Envoi SPECIALIST PATHOLOGISTS *inside insights*

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Gastric intestinal metaplasia

Definition of atrophy and IM: *Gastric atrophy* is defined as loss of the native gastric epithelium. The atrophy can be either non-metaplastic or metaplastic. Non-metaplastic atrophy refers to loss of native epithelium and replacement by inflammation or fibrosis. Metaplastic atrophy refers, in the most part, to replacement of the native epithelium by *intestinal metaplasia* (IM). (Fig. 1) IM can be classified as complete or incomplete (retained foveolar epithelium or pyloric glands) but this is not a distinction that is routinely reported in practice.

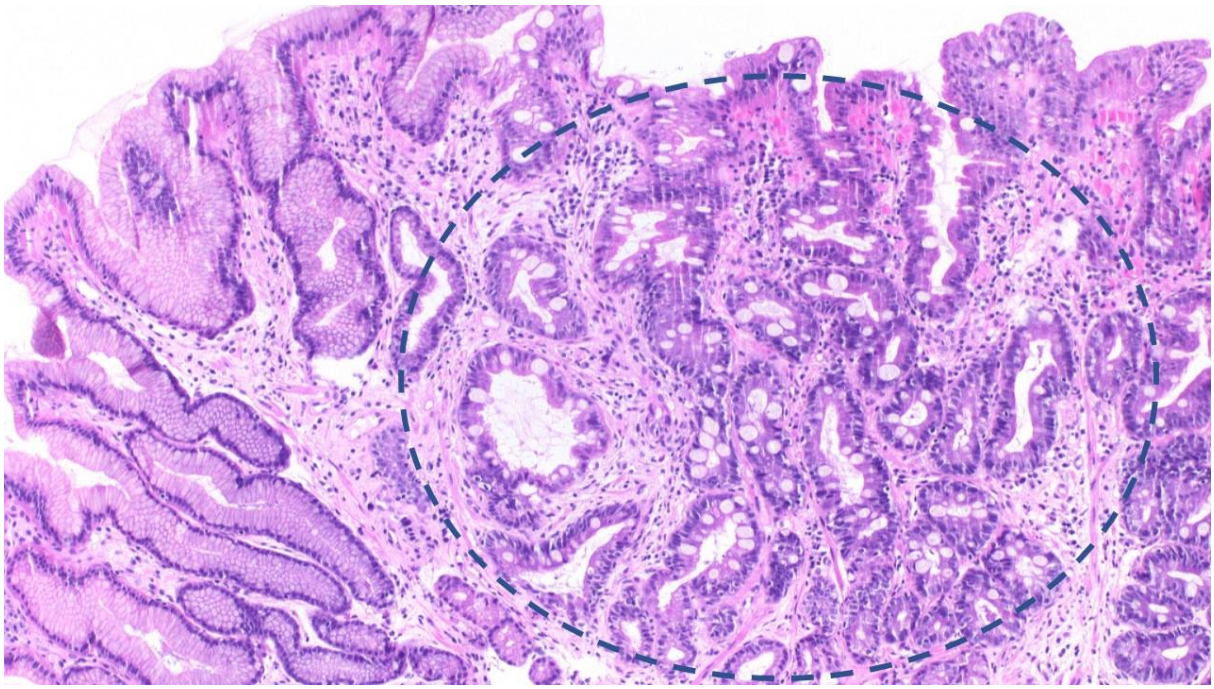

Fig.1 Gastric antral mucosa with intestinal metaplasia as indicated by the presence of goblet cells.

Significance: Chronic atrophic gastritis and intestinal metaplasia are both precancerous conditions. They both confer a risk for development of gastric cancer through the inflammation – atrophy – metaplasia – dysplasia – carcinoma sequence. The annual incidence of gastric cancer is 0.1- 0.25% with chronic atrophic gastritis and 0.25% for IM. IM is the most reliable marker of atrophy in gastric mucosa.

Aetiology / Epidemiology: Gastric atrophy occurs as a response to chronic gastric injury. Causes include Helicobacter gastritis, NSAIDs, bile reflux, smoking, autoimmune gastritis and certain dietary factors (e.g. high salt diet). The prevalence correlates with socio-economic status and is particularly high in East Asia and central and South America.

Diagnosis and Staging: Ideally, accurate staging requires at least two biopsies from the body and two biopsies from the antrum. Inclusion of the incisura is more controversial and may not be necessary. Two systems have been proposed to stage atrophy and IM. Both have a similar predictive value for gastric cancer risk but grading of the severity of gland loss is less reproducible by pathologists. *OLGIM is the preferred method of staging mucosal changes.*

- **Operative Link Gastritis Assessment (OLGA)** – atrophy is defined as loss of appropriate glands with or without metaplasia (intestinal or pseudo-pyloric). The severity is assessed at each site (body, antrum and incisura angularis).

- **Operative Link Gastritis Intestinal Metaplasia (OLGIM)** - Only the extent and site of IM is assessed. The severity is graded as: none; mild 1-30%; moderate 31-60%; severe >60%. The aggregate data is used to determine an overall stage.

- *Advanced stages of atrophic gastritis are defined as significant (moderate to marked) atrophy or IM affecting both antral and corpus mucosa. (OLGA/OLGIM III/IV)*

Prediction of subsequent dysplasia or malignancy: The identification of atrophy and IM is relevant only as a marker of risk of subsequent neoplasia in the stomach. Other factors that may influence the risk for cancer are:

- Incomplete IM – subtyping of IM is not however routinely reported
- Family history – present in 10% cases although most gastric cancers are sporadic
- Persistent H pylori infection
- Autoimmune gastritis

Definition of dysplasia: Gastric dysplasia is defined as neoplastic epithelium without evidence of invasion. Based on the degree of architectural and cytological atypia it is graded as low or high grade.

Surveillance: Surveillance allows detection of dysplastic lesions at early stages which may be amenable to endoscopic resection. European surveillance guidelines have been recently been updated (Management of epithelial precancerous conditions and lesions in the stomach MAPS II, 2019). The recommendations can be summarised as follows:

• Atrophy antrum, no IM	No surveillance
• IM at single location (antrum or body)	No surveillance
• IM at single location + family history, incomplete IM, or persistent HP	Consider re-biopsy 3yrs
• Advanced atrophic gastritis (OLGA/OLGIM III/IV)	Endoscopy every 3yrs
• Advanced atrophic gastritis (OLGA/OLGIM III/IV) + family history	Endoscopy every 1-2yrs
• Autoimmune gastritis	Endoscopy every 3-5yrs

Further reading:

1. OLGA gastritis staging for the prediction of gastric cancer risk. AJG; 2018;113:1621-1628
2. Management of epithelial precancerous conditions and lesions of the stomach (MAPS II). Endoscopy; 2019;51:365-388