiting. Forceps biopsies were taken from an ulcerating tumor-like lesion in the fundus. Histologically, the presence of gas bubbles (so-called pneumatosis phenomenon) was noted in the lamina propria on low-power, accompanied by a relatively mild active inflammatory infiltrate between the fundic glands (Panels A and B).

The foveolar epithelium showed reactive changes with focal erosions and ulceration with fibrin and necrotic debris. Embedded in the exudate, tetrad- or octet-forming coccoid bacteria were also present (Panels C and D). No signs of neoplasia were noted in the biopsy specimens.

Emphysematous gastritis is characterized histologically by gastric pneumatosis and is a rare type of phlegmonous gastritis. It usually affects patients with debilitating diseases and represents a gastrointestinal emergency that needs early diagnosis and treatment because of high mortality rate. Symptoms are not specific; epigastric or general abdominal pain, vomiting, and diarrhea have been observed in most cases. The endoscopic picture may show mucosal injury (erosion or ulceration), thickened folds, or a mass lesion. The diagnosis can also be made on CT images by the detection of gastric wall thickening and pneumatosis.

Phlegmonous gastritis has been associated with gas-forming microorganisms like *Escherichia coli*, *Streptococcus*, *Klebsiella*, *Pseudomonas* species, while the emphysematous variant is most frequently caused by *Proteus* and *Clostridium* species. Patients are treated with antibiotics, but gastrectomy is sometimes unavoidable.

The presence of *Sarcina ventriculi* has been reported in the literature in patients with emphysematous gastritis, but an obvious etiological connection has not yet been proven. These Gram-positive bacteria proliferate in conditions that cause delayed gastric emptying such as stenosis and ulceration, but it has also been associated with gastric perforation, peritonitis, and gastric adenocarcinoma. *Sarcina* has to be differentiated from the considerably smaller *Micrococcus*, which can also form tetrads or packets.

For further reading:

- › Jehangir A, Rettew A, Shaikh B, et al. A case report of emphysematous gastritis in a diabetic patient: favorable outcome with conservative measures. *J Community Hosp Intern Med Perspect*. 2015; 5: 28010.
- › Al Rasheed MR, Senseng CG. *Sarcina ventriculi* : Review of the Literature. *Arch Pathol Lab Med*. 2016; 140: 1441-1445.
- › Alvin M, Al Jalbout N. Emphysematous gastritis secondary to *Sarcina ventriculi*. *BMJ Case Rep*. 2018 Feb 8;2018. pii: bcr-2018-224233.
- › Ishioka M, Watanabe N, Sawaguchi M, et al. Phlegmonous Gastritis: A Report of Three Cases with Clinical and Imaging Features. *Intern Med*. 2018; 57: 2185-2188.
- › Singh K. Emphysematous Gastritis Associated with *Sarcina ventriculi*. *Case Rep Gastroenterol*. 2019; 13: 207-213.

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