GASTROINTESTINAL SYSTEM
Gastrointestinal System

- Gastrointestinal tract = alimentary tract
  - A hollow continuous tube that extends from mouth to anus
  - 2 parts
    - Upper GI tract: mouth, pharynx, esophagus, stomach, duodenum
    - Lower GI tract: small and large intestine, appendix, rectum, anus
  - Propels the products of digestion by peristalsis
  - Site of mechanical and chemical breakdown or food
GI System

- Keys for a fully functioning digestive system
  - Open throughout entire system
  - Functional absorption
  - Intact blood and nerve supply
  - Intact endocrine system
Etiology:
- Periodontal disease
- Bite imbalances
- Arthritis
- Muscle spasms
- Teeth clenching

Symptoms:
- Facial, neck, and jaw pain
- Stiffness
- Impaired or painful motion
Esophagus
Hiatal hernia

- Hernia
  - Protrusion of the abdominal contents through the abdominal wall

- Pathogenesis
  - Portion of the stomach bulges up into the chest cavity through the muscular (diaphragm) opening
  - Cardiac sphincter malfunctions
  - Reflux of gastric juices into the esophagus

- Most common cause of gastroesophageal reflux (GERD)
Esophageal Varices

- Varicose veins of the esophagus which can rupture

- Etiology
  - Liver cirrhosis
  - Other diseases marked by portal HTN

- One of the most common causes of upper GI bleeding (UGIB)

- ↑ mortality
Esophageal Carcinoma

- **Etiology**
  - Largely unknown
  - Correlation with alcohol and tobacco use
  - GERD

- **Epidemiology:**
  - Variation by geographic region, ethnic background, gender
Esophageal CA

- **Symptoms:**
  - Dysphagia
  - Weight loss
  - Chronic hiccups
  - Hoarseness
  - Pain with swallowing

- **Prognosis:**
  - Poor... cancer usually detected late
Stomach and Duodenum
Gastric Disease

- Clinical features
  - Pain
  - Vomiting
  - Bleeding
  - Dyspepsia
  - Systemic consequences
  - Nausea
  - Diarrhea
  - Constipation
GERD

- Acidic contents of stomach and intestine regurgitate into lower esophagus

- Symptoms:
  - Burning sensation or pain in central anterior chest
    - May be worse after meals or in supine position
  - Belching
  - Nausea
  - Sore throat
  - Difficulty swallowing
  - Vomitting
Gastritis

- Inflammation of the stomach lining

- Etiology:
  - Multiple causes exist

- Symptoms:
  - Abdominal pain
  - Indigestion
  - Decreased appetite
  - Nausea
  - Vomiting
  - Bleeding
Stomach CA

- **Etiology:**
  - Largely unknown

- **Symptoms:**
  - May not occur until later stages, therefore leads to poor prognosis
Small and Large Intestines
Diverticulosis

- Formation of diverticula (outpouchings of intestinal wall)
- Etiology: unknown, diet and exercise (???)
- Sigmoid colon
  - Older persons with chronic constipation
  - Diverticula are associated with thickening and narrowing of the colon
  - Bleeding and inflammation (diverticulitis) occur when obstructed
- Ruptured diverticula
  - Abscesses, fistulas, adhesions
Inflammatory Bowel Disease (IBD)

- Chronic autoimmune conditions that include:
  - Ulcerative colitis and Crohn’s disease

- Etiology:
  - Combination of risk factors believed to be cause
    - Genetic
    - Bacteria
    - Smoking
    - Some autoimmune diseases

- Recurrent inflammation of the intestines
- Chronic, unpredictable course
Inflammatory Bowel Disease (IBD)

- General Clinical manifestations
  - Abdominal pain
  - Persistent diarrhea → Osteoporosis
  - Loss of appetite → Weight loss/malnutrition
  - Rectal bleeding → Anemia
  - Depression/Anxiety
  - Fever
Pseudomembranous Colitis

- Acute, infectious disease; primarily of the colon

- Pathogenesis
  - Overgrowth of C. Difficile (bacteria)
  - Necrosis and superficial ulcers develop

- Clinical features
  - Acute diarrhea +/- blood
Acute Appendicitis

- Bacterial infection of the appendix
- Leads to purulent inflammation

- Appendix may
  - Necrotize (gangrenous appendicitis) or
  - Rupture (causing peritonitis)

- Clinical features
  - Sudden fever
  - Leukocytosis
  - Right lower quadrant abdominal pain
Intestinal Obstruction

- Obstruction can result from:
  - Paralytic mechanism
    - SCI
    - Medications
    - MI
    - Pneumonia
    - Inflammation
  - Obstructive mechanism
    - Adhesions
    - Tumors
    - Hernia
Intestinal Obstruction

- **Symptoms:**
  - Fever
  - Tachycardia
  - Cramping
  - Abdominal pain and distention
  - Vomiting/diarrhea
  - Loss of appetite
Malabsorption Syndrome

- Failure of intestines to absorb nutrients from food that can cause major organ and body system problems
  - Especially proteins and lipids
- Results in:
  - Anemia
  - Amenorrhea, impotence
  - General muscle weakness
  - Deficiency of fat-soluble vitamins
- May be caused by multiple intestinal diseases
  - Celiac disease
  - Crohn’s
  - Intestinal resection
  - Congestive heart disease/failure
Colorectal CA

- 4th most common type of malignant tumors

- Etiology:
  - Diet
  - Heredity
  - Polyps
  - IBD

- Symptoms
  - Variable
  - Change in bowel habits
  - Weight loss
  - Obstruction of intestine
  - Anemia