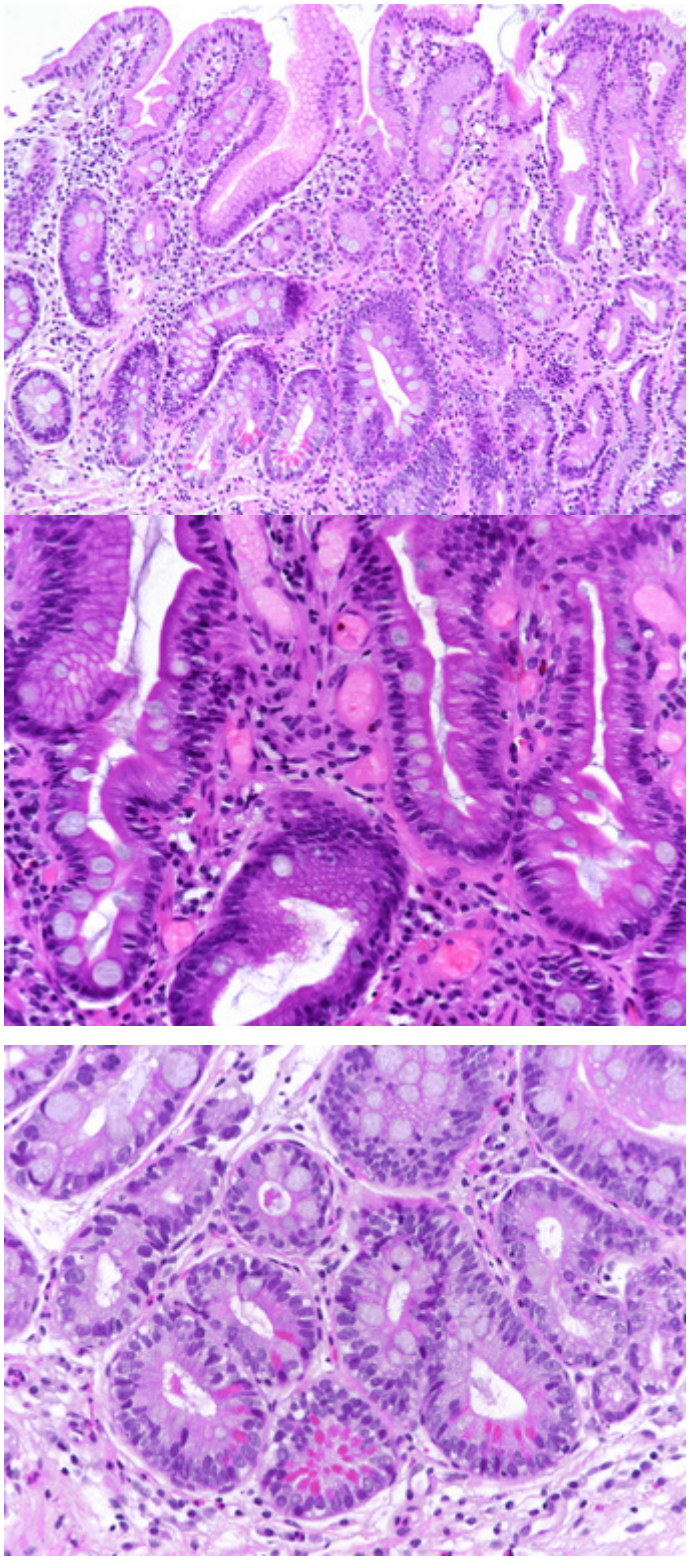
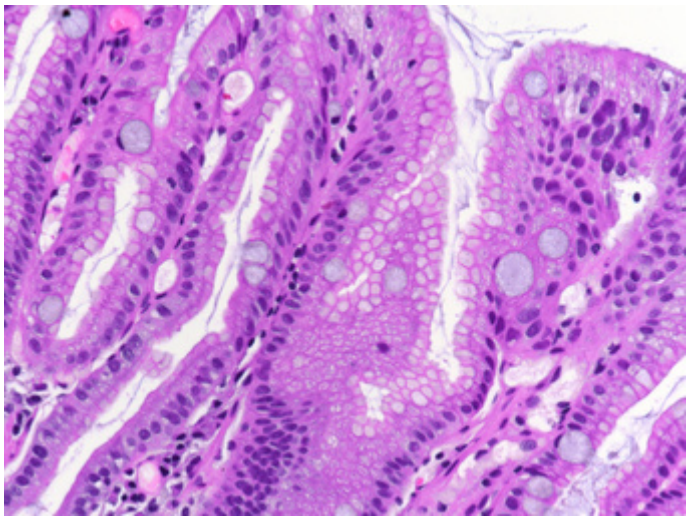
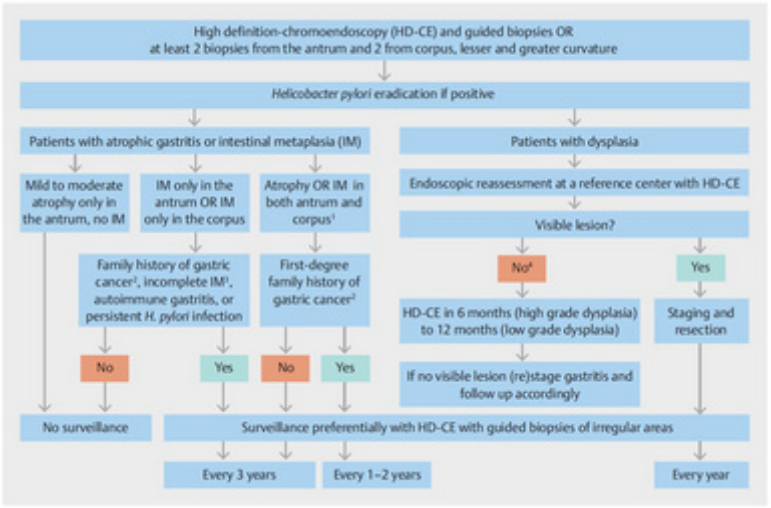
June 2020

Gastric biopsies from a 52-year-old male with mild unspecific abdominal complaints.

What is your diagnosis?







Diagnosis:

Chronic-atrophic gastritis with complete and incomplete intestinal metaplasia.

Comment:

Upon endoscopy, the mucosa appeared largely normal, only slightly irregular (not shown). Routine biopsies were taken from antrum and corpus mucosa and showed mild expansion of the lamina propria by mononuclear cells, i.e. lymphocytes and plasma cells, no active inflammation (Panel A). There was moderate gland atrophy. Helicobacter stains were negative.

Metaplastic intestinal differentiation of the mucosa was frequently observed and can be described as follows.

In some parts, we detected well-defined goblet cells alternating with eosinophilic enterocytes displaying a luminal brush border also known as glycocalyx (Panels A-B). At the bottom of some of these glands, Paneth cells were present within the crypt epithelium (Panel C). These parts qualified for classification as “complete-type” intestinal metaplasia.

In other parts, goblet cells were less well defined and were found amongst gastric foveolar cells containing apical mucin droplets of varying sizes; enterocytes with brush border (and also Paneth cells) were lacking (Panel D). These parts qualified for classification as “incomplete-type” intestinal metaplasia.

Does this distinction matter?

Yes, it does. Gastric cancer risk is higher when incomplete intestinal metaplasia (defined by intestinal differentiation in the absence of enterocytes with brush border and Paneth cells) is identified compared with complete-type intestinal metaplasia (defined by the presence of enterocytes with brush border and/or Paneth

cells). Accordingly, individuals with incomplete intestinal metaplasia have shorter surveillance intervals (Panel E; MAPS II Guidelines 2019).

Two final remarks:

Slight nuclear irregularities are common within the proliferation compartment of metaplastic glands and can also be observed here. They may be marked when active inflammation is present and have been referred to as metaplastic atypia. Their presence does not bear any clinical consequences. Surface maturation discriminates these changes from dysplasia.

To correctly identify incomplete intestinal metaplasia on an H&E stain, there needs to be enough haematoxylin included, which stains goblets cells somehow bluish in contrast to neighbouring foveolar cells that appear more pinkish (compare Panel D for illustration). This is relevant also for biopsies from the gastroesophageal junction, where Barrett's metaplasia has to be differentiated from "pseudo-goblet cells" within cardiac mucosa.

For further reading:

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- Jencks DS, Adam JD, Borum ML, Koh JM, Stephen S, Doman DB. Overview of Current Concepts in Gastric Intestinal Metaplasia and Gastric Cancer. Gastroenterol Hepatol (N Y). 2018; 14: 92–101.
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Presented by:

Dr. Cord Langner, Graz, Austria.