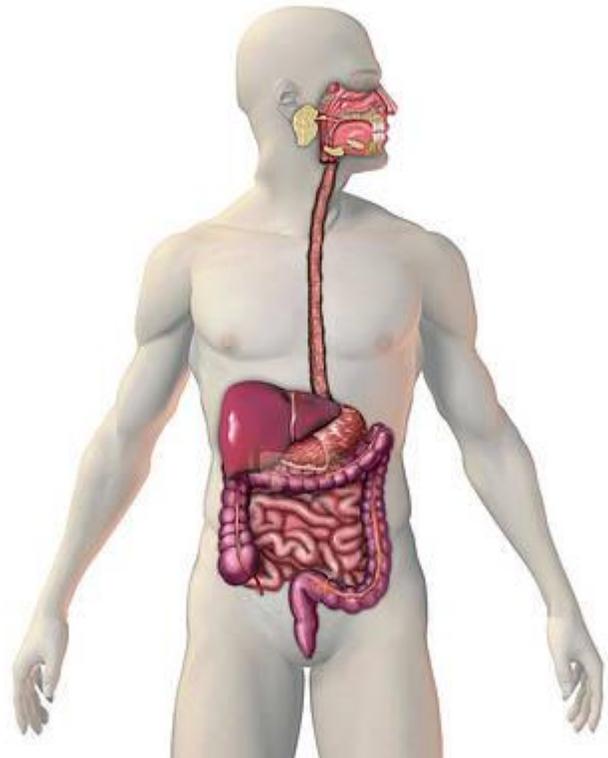


Gastrointestinal System – Clinical Notes



Abdulrahman Aldabobi
CLINICOSIS

GI Clinical Notes

Anatomy

1-Liver

- a) Upper border → 5th right intercostal space on full expiration
- b) Lower border → at the costal margin in the mid-clavicular line on full inspiration

2-Spleen → Underlies left ribs 9-11, posterior to the midaxillary line

3-Gallbladder → At the intersection of the right midclavicular line and the costal margin (tip of the ninth vertebrae)

4-Pancreas

- a) Neck → At the level of L1
- b) Head → Below and right to the neck
- c) Tail → Above and left to the neck

5-Kidneys

- a) Upper pole → Deep to the 12th rib posteriorly, 7 cm from the midline
- b) The right kidney is 2-3 cm lower than the left one

GI Diseases

1-Weight loss

- a) Significant if the weight loss was
 - a. 2% in one month
 - b. 5% in three months
 - c. 10% in six months
- b) Causes of weight loss
 - a. Decreased energy intake
 - b. Increased energy consumptions

2-Inflammatory Bowel Disease

- a) Causes painful mouth
- b) Causes Bloody diarrhea
- c) Either Crohn's or Ulcerative colitis
- d) Crohn's
 - a. Affects any part of the GI system (most commonly the terminal ileum)
 - b. Inflammation is not continuous along the affected area
- e) Ulcerative Colitis
 - a. Affects the colon only
 - b. Inflammation is continuous over the affected area
 - c. Smoking decreases the symptoms of UC

3-GERD

- a) Gastroesophageal Reflux Disease → Reflux of acid from the stomach to the esophagus, mainly due to relaxation of the lower esophageal sphincter
- b) Symptoms
 - a. Heart burn (exacerbated by lying down and bending forward)
 - b. Waterbrash → Sudden appearance of water in the mouth (also seen in peptic ulcer disease)
 - c. Taste of acid appearing in the mouth (compared to the alkaline taste after biliary vomiting)
 - d. Odynophagia
- c) Hiatal Hernia is an important risk factor
- d) If chronic and untreated → Barret esophagus (increase the risk of esophageal adenocarcinoma)

Note

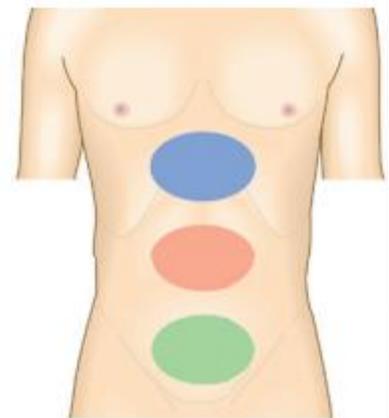
Odynophagia indicates an intact mucosal sensation and excludes cancer

4-Dyspepsia

- a) Pain and discomfort in the upper abdomen
- b) Associated with nausea, belching, bloating and premature satiety
- c) Three types
 - a. Reflux Like → Dyspepsia with heartburn
 - b. Ulcer-Like → Epigastric pain relieved by food (worse with an empty stomach)
 - c. Dysmotility like Dyspepsia → presents with nausea, belching, bloating and premature satiety (must be distinguished from gastric cancer, which also causes early satiety)
- d) Fatty and spicy food exacerbate symptoms (gallbladder disease must be excluded)
- e) Pointing Sign → The patient may indicate a localized pain in the epigastrium

5-Abdomina pain

- a) Visceral
 - a. Conducted by the sympathetic splanchnic nerves
 - b. Poorly Localized
 - c. Caused by either excessive contraction of the smooth muscles or distension of the hollow organs
 - d. Pain from foregut structures → Epigastric (above the umbilicus)
 - e. Pain from the midgut structures → Periumbilical (around the umbilicus)
 - f. Pain from the hindgut structures → Suprapubic (below the umbilicus)
- b) Parietal
 - a. Conducted by the intercostal nerves
 - b. Well localized
- c) Abdominal pain in mails may due to testis torsion, and in females may be due some gynecological cause (ectopic pregnancy, ruptured follicle, ovarian torsion)



6-Diverticulosis

- a) An abnormal false diverticulum is formed in the colon
- b) Usually affects the sigmoid colon → leads to Left iliac fossa pain
- c) Causes altered bowel habits
- d) If inflamed → named as Diverticulitis
- e) Rupture → Severe abdominal pain, rapidly progressing to become generalized and constant with hypotension

7-Peptic Ulcer disease

- a) Ulceration of the gastrointestinal mucosa (Gastric and Duodenal),
- b) Symptoms
 - a. Epigastric pain that radiates to the back
 - b. Painless non-biliary vomiting
 - c. Most common cause of upper GI bleeding (may manifest as hematemesis, melena, or both)
- c) If gastric → Exacerbated by food, if duodenal → Exacerbated by fasting
- d) Risk Factors
 - a. NSAIDs
 - b. H.Pylori infection
 - c. Glucocorticoid therapy
 - d. Stress
- e) If Perforated (May cause peritonitis)
 - a. Severe abdominal pain, rapidly progressing to become generalized and constant
 - b. Vomiting
 - c. Hypotension
 - d. Shallow breathing with decreased abdominal movement with respiration (peritonitis)
 - e. May cause absent bowel sounds

8-Colorectal Cancer

- a) Right Sided → Bleeding (iron deficiency anemia on the long-term)
- b) Left Sided → Constipation
- c) Rupture → Severe abdominal pain, rapidly progressing to become generalized and constant with hypotension

9- Abdominal Aortic Aneurysm

- a) Dilation of the abdominal aorta, that present as Pulsatile mass in the abdomen
- b) Symptoms of ruptured AAA
 - a. Sudden onset of severe tearing abdominal and back pain (may radiate to the loin) → Poorly relieved by opioid analgesia
 - b. Hypotensive shock may be present
 - c. Asymmetrical femoral pulses

10-Acute Mesenteric Infarction

- a) Symptoms
 - a. Severe sudden abdominal pain → poorly relieved by analgesia
 - b. Bloody diarrhea
 - c. Anorexia, nausea, vomiting
 - d. Asymmetrical Pulses
 - e. Absent bowel sounds
 - f. Guarding
- b) Risk Factors
 - a. Atrial Fibrillation
 - b. HF

11-Intestinal Obstruction

- a) Causes
 - a. Adhesions → Relevant history of multiple surgeries
 - b. Left sided colorectal cancer
 - c. Volvulus
 - d. Intussusception
- b) Symptoms
 - a. Constipation (if severe → Obstipation)
 - b. Colicky Pain
 - c. Bloating
 - d. Vomiting
 - i. If in the proximal small intestines → Painless biliary vomiting
 - ii. If in the distal small intestines (or in the colon) → Fecal Vomiting
 - e. Increased bowel sounds proximal to the obstruction with visible peristalsis

12-Cholesectitis

- a) Inflammation of the gallbladder
- b) Causes RUQ that
 - a. Radiates to the right shoulder (below the scapula – due to diaphragmatic irritation)
 - b. Exacerbated by fatty meals
 - c. Pattern → Progressive in the first 30minutes, constant in the next 6 hours, then regress
- c) Positive murphy sign

13-Acute appendicitis

- a) Inflammation of the appendix
 - a. In children → Follows a viral infection
 - b. In adults → Due to fecal mass that obstructs the opening of the appendix
- b) Symptoms
 - a. Periumbilical pain → Shifts to the right iliac fossa
 - b. Fever
 - c. Guarding and tender abdomen

14-Acute Pancreatitis

- a) Symptoms
 - a. Severe epigastric pain with epigastric tenderness
 - i. Relieved by sitting upright
 - ii. Radiates to the back
 - b. Fever, Anorexia, and nausea
 - c. Bruising (in case of hemorrhagic pancreatitis – these signs are also associated with ruptured AAA and ruptured ectopic pregnancy)
 - i. Periumbilical → Cullen's sign
 - ii. Loin Bruising → Grey Turner's Sign
 - d. Absent bowel sounds
 - e. Unable to eat during bouts
 - f. Steatorrhea (Only in chronic pancreatitis)
- b) Risk factors (there are many, but these two are the only mentioned)
 - a. Alcohol consumption
 - b. Cholelithiasis

16-Ruptured Ectopic Pregnancy

- a) Symptoms
 - a. Unilateral iliac fossa pain with tenderness in the suprapubic area
 - b. Periumbilical bruising
 - c. Vaginal discharge (prune-juice like discharge)
 - d. Hypotension
- b) Think of a young female patient (premenopausal) with missed menstrual period and iliac fossa pain

17-Pelvic Inflammatory disease

- a) Symptoms
 - a. Lower or central abdominal pain
 - b. Backache
 - c. Pleuritic RUQ pain
 - d. Fever
 - e. Vaginal Discharge
 - f. Irregular menstruation
- b) Risk factors
 - a. History of STD
 - b. Recent gynecological procedures
 - c. Intrauterine contraceptive device
 - d. Pregnancy

18-Irritable Bowel Syndrome

- a) Abdominal pain with altered bowel habit
- b) Alternating episodes of constipation and diarrhea (low volume), Bloating and Dyspepsia
- c) Functional abnormality, with no structural changes in the intestines

19-Peritonitis

- a) Inflammation of the peritoneum, usually following a hollow organ ruptures
- b) Results in progressive abdominal pain that becomes generalized and constant
- c) Silent Interval → Complete resolving of the abdominal pain within the first two hours of the perforation
- d) Small volume and persistent vomiting

20-Dysphagia (May cause nausea without vomiting)

- a) Neurological Causes of dysphagia
 - a. Results from weakening of the pharyngeal muscles
 - b. As in
 - i. Bulbar Pseudobulbar palsy
 - ii. Strokes
 - c. Worse for liquids
 - d. Accompanied by choking and fluid regurgitating
- b) Neuromuscular Dysphagia (Dysmotility)
 - a. Dysphagia due to abnormal movement of esophageal smooth muscles
 - b. Causes
 - i. Achalasia
 - ii. Myasthenia Gravis
 - iii. Pharyngeal pouch → May lead to fluid regurgitation and aspiration pneumonia
 - c. Worse for solids than liquids
 - i. Drinking fluids and sitting upright helps the dysphagia
 - ii. Lying down increases the dysphagia
 - d. Achalasia
 - i. Esophageal spasms
 - ii. Inability for the lower esophageal sphincter to relax
 - iii. Bear-Peak Sign on X-Ray with barium swallow
 - iv. Food accumulates inside the esophagus → Increased risk for aspiration pneumonia
 - e. Esophageal dysmotility may cause central chest pain that is misdiagnosed as a cardiac pain
- c) Mechanical Obstruction
 - a. Causes
 - i. Esophageal cancer → Causes weight loss and no heartburn
 - ii. Esophageal strictures (mainly due to peptic disease) → Does not cause weight loss and heartburn is present
 - iii. External Compression (Dilated left atrium, massive goiter)
 - iv. Systemic Sclerosis
 - b. Progressive → only for solids first, then for solids and liquids

Note

Vomiting due to increased intracranial pressure is not preceded by nausea

21-Pyloric Stenosis

- a) Projectile non-biliary vomiting
- b) Visible Peristalsis are seen on the abdomen

22-Bulemia

- a) Self-Induced vomiting
- b) Weight is maintained

23-Anorexia Nervosa

- a) Profound weight loss

24-Abdominal Distension

- a) Fat
- b) Flatus
- c) Feces
- d) Fluid
- e) Fetus
- f) Functional → fluctuating abdominal distension that develops during the day and resolves overnight, usually occurring in irritable bowel syndrome

25-Coeliac Disease

- a) Mouth ulcers
- b) Steatorrhea

26-Causes of constipation

- a) IBS
- b) Colon cancer
- c) Hypothyroidism
- d) Hypercalcemia
- e) Drugs (opioids iron)
- f) Immobility (Parkinson, stroke)

27- Diarrhea (types and causes)

- a) Osmotic → Stops with fasting
- b) Secretory → Does not stop with fasting
 - a. Thyrotoxicosis
- c) Steatorrhea
 - a. Coeliac Disease
 - b. Chronic Pancreatitis (or Pancreatic Insufficiency)
 - c. Cystic Fibrosis
- d) Bloody Diarrhea
 - a. IBD
 - b. Colonic Ischemia
 - c. Infective Gastroenteritis

28-Hematemesis causes

- a) Esophageal varices → With the first vomit (associated with portal hypertension - Cirrohsis)
- b) Mallory Weiss Syndrome → Blood is present after forcefully vomiting several times (associated with chronic alcohol consumption)

29-Melena Causes (Associated with upper GI bleeding)

- a) Peptic Ulcers
- b) Mallory Weiss syndrome
- c) Esophageal / Gastric cancers
- d) Gastric Angioectasias

30-Causes of Rectal Bleeding

- a) Hemorrhoids
- b) Anal Fissures
- c) Complicated Diverticular disease
- d) Colorectal cancer
- e) Colonic polyps
- f) IBD
- g) Ischemic Colitis
- h) Colonic Angioectasias

31-Hyperbilirubinemia

- a) Increased Bilirubin in the blood, usually deposits in the skin causing jaundice (yellowish skin, sclera and mucous membranes)
- b) *Pre-Hepatic Hyperbilirubinemia*
 - a. Increased bilirubin in the blood, not due to liver or biliary cause
 - b. Usually caused by Hemolysis of RBCs → Increased amount of Unconjugated bilirubin found in the blood → Jaundice
 - c. Also called Unconjugated Hyperbilirubinemia
 - d. The stool and the urine colors are normal, as the stool still getting normal amount of sterocolbin, and the urine still gets normal amount of
 - e. Remember, the unconjugated bilirubin is not soluble, so even if it was found in large amounts in the blood, it cannot be secreted in the urine, and it cannot change the urine color
- c) *Hepatic Hyperbilirubinemia*
 - a. Increased bilirubin in the blood due to hepatic causes
 - b. Called 'Mixed Bilirubinemia' as it increases both the conjugated and the unconjugated bilirubin in the blood
 - c. Liver diseases will
 - i. Decrease liver functions → Decrease bilirubin conjugation → Increase Unconjugated bilirubin in the blood
 - ii. Lysis (Destruction) of liver cells → Contents of these cells is spilled in the blood → increased conjugated bilirubin in the blood
 - d. Causes normal stool color (stool is getting enough sterocolbin) and dark urine (increased conjugated bilirubin in the blood)
- d) *Post-Hepatic Hyperbilirubinemia*
 - a. Hyperbilirubinemia is increased bilirubin in the blood, due to obstruction of the biliary system
 - b. Biliary system → Group of canal that transport the conjugated bilirubin from the liver and the gallbladder to the intestines

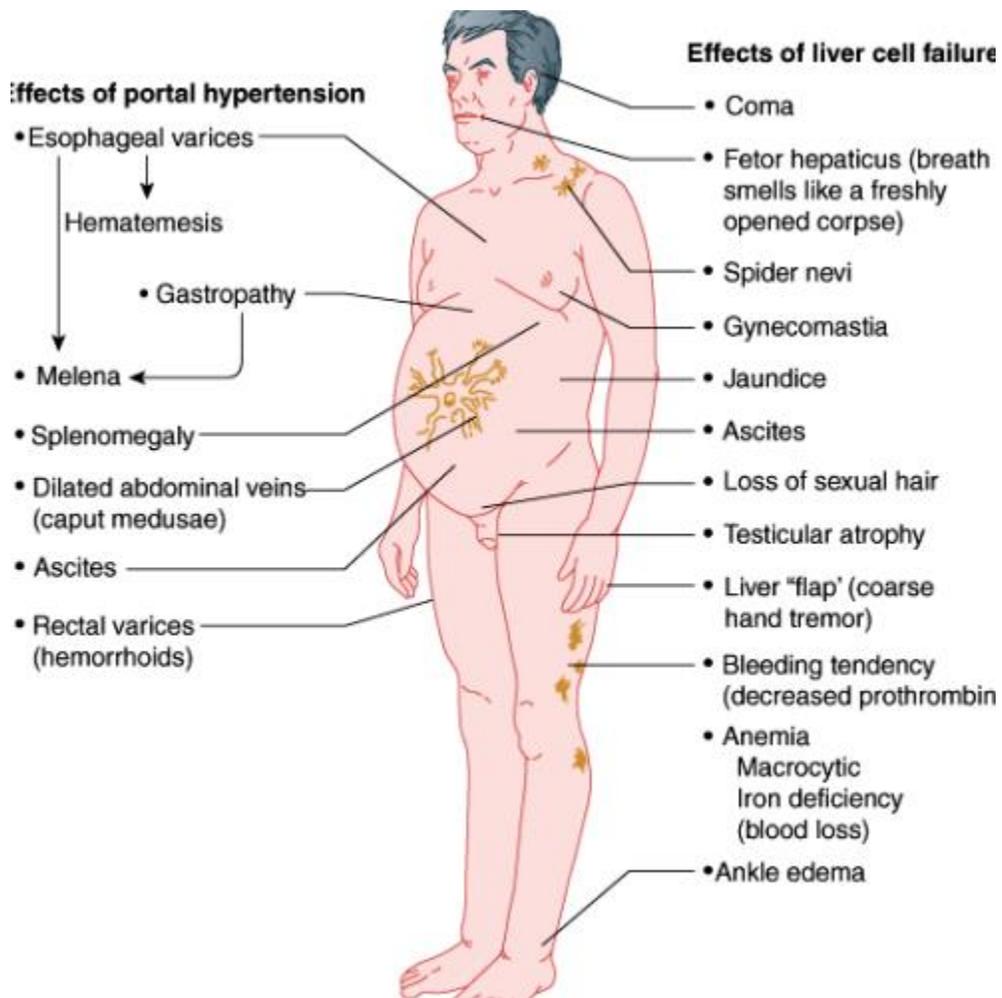
- c. If the biliary system is obstructed → The conjugated bilirubin will build up, and finally leak into the circulation → Increased conjugated bilirubin in the blood, with normal levels of unconjugated bilirubin
- d. Stool color will be pale (bilirubin does not reach the intestines due to the obstruction → No stercobilin), and the urine color will be dark (increased conjugated bilirubin in the blood)

	Conjugated Bilirubin (plasma)	Unconjugated Bilirubin (plasma)	Bilirubin (Urine)	Urobilinogen (Urine)	Stool Color	Urine Color
Pre-Hepatic (Unconjugated)	Normal	Increased	Normal	Normal	Normal	Increased
Hepatic (Mixed)	Increased	Increased	Increased	Dark	Normal	Increased
Post-Hepatic (Obstructive)	Increased	Normal	Increased	Dark	Pale	Normal

33-Dilated abdominal Veins

- a) Around the umbilicus → Caput medusae (associated wil liver cirrhosis)
- b) Ascending in the abdomen → IVC obstruction

34-Signs and symptoms of the chronic liver disease and some important tables are shown next



6.12 Differentiating a palpable spleen from the left kidney

Distinguishing feature	Spleen	Kidney
Mass is smooth and regular in shape	More likely	Polycystic kidneys are bilateral irregular masses
Mass descends in inspiration	Yes, travels superficially and diagonally	Yes, moves deeply and vertically
Ability to feel deep to the mass	Yes	No
Palpable notch on the medial surface	Yes	No
Bilateral masses	No	Sometimes, e.g. polycystic kidneys
Percussion resonant over the mass	No	Sometimes
Mass extends beyond the midline	Sometimes	No (except with horseshoe kidney)

6.11 Grading of hepatic encephalopathy (West Haven)

Stage	State of consciousness
0	No change in personality or behaviour No asterix (flapping tremor)
1	Impaired concentration and attention span Sleep disturbance, slurred speech Euphoria or depression Asterix present
2	Lethargy, drowsiness, apathy or aggression Disorientation, inappropriate behaviour, slurred speech
3	Confusion and disorientation, bizarre behaviour Drowsiness or stupor Asterix usually absent
4	Comatose with no response to voice commands Minimal or absent response to painful stimuli

6.13 Causes of splenomegaly

Haematological disorders

- Lymphoma and lymphatic leukaemias
- Myeloproliferative diseases, polycythaemia rubra vera and myelofibrosis
- Haemolytic anaemia, congenital spherocytosis

Portal hypertension

Infections

- Glandular fever
- Malaria, kala-azar (leishmaniasis)
- Bacterial endocarditis
- Brucellosis, tuberculosis, salmonellosis

Rheumatological conditions

- Rheumatoid arthritis (Felty's syndrome)
- Systemic lupus erythematosus

Rarities

- Sarcoidosis
- Amyloidosis
- Glycogen storage disorders

6.10 Causes of hepatomegaly

Chronic parenchymal liver disease

- Alcoholic liver disease
- Hepatic steatosis
- Autoimmune hepatitis
- Viral hepatitis
- Primary biliary cirrhosis

Malignancy

- Primary hepatocellular cancer
- Secondary metastatic cancer

Right heart failure

Haematological disorders

- Lymphoma
- Leukaemia
- Myelofibrosis
- Polycythaemia

Rarities

- Amyloidosis
- Budd–Chiari syndrome
- Sarcoidosis
- Glycogen storage disorders

6.9 Specific signs in the 'acute abdomen'

Sign	Disease associations	Examination
Murphy's	Acute cholecystitis: Sensitivity 50–97% Specificity 50–80%	As the patient takes a deep breath in, gently palpate in the right upper quadrant of the abdomen; the acutely inflamed gallbladder contacts the examining fingers, evoking pain with the arrest of inspiration
Rovsing's	Acute appendicitis: Sensitivity 20–70% Specificity 40–96%	Palpation in the left iliac fossa produces pain in the right iliac fossa
Iliopsoas	Retroileal appendicitis, iliopsoas abscess, perinephric abscess	Ask the patient to flex their thigh against the resistance of your hand; a painful response indicates an inflammatory process involving the right psoas muscle
Grey Turner's and Cullen's	Haemorrhagic pancreatitis, aortic rupture and ruptured ectopic pregnancy (see Fig. 6.25)	Bleeding into the falciform ligament; bruising develops around the umbilicus (Cullen) or in the loins (Grey Turner)

6.16 Causes of abnormal stool appearance

Stool appearance	Cause
Abnormally pale	Biliary obstruction
Pale and greasy	Steatorrhoea
Black and tarry (melaena)	Bleeding from the upper gastrointestinal tract
Grey/black	Oral iron or bismuth therapy
Silvery	Steatorrhoea plus upper gastrointestinal bleeding, e.g. pancreatic cancer
Fresh blood in or on stool	Large bowel, rectal or anal bleeding
Stool mixed with pus	Infective colitis or inflammatory bowel disease
Rice-water stool (watery with mucus and cell debris)	Cholera

	SAAG (g/dL)	
	≥ 1.1	< 1.1
Total protein (g/dL)		
< 2.5	Cirrhosis Acute liver failure	Nephrotic syndrome
≥ 2.5	CHF Constrictive pericarditis Budd-Chiari syndrome Veno-occlusive disease	Peritoneal carcinomatosis TB peritonitis Pancreatic ascites Chylous ascites