

Gastrointestinal tract pathology 2022-2023

Stomach

Parts of stomach

- 1- The cardia about 1 cm length surrounds the superior opening of the stomach.
- 2- Fundus
- 3- Body : which forms most of the stomach
- 4- Antrum

The gastric wall is composed of:

- **Mucosa:** composed of :
 1. The gastric pits or foveolae,
 2. Glands.
- **Submucosa**
- **Muscularis externa**
- **Serosa**

Gastric cells

- Mucus secreting cells (foveolar cells): mucus
- Chief cells: pepsin
- Parietal cells: acid and intrinsic factor
- G cells: gastrin that stimulate acid secretion by parietal cells.

Gastritis

Inflammation of gastric mucosa.

- 1) Acute
- 2) Chronic

Acute Gastritis:

- Is a transient mucosal inflammatory process
- Asymptomatic, may cause nausea, vomiting and epigastric pain or bleeding in severe cases.

Causes of acute gastritis

- Heavy use of NSAIDs especially aspirin
- Excessive alcohol consumption

- Heavy smoking
- Chemotherapy, uremia, systemic infections
- Severe stress, (trauma, burn, surgery)
- Ischemia, suicidal, (acid and alkali)
- Irradiation
- Intubation

Microscopically: Neutrophilic infiltration, edema, erosion, and purulent exudate.

Chronic Gastritis:

Is the presence of chronic mucosal inflammatory changes leading eventually to mucosal atrophy and intestinal metaplasia.

A. H. Pylori chronic gastritis (Antral)

- ❖ Spiral-shaped or curved gram negative bacilli
- ❖ Mechanism in gastritis unclear but may be by stimulating production of pro-inflammatory cytokine as well as by directly damaging epithelial cells by liberation of toxins and degrading enzymes.
- ❖ H.Pylori causes Antral gastritis with high acid secretion and increase risk of duodenal ulcer, in advanced untreated conditions lead to pangatrinitis associated with multifocal mucosal atrophy, reduced acid secretion, intestinal metaplasia, and increased risk of gastric adenocarcinoma.

B. Autoimmune chronic gastritis (10%) (Fundal)

- **Autoantibodies against** Parietal cell and intrinsic factor result in:
 - ✓ Gland destruction and mucosal atrophy
 - ✓ Decrease intrinsic factor --- malabsorption of vitamin b12 lead to Pernicious anemia.
 - ✓ Impaired gastric acid secretion (achlorhydria)
 - ✓ Reduced serum pepsinogen I levels
 - ✓ In contrast to H. Pylori chronic gastritis, autoimmune chronic gastritis Spares the antrum and induces marked hypergastrinemia

Gross feature similar in both types:

The mucosa of affected regions is usually hyperemic and has coarse rugae than normal

In long standing cases, the mucosa becomes thin and flat.

Histological features of chronic gastritis

- Infiltration of mucosa by lymphocytes and plasma cells.
- Frequently lymphocytes are aggregate (lymphoid follicle).
- Neutrophils may present.
- **Other features:** intestinal metaplasia, atrophy, and dysplasia

Sequelae of chronic gastritis:

- **H. Pylori chronic gastritis** ---peptic ulcer, adenocarcinoma and lymphoma.
- **Autoimmune chronic gastritis**--- Atrophy, pernicious anemia, adenocarcinoma, carcinoid tumor.

PEPTIC ULCERS

An ulcer is defined as a breach in the mucosa of the alimentary tract that extend in to submucosa or deeper.

Peptic ulcer: ulceration which develops in sites exposed to the action of acid-peptic juices. Although it can occur anywhere in the alimentary tract, they are most common in duodenum and stomach.

According to the

- Duration
- Degree of penetration
- Healing

Peptic ulcer is divided into;

1. Acute peptic ulcer.
2. Chronic peptic ulcer

Acute peptic ulceration (stress ulcers)

- Sever trauma.
- Chronic exposure to Aspirin and NSAID.
- Extensive burns (Curling ulcer).
- Traumatic or surgical injury to CNS or intracranial hemorrhage (Cushing ulcer).

Gross features:

- Usually small (<1cm), round, superficial, single or most often multiple, predominantly gastric but sometimes also duodenal.
- Healing is with complete re-epithelization.

Microscopically:

- There is focal loss of the mucosa and at least part of the submucosa.
- There is no chronic gastritis or scarring.

Chronic peptic ulcer

- CDU (chronic duodenal ulcer) occurs in young age groups and affects males
- CGU (chronic gastric ulcer) is more common in elderly females.
- Duodenal ulcers are more frequent in persons with blood group O.

Gross features:

- 90% ulcers in first portion of duodenum or lesser curvature of stomach
- Ulcer penetrates the submucosa and even muscle
- Most are solitary, round to oval, sharply punched out craters 2 to 4 cm in diameter
- The base of the crater appears clean and smooth.

Histological features 4 layers

1. Necrotic debris
2. Nonspecific acute inflammatory Cells
3. Granulation tissue
4. Fibrosis

Pathogenesis

The imbalances between mucosal surface defenses and damaging forces that cause chronic gastritis are also responsible for PUD.

Defense forces

- Mucous layer and bicarbonate secreted by epithelium.
- Regenerative capacity of epithelial cells.
- Elaboration of Prostaglandin
- Mucosal blood flow

Damaging forces

- ↑ amount of HCl secretion (gastric hyperacidity)
- Infection by H. Pylori.
- Use of NSAIDs.
- Smoking
- Alcohol

- Zollinger Ellison syndrome: **Gastrinoma**

Is a tumor of pancreas associated with excessive secretion of gastrin and hence excess acid secretion causing multiple ulcers in the stomach, duodenum, and even jejunum.

Complications of chronic peptic ulcers:

1- Bleeding

- ✓ Most frequent complication occurs in 15% to 20% of patients
- ✓ May be life-threatening and the first indication of an ulcer.

If it involves small blood vessels → cause loss of small amount of occult blood
→Iron deficiency anemia.

If it involves large blood vessels → cause Hematemesis or melena

2- Perforation

- Cause escape of gut contents into the peritoneal cavity → acute peritonitis.
- Occurs in about 5% of patients.

3- Healing by scarring

Contraction of fibrous scar may induce serious outcomes. E.g. Pyloric obstruction

- 4- **Malignant transformation:** occurs in less than 1% in gastric ulcer and Never occurs in duodenal ulcer.