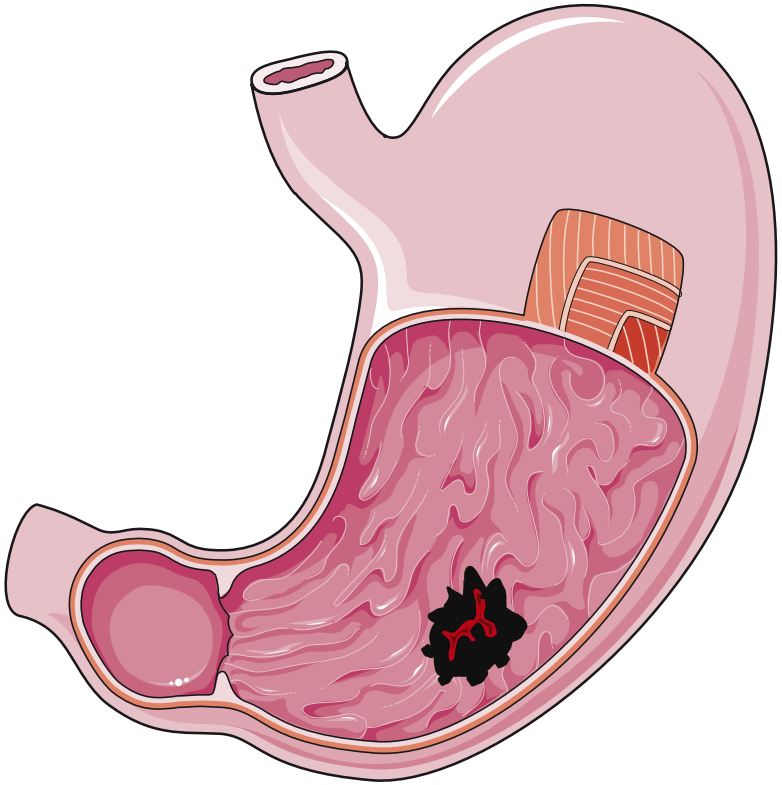
Gastric Cancer



Epidemiology

- Sixth most common cancer
- The third most common cause of cancer-related death
- Prognosis tends to be poor
- Median age at diagnosis - 68 years
- Rates are about twice as high in men as in women

Anatomy

- Stomach begins at the gastroesophageal junction and ends at the duodenum
- Three parts:
  1. Cardia - mucin-secreting cells
  2. Fundus - mucoid cells, chief cells, and parietal cells
  3. Pylorus - mucus-producing cells and endocrine cells

Histologically five layers

- Mucosa
- Submucosa
- Muscularis
- Subserosa
- Serosa

Common site for gastric cancer- cardia

- Lesser curvature- 40%
- Greater curvature-12%

Pathophysiology

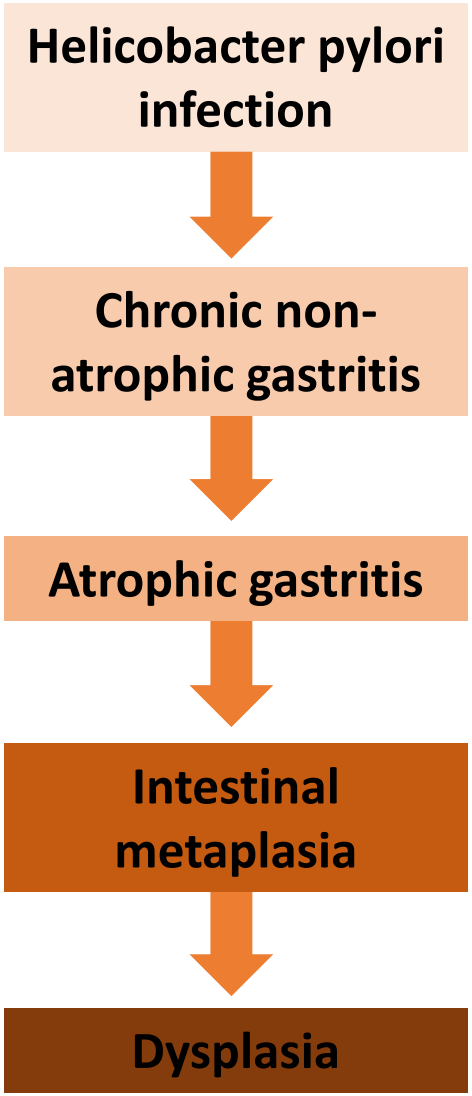
Three oncogenic pathways

1. the proliferation/stem cell
2. NF-kappaβ
3. Wnt/beta-catenin pathways

Precancerous lesion

- Chronic atropic gastritis
- Polyps
- Sub total gastrectomy

Correa's cascade



Risk factors

- Male sex
- H.pylori infection
- Pernicious anemia
- Gastric atrphy
- Gastric polyps
- Blood group A
- Achlorhydria
- Peutz jegher’s syndrome
- Previous gastric surgery

- Intestinal metaplasia
- Smoking
- Dust ingestion
- Alcohol
- Diets with increased amount of salt & N-nitroso compounds
- Genetic factors
- Family histroy

Types

According to histology

1. Diffuse- 70%
2. Multifocal- 30%

According to spread

1. Early gastric cancer- limited to mucosa and submucosa
2. Advanced gastric cancer- involves the muscularis propria

Proximal cancer vs. distal cancer

Proximal gastric cancer	Body and distal cancer
Increasing	Decreasing
Higher social classes	Low social classes
Not associate with *H.pylori*	Associate with *H.pylori* infection

Clinical features

- Indigestion
- Nausea or vomiting
- Dysphagia
- Postprandial fullness
- Loss of appetite
- Melena or pallor from anemia
- Hematemesis
- Weight loss
- Palpable enlarged stomach with succussion splash
- Enlarged lymph nodes such as Virchow nodes and Irish node

Late complications

- Pathologic peritoneal and pleural effusions
- Obstruction of the gastric outlet, gastroesophageal junction, or small bowel
- Bleeding in the stomach from esophageal varices or at the anastomosis after surgery
- Intrahepatic jaundice caused by hepatomegaly
- Extrahepatic jaundice
- Inanition from starvation or cachexia of tumor origin

Spread

Direct

- Pancreas
- Colon
- Liver

Lymphatic - common

Haematogenous

- Liver
- Lung
- Bone

Transperitonial- common

- Krukenberg's tumor
- Sister joseph's nodule
- Blummer shelf

TMN classification

Primary tumor (T)

- TX - Primary tumor cannot be assessed
- T0 - No evidence of primary tumor
- Tis - Carcinoma in situ, intraepithelial tumor without invasion of lamina propria
- T1 - Tumor invades lamina propria, muscularis mucosae, or submucosa
- T1a - Tumor invades lamina propria or muscularis mucosae
- T1b - Tumor invades submucosa
- T2 - Tumor invades muscularis propria
- T3 - Tumor penetrates subserosal connective tissue without invasion of visceral peritoneum or adjacent structures
- T4 - Tumor invades serosa (visceral peritoneum) or adjacent structures
- T4a - Tumor invades serosa (visceral peritoneum)
- T4b - Tumor invades adjacent structures/organs

Regional lymph nodes (N)

- NX - Regional lymph node(s) cannot be assessed
- N0 - No regional lymph node metastases
- N1 - Metastases in 1-2 regional lymph nodes
- N2 - Metastases in 3-6 regional lymph nodes
- N3 - Metastases in 7 or more regional lymph nodes
- N3a - Metastases in 7-15 regional lymph nodes
- N3b - Metastases in 16 or more regional lymph nodes

Distant metastasis

- M0 - No distant metastasis
- M1 - Distant metastasis

Staging

- **Stage 0** - Tis, N0, M0
- **Stage I** - T1-2, N0, M0
- **Stage IIA** - T1-2, N1-3, M0
- **Stage IIB** - T3, N0, M0 or T4a, N0, M0
- **Stage III** - T3, N0, M0 or; T4a, N1-3, M0
- **Stage IVA** - T4b, any N, M0
- **Stage IVB** - Any T, any N, M1

Investigations

To diagnosis

- Upper gastrointestinal (GI) tract endoscopy and biopsy

To stage

- Ultrasound scan abdomen
- CT scan thorax, abdomen and pelvis
- Endoscopic ultrasound scan
- Laperoscopy

Management

- Gastrectomy
  - Total
  - Partial
- Palliative surgery
- Adjuvant chemotherapy
- Neoadjuvant chemotherapy

Gastrectomy

- Total gastrectomy - Stomach is removed en bloc, including the tissues of the entire greater omentum and lesser omentum

- Subtotal gastrectomy- very similar to that of a total gastrectomy except that the proximal stomach is preserved

Palliative treatment

Incurable disease

- Haematogenous metastases
- Involvement of the distant peritoneum
- N4 nodal disease and disease beyond the N4 nodes
- Fixation to structures that cannot be removed
- To relieve obstruction or bleeding – Palliative gastrectomy

Other treatment modalities

- **Radiotherapy** - palliative treatment of painful bony metastases

- **Chemotherapy** - respond well to combination cytotoxic chemotherapy and neoadjuvant chemotherapy

Combination of epirubacin, cis-platinum and infusional 5-FU or an oral analogue such as capecitabine

Prognosis

Prognosis tends to be poor

Survival rates

- Stage IA - 94%
- Stage IB - 88%
- Stage IIA - 82%
- Stage IIB - 68%
- Stage IIIA - 54%
- Stage IIIB - 36%
- Stage IIIC - 18%
- Stage IV - 5%