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Diploma in Pharmacy 2nd Year
Pharmacotherapeutics
Chapter 2 (e) : Gastro Intestinal System Disorders

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Chapter 2 (e)

Gastro Intestinal System Disorders

→ The gastrointestinal (GI) tract is a hollow tube extending from the oral cavity to the anus that consists of anatomically distinct segments, including the oesophagus, stomach, small intestine, colon, rectum, and anus. Each of these segments has unique, complementary, and highly integrated functions, which together serve to regulate the intake, processing, and absorption of ingested nutrients and the disposal of waste products

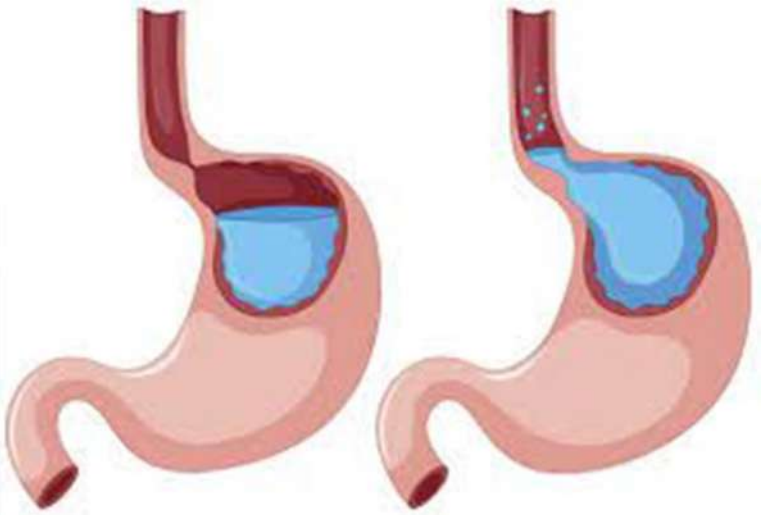
Clinical Consideration

- Irritable bowel syndrome.
- Hypertrophic pyloric stenosis.
- Oesophageal achalasia.
- Gastro oesophageal reflux disease (GERD).
- Peptic ulcer/gastric ulcer/duodenal ulcer.
- Inflammatory bowel diseases (IBDs).
- Alcoholic liver disease etc.

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Gastro Oesophageal Reflux Disease (GERD)

→ GERD is a disease in which gastric acid (stomach acid) moves up into the oesophagus and irritates the oesophageal lining.



Etiology

- Weakness of LES(lower oesophageal sphincter)
- Excessive abdominal pressure (pregnancy)
- Some foods (like spicy, dairy , fried foods)
- Some drugs like anti-asthmatic ,anti hypertensive , anti allergy , anti depressant and pain killers etc.
- Hiatal Hernia.
- Obesity

Pathogenesis

Oesophageal Hypersensitivity or other reason

↓

Inflammation (due to cytokine)

↓

Change in Oesophageal Sensitivity

↓

weakness / relaxed LES

↓

GERD

Clinical Manifestations

- Heartburn
- Chest Pain
- Difficulty in Swallowing
- Sensation of Lump in the Throat
- Bad breath

Non Pharmacological Management

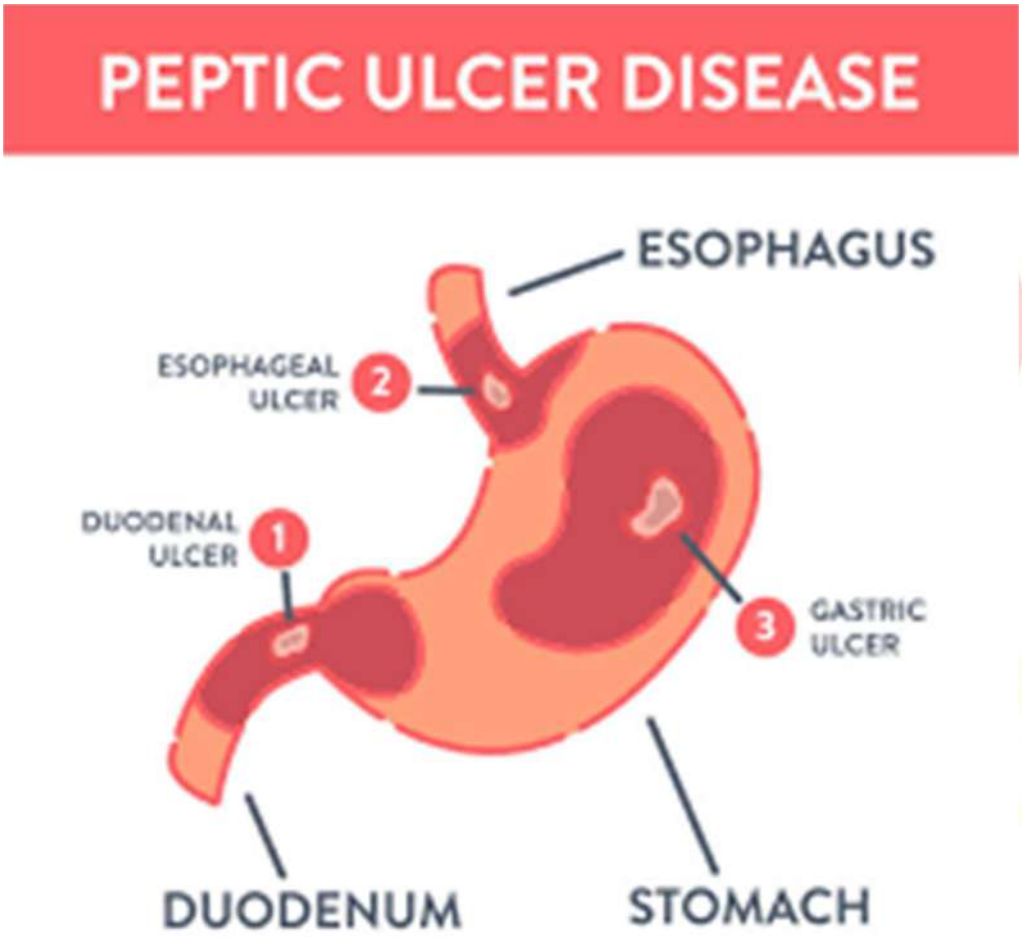
- To avoid Foods increase Gastric acidity . and foods or beverages can relax the LES (Chocolate , peppermint , Caffeine , alcohol etc.)
- Avoiding meals that slow down Peristaltic movement.
- Limiting the foods that take a long time in digestion.
- Avoiding heavy meals.
- leaving smoking
- Not laying down after eating.
- Losing weight (overweight).

Pharmacological Management

- **Antacids :** Aluminium hydroxide. magnesium carbonate. ,magnesium trisilicate. magnesium hydroxide. calcium carbonate. sodium bicarbonate.
- **H2 Blocker :** Cimetidine (Tagamet) , ranitidine (Zantac)** nizatidine (Axid) famotidine (Pepsid).
- **PPI :** Omeprazole ,Esomeprazole ,Lansoprazole , Rabeprazole Pantoprazole.
- **Baclofen :** It reduces the relaxation of LES

Peptic Ulcer Disease

→ Peptic Ulcer is a condition in which a wound / Sore developed on the lining of the Oesophagus , stomach , or small intestine (beginning part of intestine).



Etiology

- Helicobacter Pylori (it infects and causes inflammation).
- NSAIDs . (Inhibit COX 1)
- Smoking
- Alcoholism
- Radiotherapy

Pathogenesis

Helicobacter pylori release toxin ↓	NSAIDs ↓
Cause Inflammation ↓	Inhibits COX 1 ↓
Damage the defense mechanism ↓	Reduce PG Secretion ↓
ulcer Developed	Decrease Defense Mechanism ↓
	Ulceration Developed

Clinical Manifestations

- Pain in stomach
- Gastrointestinal Disorders
- Heartburn
- Appetite change
- Nausea , vomiting
- Dark or black stool due to bleeding
- Severe pain

Non Pharmacological Management

- Diet :
  - Avoiding the foods that take a long time in digestion.
  - If blood or water loss occurred due to Diarrhoea or vomiting , they should be recovered
- Cessation of NSAIDs.
- Quitting smoking.

Pharmacological Management

- **Antacids :** Aluminium hydroxide. magnesium carbonate. ,magnesium trisilicate. magnesium hydroxide. calcium carbonate. sodium bicarbonate.
- **H2 Blocker :** cimetidine (Tagamet) , ranitidine (Zantac)** nizatidine (Axid) famotidine (Pepsid)
- **PPI :** Omeprazole ,Esomeprazole ,Lansoprazole , Rabeprazol e Pantoprazole.
- **Protective Drugs :** Carafate (Sucralfate) Pepto- Bismol (Bismuth Subsalicylate). It covers the wound and prevent further damage)
- **Antibiotics :** Imidazole , azithromycine , amoxicillin etc.

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Alcoholic Liver Disease (ALD)

- → The Structural and functional changes (damage) of liver due to overconsumption of alcohol is called ALD.
- → Consumption of 60-80 g/ day (about 75-100 ml/day) for 10 to 20 years for men.
- → 20 g /day (about 25 ml /day) for women . Women are at the double risk of getting ALD



Etiology

- Overconsumption of alcohol

Pathogenesis

Overconsumption of Alcohol ↓
Acetaldehyde (toxic) it causes auto immune disorder , due to its toxic effect liver cells also damage ↓
NAD reduced to NADH ↓
Inhibits Gluconeogenesis , decrease fatty acid oxidation in liver , increase storage of extra fat in liver ↓
Fatty liver (this is first stage of alcoholic Liver disease)

Clinical Manifestations

- Abdominal swelling.
- Jaundice
- Haematological disorders
- Indigestion and constipation
- Fainting and mental disturbance
- Renal disorders.

Non-Pharmacological Management

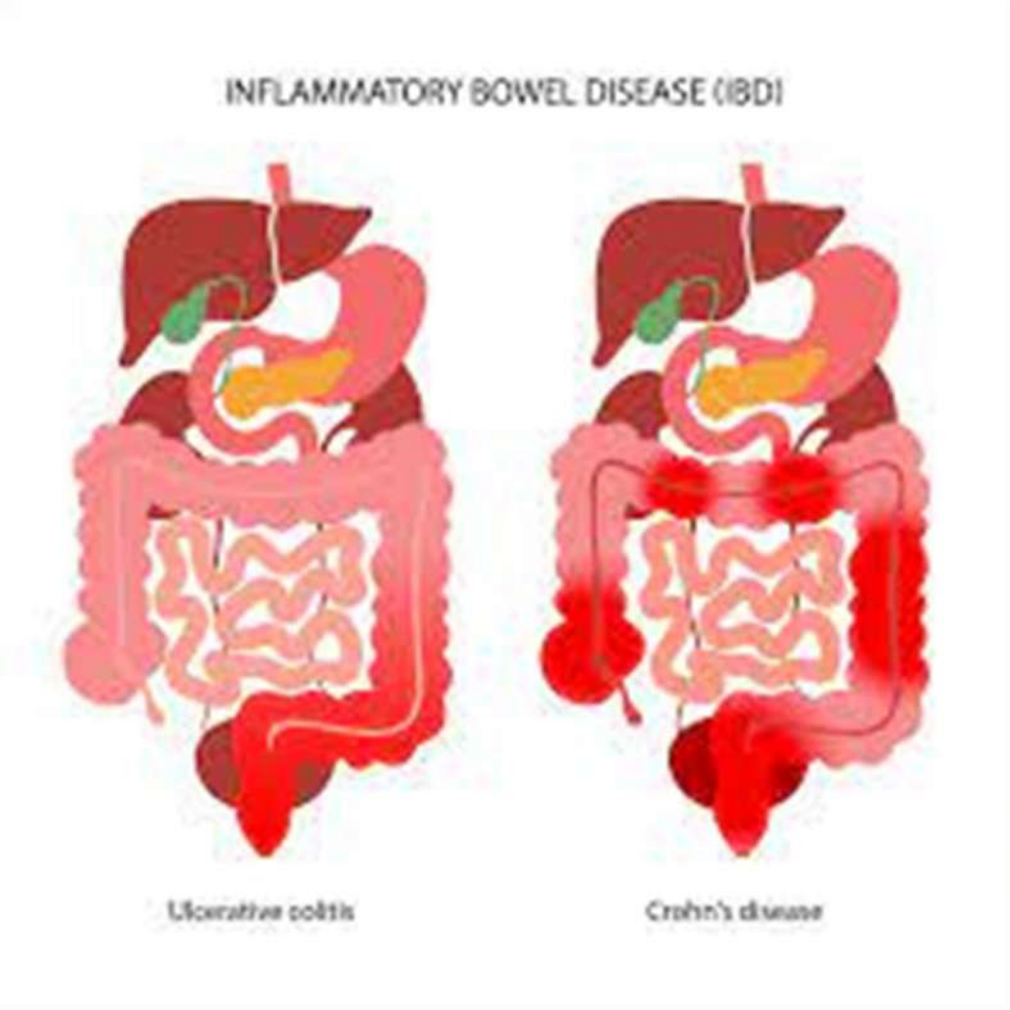
- Cessation of alcohol
- Taking healthy diet
- Low intake of salt

Pharmacological Management

- **In fatty liver :** It can be recover with stopping alcohol
- **In hepatitis :** Anti inflammatory drugs are used like steroids (prednisolone , pentoxifyline). Cholesterol medication.
- **In liver cirrhosis :** Diuretics , ammonia reducer , Beta blockers , antibiotics,
- Anti viral drugs and at last liver transplant.
- Vitamin k used according to needs

Inflammatory Bowel Disease

→ The prolonged Inflammation of GIT (specially in intestine) is called IBD.



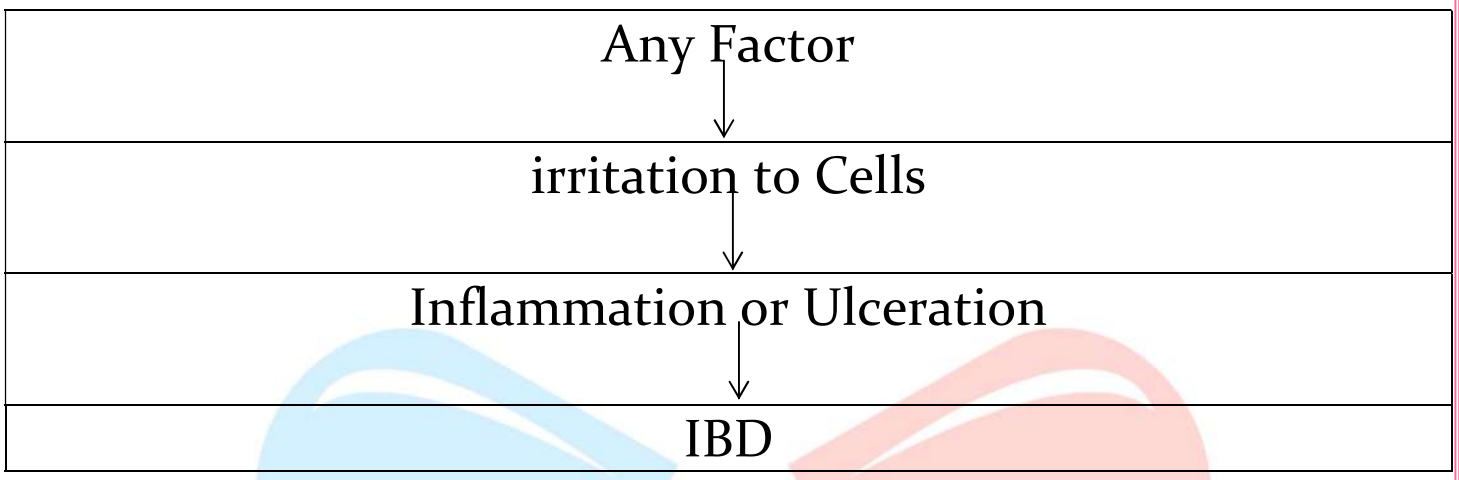
Types

- **Crohn's Disease :** If there is inflammation in intestine it is called Crohn's disease.
- **Ulcerative Colitis :** If there are inflammation and ulceration in large intestine it is called Ulcerative Colitis.

Etiology

- Autoimmune disorder
- Genetics
- Bacteria and viruses
- Environmental factors (Smoking , alcohol , Diet , oral contraceptives etc.).

Pathogenesis



Clinical Manifestations

- Loss in Weight
- Fever
- Pain & tenderness in abdomen
- Rectal Bleeding etc,

Non Pharmacological Management

- Avoiding smoking
- Cessation of alcohol
- Avoiding NSAIDs
- Increasing fiber rich diet.
- Increasing the intake of Omega 3 fatty acids in diet . It reduce inflammation.
- Avoiding Spicy and fried foods.

Pharmacological Management

- Antibiotics
- Anti-inflammatory drugs
- Immune suppressive drugs
- Steroids
- Analgesic
- Janus kinase (JAK) Inhibitors : Tofacitinib . It blocks the enzyme causes inflammation .
- Anti-diarrheals : Loperamide