Microscopic alterations of the gastric mucosa in preneoplastic lesions as assessed by new-generation endocytoscopy

Chronic atrophic gastritis with/without intestinal metaplasia is defined as a gastric precancerous condition (GPC) that increases the risk of gastric cancer according to the severity of atrophy [1]. Advanced endoscopic imaging permits accurate visualization of the mucosa and optical diagnosis of GPC [2]. Endocytoscopy introduces a further step, providing ultrahigh magnification images and in vivo histologic assessment of nuclear and cellular structures; however, data on endocytoscopic characterization of GPC are lacking [3]. Here, we report a series of four exemplary cases demonstrating characteristic changes in endocytoscopy along different histological stages of gastric carcinogenesis, from chronic nonatrophic gastritis through atrophic gastritis, intestinal metaplasia, and gastric dysplasia/adenocarcinoma (▶Video 1).

Patient 1 was a 58-year-old woman who underwent esophagogastroduodenoscopy because of dyspeptic symptoms (no alarm symptoms). White-light endoscopy (WLE) showed diffuse erythema of the gastric mucosa without focal lesions. Histology confirmed the diagnosis of a mild *Helicobacter pylori*-negative chronic nonatrophic gastritis (▶Fig. 1). A 4-week course of proton pump inhibitor therapy led to improvement of the symptoms. Patient 2 was a 46-year-old woman with autoimmune gastritis who was referred for surveillance endoscopy. WLE revealed multifocal atrophy, which was severe (stage III) according to the histopathological operative link on gastritis assessment (OLGA) staging system [4] (▶Fig. 2).

Patient 3 was a 48-year-old man with alcoholic liver cirrhosis who underwent index esophagogastroduodenoscopy that revealed small esophageal varices. There were no signs of portal hypertension in the stomach but multiple areas of intestinal metaplasia were present. The operative link on gastric intestinal metaplasia (OLGIM) stage [4] was III (▶Fig. 3).

Patients 2 and 3 were included in a 3-year surveillance program in accordance with current guidelines [5].

▶Fig. 1 Images from patient 1 with chronic nonatrophic gastritis. a Regular arrangement of foveolar structures with a few scattered, small, and poorly stained nuclei (antrum × 350). b The corresponding histopathological picture. c Homogeneously distributed and regular gastric pits delineated by a consistent honeycomb-like subepithelial capillary network (corpus, × 200). d The corresponding histopathological picture.

▶Fig. 2 Images from patient 2 with chronic atrophic gastritis. a Patchy distribution of atrophic areas, with subtotal loss of the glandular pattern (corpus, × 300). b Deformation of gastric pits, depletion of marginal epithelium with reduced dye uptake that revealed multiple translucent vessels (corpus, × 520). c The corresponding histopathological picture.
Patient 4 was a 70-year-old man with hepatic metastases. WLE revealed a 3-cm flat ulcerated lesion on the anterior wall of the gastric corpus. Histopathological analysis of targeted biopsies confirmed atrophic gastritis with advanced GPC (OLGA/IM stage IV) and a moderately differentiated intestinal-type adenocarcinoma in the perilesional and tumor areas, respectively (▶Fig. 4). The patient received palliative chemotherapy.

Endoscopy has the potential to support GPC identification reliably and should be further evaluated in upper gastrointestinal diseases.

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Competing interests

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References


Video 1  Endocytoscopic characterization of gastric mucosa in patients with 1) chronic nonatrophic gastritis, 2) chronic atrophic gastritis, 3) intestinal metaplasia, and 4) gastric dysplasia/adenocarcinoma. Examinations were conducted using an Olympus endoscopy system (GIF-H290EC – Evis X1 CV-1500; Olympus, Tokyo, Japan) after double staining of the gastric mucosa with 0.05 % crystal violet and 1 % methylene blue.

Bibliography

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