Achalasia

- Idiopathic loss of the normal neural structure of the lower esophageal sphincter resulting in inability to relax

Features

- Progressive dysphagia to both solid and fluids (more to fluids)
- Regurgitation (hours after eating)
- Weight loss
- There may be history of **recurrent URTIs** or **aspiration pneumonia** as a result from untreated achalasia that leads to **nocturnal inhalation** of material lodged in the esophagus
- NO relationship with alcohol or tobacco use

Investigations

- Barium swallow → (Sigmoid esophagus); dilation of the esophagus, which narrows into a "parrot's beak" at the distal end
- Manometric studies (*most accurate*) → increased tone of lower esophagus

Management

Dilation of the lower esophageal sphincter

- *HELLER'S OPERATION (myotomy)*
- *Botulinum toxin injection,* elderly not able to tolerate operations

Esophageal cancer

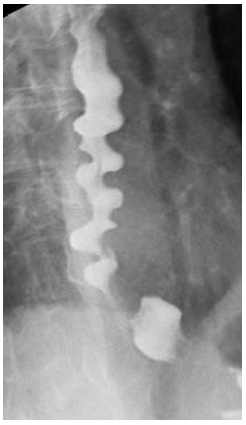
- dysphagia to solid first then liquids
- common in **elderly** with long history of alcohol and tobacco use

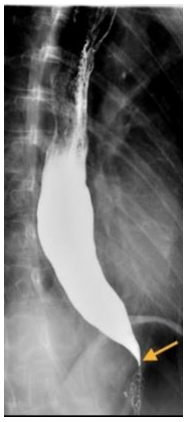
Schatzki ring

- Narrowing of the lower esophagus that leads to intermittent dysphagia but not associated with pain, mainly to solids and in old patients

Esophageal spasm (CCCC)

- *Intermittent* **C**hest pain and dysphagia, pain can be precipitated by **C**old liquids
- Pain can simulate that of MI, but it has no relation to exertion
- Relieved after ingestion of nitrates as they are smooth muscle relaxants





Investigations

- **Manometric study** → High intensity and disorganized contractions (*most accurate*)
- **Barium meal** → **C**orkscrew pattern

Treatment

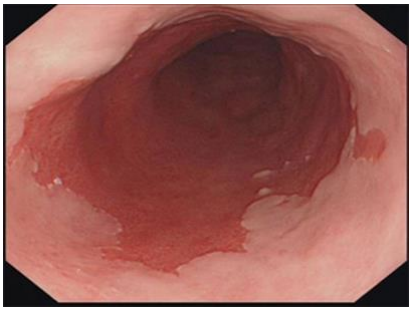
- **Ca channel blockers**: nifedipine

Plummer Vinson $

- Middle-aged woman
- Dysphagia (painless/intermittent) + IDA + post cricoid esophageal web

Management

- Iron supplement
- Dilation of the web



Barret's esophagus

- *Occasional* dysphagia
- Results from long history of **GERD**
- Replacement of Sq. epithelium to columnar epithelium
- Associated with esophageal adenocarcinoma

Dysphagia

Benign esophageal stricture (peptic stricture)	• Dysphagia to both solids and liquids WITHOUT regurgitation • Results from scarring due to: - Acid reflux - Persistent GERD (retrosternal discomfort) - Ingestion of corrosives - Drugs: **Bisphosphonates** (alendronate) – **NSAIDs.** So patients are advised to lie down for 30min after administration
Esophageal carcinoma	• Symptoms of cancer
Barrett's esophagus	• A long hx of GERD, occasional dysphagia not persistent
Pharyngeal pouch (Zenker's diverticulum)	• Hx of halitosis, regurgitation of stale food & a throat lump • Barium swallow may show a residual pool of contrast within the pouch • Endoscopy should be AVOIDED in fear of perforation
Achalasia	• Dysphagia + regurgitation
Ulcers and esophageal candidiasis	• **Painful** dysphagia
Plummer Vinson $	• IDA + Esophageal web

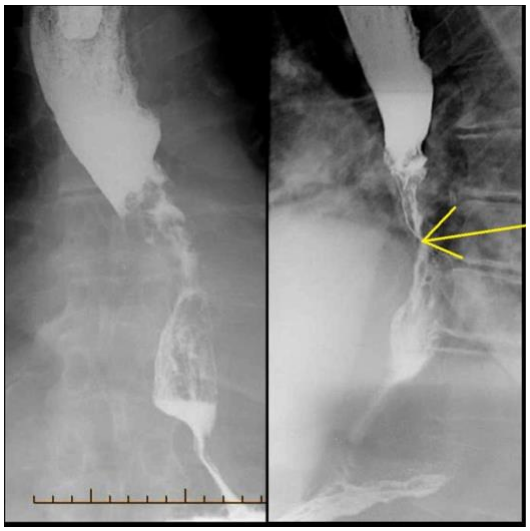
- *Bisphosphonates are used to treat osteoporosis but long-term use can cause esophagitis resulting in a stricture*

Esophageal cancer

- Adenocarcinoma is more common
- Commonly occur in the lower third, Squamous cell type is less common and it affects the upper 2/3
- More likely to develop in patients with history of GERD or Barret's
- Dysphagia to solid first then liquids + weight loss

Risk factors

- Smoking (RF for both but mainly for SCC)
- Alcohol
- GERD
- Barret's
- Achalasia
- Plummer Vinson $



Diagnosis

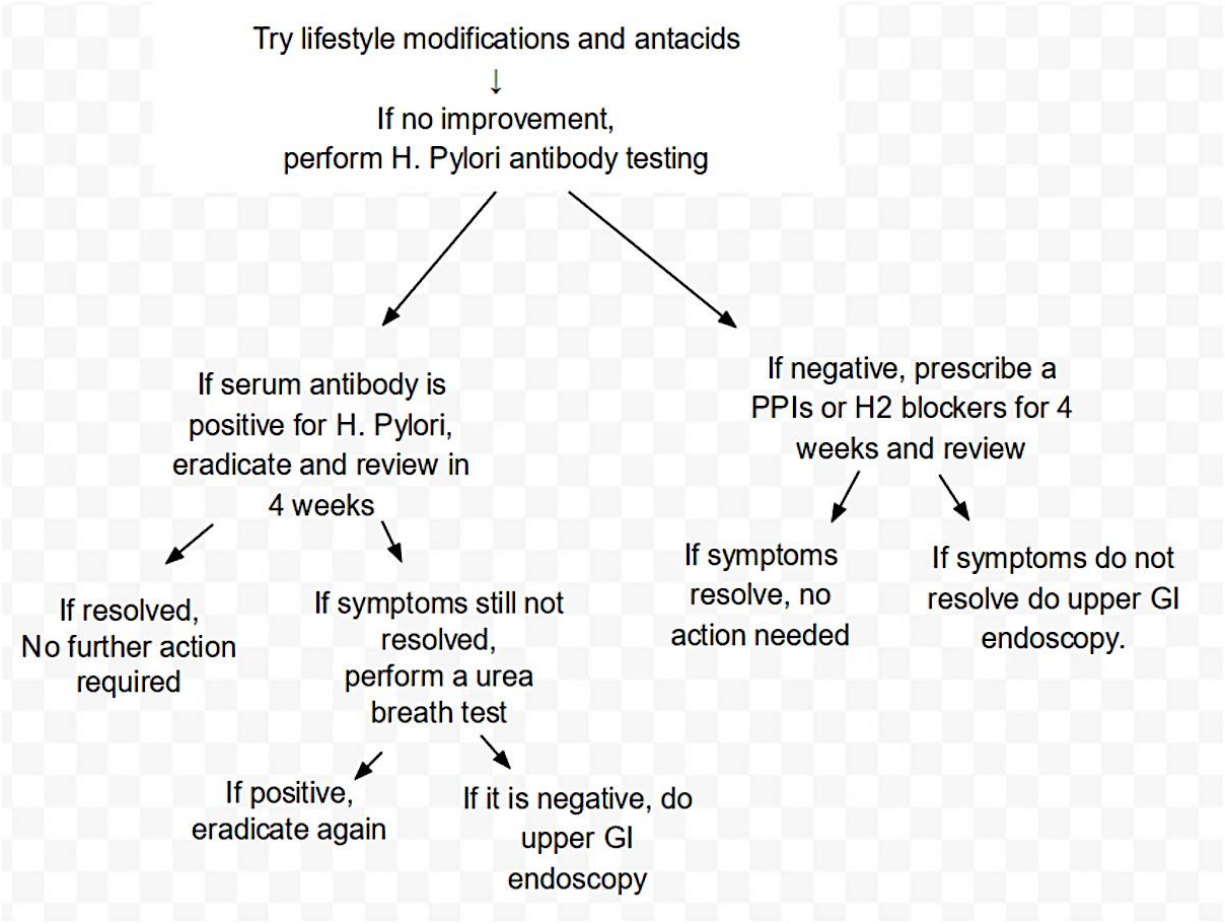
- **Upper GI endoscope and biopsy** → *1st line*
- **Barium swallow**
  - Rat-tail appearance
  - Apple-core appearance
  - Shouldering

Treatment

- Operable → surgical resection, radiotherapy
- Inoperable (e.g. metastasis) → palliative esophageal **Stent**, Percutaneous endoscopic gastrostomy (**PEG**) usually in stroke patients who are at risk of aspiration pneumonia or to decompress the stomach in cases of gastric volvulus

Dyspepsia and H. Pylori

- **<u>< 55 with no red flags:</u>**



- **<u>> 55 with unexplained/persistent symptoms (not just alarm signs)</u>** ⟶ **Endoscopy**

➢ Red flags (ALARMS)

- **A**nemia
- **L**oss of weight
- **A**norexia
- **R**ecent onset of progressive symptoms
- **M**asses, **M**elena or hematemesis
- **S**wallowing difficulty

➢ H. Pylori antibody testing

- <u>Carbon-13 urea breath test</u>
- Stool antigen test
- Serum antibody testing

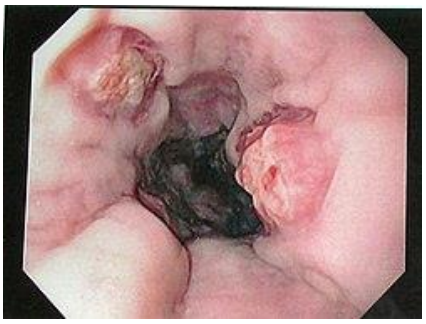
- Serological tests have no value in confirming successful eradication because antibodies persist long after successful eradication, **C-13 urea breath test** ensures successful eradication
- If the patient is taking **PPIs**, stop it <u>14 days</u> prior to performing urea breath test or stool antigen test
- There must be a <u>28-day</u> break after eradication with antibiotics prior to testing

➢ H. Pylori eradication

- PPIs
- Clarithromycin
- Amoxicillin or metronidazole

Esophageal varices

- Dilated sub-mucosal veins in the <u>lower 1/3</u> of the esophagus
- Often severe and life threatening
- History of **chronic liver disease** → **portal hypertension** → **esophageal varices**



Features

- **Hematemesis** *(most commonly)* and **melena**
- Signs of **chronic liver disease**

Investigations

- **Endoscopy** at early stage

Acute management of variceal bleeding

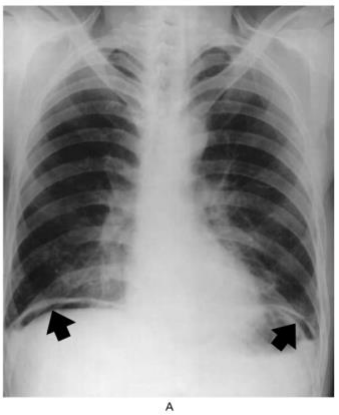
- Always with **ABC**
- Correct clotting: **FFP**, **vitamin K**
- **Terlipressin** (vasoactive agent) → should be offered to patients with suspected variceal bleeding at presentation
- **Antibiotic prophylaxis** → reduces mortality in patients with acute upper GI bleeding in association with chronic liver disease
- Endoscopic variceal **band ligation** → if it's not available → emergency sclerotherapy
- Sengstaken-Blakemore tube if uncontrolled hemorrhage
- Transjugular Intrahepatic Portosystemic Shunt (**TIPSS**)

Prophylaxis of variceal hemorrhage

- ***Propranolol**, given at discharge to reduce portal pressure in order to decrease the risk of repeat bleeding*

Perforated peptic ulcer

- Sever sudden localized **epigastric** pain
- May worsen with **coughing** or **moving**
- May radiate to the **shoulder tip**



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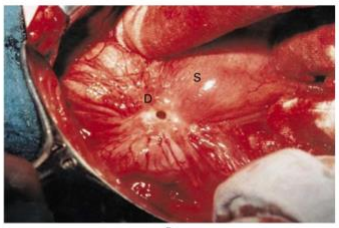


B

Examination

- **Absent bowl sounds**
- **Shock**
- Generalized **peritonitis** (fever, tachycardia, abdominal guarding & rigidity)

Investigations

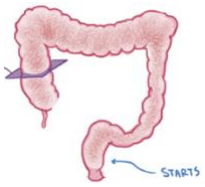
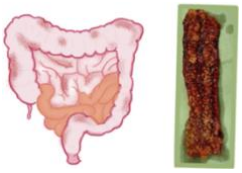
- **Erect X-ray** → *<u>free gas under the diaphragm</u>*
- CT scan

Management

- IV analgesics
- Antiemetic (e.g. metoclopramide 10mg)
- Resuscitate with IV 0.9% saline
- IV antibiotics

*For bleeding peptic ulcer without perforation → **Endoscopy**, or **IV PPIs** if endoscopy isn't available*

IBD

	Ulcerative Colitis → Lt	Crohn's disease → Rt
Def.	- BD that forms ulcers in the colon and rectum only - Only affects mucosa and submucosa - Autoimmune - Bloody diarrhea is more prominent	- Anywhere in the GIT mostly ileum & colon - Extending to serosa - Immune-related caused by pathogens - Weight loss more prominent - Steatorrhea
Diff.	- **C**ircumferential - **C**ontinuous - **C**rypt abscesses - 1ry sclerosing **C**holangitis ➢ Aphthous oral ulcers 	- Transmural/deep ulcers - Skip lesions (cobblestone appearance) on endoscopy ➢ Peri-anal **fistulas** ➢ Kantor's string sign ➢ Rose thorn ulcers 
Symptoms	- Pain in **LLQ** (rectum) - LI: **Bloody diarrhea** more common	- Pain in **RLQ** (ileum) - LI: Diarrhea usually not bloody - SI: Malabsorption
Diagnosis	- Colonoscopy - Barium enema (loss of haustration, drain pipe colon) - CT \ MRI - Decreased goblet cells on histology - In children → *P-ANCA positive*	- Barium swallow - CT - **Increased** goblet cells + **Granuloma** on histology
Treatment	➢ **Inducing remission** - **1st line** (motions <4 times) → topical aminosalicylates (e.g. **rectal mesalazine**) - If not responding → **oral mesalazine** (5-ASA) - Still not responding or motions 5/day → **oral prednisolone** If severe colitis → **IV steroids**, ***Infliximab in children:*** 1. > 6 bowl movements 2. Visible blood in large amount 3. Pyrexia > 37.8℃ 4. Tachycardia 5. Anemic 6. ESR > 30 *In severe cases, an abdominal X-ray would be very appropriate in the setting to look for features suggestive of* ***toxic megacolon*** ➢ **Maintaining remission** - Mesalazine - If not well maintained → oral azathioprine or mercaptopurine	➢ **Inducing remission** - **1st line** → **prednisolone** - 2nd line → budesonide - 3rd line → mesalazine (5-ASA) • Add on treatment (not used as monotherapy): **azathioprine**, **mercaptopurine** or **methotrexate** ➢ **Maintaining remission after surgery** - **1st line** → azathioprine, mercaptopurine or 5-ASA

Toxic megacolon

➢ **IBD** or **infective colitis** characterized by total or segmental non-obstructive colonic dilatation + systemic toxicity

Presentation

- Severe abdominal pain
- Marked toxicity (weakness, lethargy, confusion)

Investigation

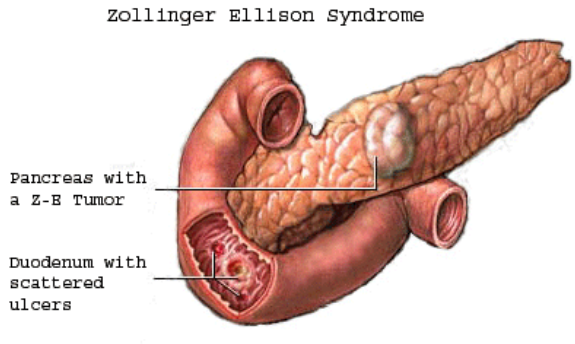
- Abdominal **X-ray**

Treatment

- Admission to ITU, **IV fluids**
- **IV steroid** in case of IBD
- **IV antibiotics** in case of infectious cases
- Possible surgical resection (high risk of perforation and death)
- If rupture colon is suspected → ***Urgent laparotomy***

Zollinger-Ellison $

- ➢ **Gastrinoma** (tumors found in pancreas or duodenum) → secretes **gastrin** → **↑ gastric acid** → **peptic ulcers** at usual sites, such as 2nd part of duodenum or jejunum
- ➢ Ulcers may occur after adequate surgery



Investigations

- **Fasting gastrin levels**
- **Secretin stimulation test** (gastrin goes up after secretin in case of Gastrinoma)

ZES is suspected when

1. ***Multiple ulcers*** *that are* ***resistant*** *to drugs*
2. *Associated with* ***diarrhea*** *+* ***steatorrhea***
3. ***Family history*** *of* ***peptic ulcers***

Constipation management

- ➢ **Hard stool** → Stool softeners + high fiber (residue) diet
- ➢ **Soft stool** → **S**enna then lactulose
- ➢ **Impacted stool** → phosphate enema
- ➢ **Constipation in pregnancy** → Lactulose then Senna

Colorectal carcinoma

- Presents with a change in bowel habits, abdominal pain, anemia and weight loss
- Best diagnostic investigation → *Colonoscopy*
- Gold standard → *Biopsy*
- Alternatives → *Barium enema* and *CT angiography*
- CEA antigen is NOT used for diagnosis or staging but rather for monitoring relapses

Diarrhea

- 3 loose or watery stool /day
- Acute < 14 days → ***Microscopy, culture*** *and* ***sensitivity***
- Chronic > 14 days → ***Colonoscopy***

- Most common adenoma causing electrolytes disturbances → **Villous adenoma**
- Most common electrolyte imbalance in diarrhea → **Hypokalemia**
- Acid-base imbalance in diarrhea → **Non-anion gap metabolic acidosis** (due to loss of HCO3)
- Most common cause of bloody diarrhea → **Campylobacter** (a prodrome of ***headache***, ***myalgia*** & ***fever***)
- Second most common cause of bloody diarrhea → **Shigella** → **Salmonella**
- Diarrhea after camping → **Giardia**
- Most common cause of traveler diarrhea (in less than 72h) → **E-coli**
- Traveler diarrhea lasting >1 week and associated e' steatorrhea and weight loss→ **Giardia**
- Most common cause of diarrhea in pediatrics → **Viral (Rotavirus)**
- Diarrhea followed by weakness and areflexia (Ascending paralysis) → **GB$**
- Diarrhea followed by renal impairment → **HUS (hemolytic uremic syndrome)**
- Bloody diarrhea followed by RUQ pain → **Ameba** > **amoebic liver abscess**
- Chronic bloody diarrhea in young male → **IBD**
- Diarrhea after long term antibiotics → **Clostridium difficile**
- MC Antibiotic causing clostridium difficile → **Clindamycin, Cephalosporin, Co-amoxiclav**
- TTT of clostridium difficile → **Metronidazole** (Vancomycin for severe cases/ failure to respond to metronidazole)
- Diarrhea after eggs or chicken → **Salmonella** → **Ciprofloxacin**
- Diarrhea/vomiting just hours after meal → **Staph toxin**
- Diarrhea in bed ridden with constipation → **Fecal impaction**
- Main TTT of diarrhea → **Fluid**
- TTT of traveler diarrhea → **Fluid only**
- TTT of staph toxin → **Fluid only**
- TTT of shigella or campylobacter → **Antibiotics**
- TTT of ameba or giardia → **Metronidazole**
- 1st Inv of choice for acute diarrhea (<14 days) → **Stool C&M**
- HIV + watery diarrhea → **Cryptosporidium parvum**
- HIV + bloody diarrhea → **CMV**

Overflow diarrhea

- Severe constipation can cause fecal impaction and fecal fluid will flow around the blockage
- Common in **bedridden** elderly
- Can be due to **opioid** pain relievers → reduces GI motility

Fecal impaction

- **Symptoms**
  - Dehydration, agitation, tachypnea
- **Management**
  - Bisacodyl suppository
  - Arachis oil retention enema
  - Phosphate enema

- **Long standing** diarrhea after recent travel:
  1. Non-bloody / watery / steatorrhea → **Giardiasis** *(1st → Stool microscopy, then stool PCR and ELISA)*
  2. Bloody → **Campylobacter jejuni** → Gram-negative curved bacilli → **Erythromycin**, alternatively → **Clari/Azi**, if Macrolides are not tolerated → **Ciprofloxacin**

Celiac disease

- Caused by sensitivity to the protein **gluten** (exacerbated by consumption of **wheat**)
- Repeated exposure leads to **villous atrophy** which in turn causes **malabsorption** → *buttock atrophy in children*

Signs and symptoms

- **Diarrhea**, chronic or intermittent
- **Stinking** stools, difficult to flush
- **Steatorrhea**
- Persistent GI symptoms (bloating, nausea & vomiting)
- Fatigue
- **Recurrent abdominal pain**, cramping and distension
- Sudden or unexpected **weight loss**
- Unexplained iron, folate or vitamin B12 deficiency **anemia**

> - One of the most common presentation of celiac disease is **Iron deficiency anemia (IDA)**.
> - May be associated with **type 1 DM**
> - **Folate** deficiency is more common than vitamin B12 deficiency in celiac disease

Complications

- **Osteoporosis**
- **T-cell lymphoma of small intestine** (rare)
- **Dermatitis herpitiformis** (presented as red raised patches, often with blisters and severe itching, treated with Dapsone)

> - Any patient with confirmed celiac disease who experience recurrence of the symptoms despite gluten-free diet +/- weight loss → **Intestinal lymphoma** until proven otherwise

Investigations

1. **Specific auto-antibodies**
   - **TTG antibodies** (IgA) → *the first choice*
   - Endomysial antibody (IgA)
   - Alpha-gliadin antibodies
2. **Jejunal/duodenal biopsy** (Still needed even if antibody test confirms the disease)
   - Villous atrophy
   - Crypt hyperplasia
   - Increase in intraepithelial lymphocytes

> - Patients should not start gluten free diet until diagnosis in confirmed
> - If patients are already taking a gluten-free diet they should restart consuming gluten for at least 6 weeks prior to testing

Management → *Gluten-free diet*

> **Differentiating tropical sprue from celiac disease:**
> 1. Origin: infective in TS, autoimmune in CD
> 2. TS along with IDA will present with symptoms of other vitamins deficiencies (Vit D, K, A). usually begins with acute diarrhea then progresses to chronic state and malabsorption and steatorrhea
> 3. No dermatitis herpitiformis in tropical sprue
> 4. Biopsy: incomplete villous atrophy in TS while complete in CD

Pseudomembranous colitis

- **Clostridium difficile** is detected in stool, presented with watery diarrhea (could be bloody), abdominal pain, raised WBCs and fever

Most common antibiotics that cause it

1. **Clindamycin**
2. Cephalosporin (2nd and 3rd gen)
3. Co-amoxiclav
4. Quinolones
5. Aminopenicillins (amoxicillin and ampicillin)

Management (only if symptomatic)

1. Stop the causative antibiotic
2. 1st line → **Oral metronidazole**
3. If severe/not responding → Oral vancomycin (to be absorbed in the gut)

Jaundice

1. **Prehepatic**
   - ↑ Heme breakdown (e.g. hemolysis, G6PD deficiency, malaria) → ↑ unconjugated hyperbilirubinemia

2. **Intrahepatic**
   - Inability to conjugate
     - **Gilbert's $** → ↑ unconjugated hyperbilirubinemia
     - Crigler-Najjar $
     - liver disease
   - Inability to excrete
     - **Dubin-Johnson $** → ↑ conjugated hyperbilirubinemia
     - PBC

3. **Post-hepatic/obstructive (surgical)**
   - Gallstones
   - Cholangitis

Gilbert's $

- Due to ↓UGT-1 which is the enzyme that conjugate bilirubin with glucuronic acid
- Jaundice is precipitated by: infection, illness, physical exertion, stress or fasting

Investigations

1. Mildly raised bilirubin (<100) with normal LFTs
2. FBC → normal reticulocyte count
3. Urine dipstick → normal

- ↑ Reticulocyte count → Hemolysis
- Total bilirubin >100 → Crigler Najjar
- Abnormal dipstick + Dark liver → Dubin-Johnson (↑ conjugated)

Primary Biliary Cholangitis/Cirrhosis	Primary Sclerosing Cholangitis

• **Autoimmune, idiopathic**
• Associated with → **Sjogren syndrome** & **RA**
• Pruritus, ↑ALP
• **+ve AMA** (ant-mitochondrial antibodies)
• Treatment
  - Ursodeoxycholic acid
  - Cholestyramine
	• Autoimmune, idiopathic
	• Fibrosis at some areas of bile ducts "beaded appearance"
	• Associated with → **IBD** (especially **UC**)
	• Pruritus, ↑ALP
	• **ERCP** → **the most specific**
	• Treatment:
	  - Ursodeoxycholic acid
	  - Cholestyramine

PBC – the **M** rule:

- Ig**M**
- A**M**A
- **M**iddle aged female

Ascending cholangitis

- Due to ascending bacterial infection **(E. coli)** as a result of choledocholithiasis
- **Charcot's triad**
  - *Fever*
  - *RUQ pain*
  - *Jaundice*
- Confirmed by **US** gallbladder and biliary ducts
- **Complications** → Reynold's triad = Charcot's triad + hypotension + confusion
- **Treatment** → **Emergency ERCP**, rehydration & antibiotics

- Investigations for **cholecystitis** → US – HIDA
- Only symptomatic Gallstones are treated with elective cholecystectomy. However, **CBD stones** may need laparoscopic cholecystectomy regardless if they're symptomatic or not
- **Choledocholithiasis** (stones in CBD) → **ERCP** (both diagnostic & therapeutic)
- One complication of ERCP → Acute pancreatitis
- **Cholangitis** → inflammation of the bile ducts

Autoimmune hepatitis (AIH)

- Chronic disease of unknown cause characterized by continuing hepatocellular inflammation and necrosis, which tends to progress to cirrhosis. Often seen with autoimmune diseases (autoimmune thyroid disorder, Addison's or vitiligo)
- Middle-aged women

> - **Deranged LFTs** + **2ry amenorrhea** → autoimmune hepatitis
> - AST & ALT are usually elevated initially
> - ALP is normal or slightly raised, > 2 folds suggests another diagnosis

Features

- Fever, malaise
- Rash, Polyarthritis
- *Pulmonary* infiltration, pleurisy
- *Glomerulonephritis*
- Liver enzymes are usually elevated
- Amenorrhea is common and disease tends to attenuate in pregnancy

Investigations

- **ANA/SMA/LKM1** antibodies, raised **IgG** levels
- **Liver biopsy** → inflammation extending beyond limiting plate **'piecemeal necrosis'**, bridging necrosis

Management

- **Steroids**, other immunosuppressants e.g. azathioprine
- Liver transplantation

Acute fatty liver of pregnancy

Risk factors

- Pre-eclampsia
- First pregnancies
- Multiple pregnancies

Features

- Begins after 30 weeks of gestation, may also appear immediately after delivery
- Presents acutely with:
  - Nausea, vomiting
  - Abdominal pain
  - Fever, headache
  - Jaundice, pruritis

Investigations

- Elevated LFTs
- Raised bilirubin
- Hypoglycemia & ammonia
- Prolonged PT
- **Liver biopsy** → *diagnostic*

Management

- Treat hypoglycemia
- Correct clotting disorders
- N-acetylcysteine (NAC)
- Consider early delivery

AFL = HELLP + Hypoglycemia + Ammonia

Causes of elevated liver enzymes in postpartum period

- **Pregnancy related liver diseases**
  - Obstetric cholestasis → severe pruritis due to high bile acids + x20 ALT
  - Pre-eclampsia / Eclampsia
  - HELLP syndrome
  - Acute fatty liver of pregnancy
- **Liver diseases unrelated to pregnancy**
  - Viral hepatitis
  - Autoimmune liver disease
  - Wilson's
  - Budd Chiari $
  - Acute cholecystitis
  - Drug-induced hepatotoxicity

Hemochromatosis

- Autosomal recessive condition in which increased intestinal absorption of iron causes **iron accumulation** in tissues especially the **liver** which may lead to **cirrhosis** and **HCC (hepatoma)**
- Iron is accumulated mainly in peripheral hepatocytes and not in Kupffer cells, while in **Hemosiderosis,** iron is accumulated in Kupffer cells and more in central rather than peripheral hepatocytes

Presentation

- Often asymptomatic until late stages
- Symptoms usually start at 40-60 years old
- Initial symptoms are vague and non-specific
- Iron overload might cause symptoms of arthropathy and gynecomastia
- Maybe diagnosed accidentally following LFTs or abnormal serum ferritin
- Symptoms of advanced disease include a triad of:
  1. **Diabetes** (bronze diabetes)
  2. **Hepatomegaly**
  3. **Bronze pigmentation**
- It may also include cardiac diseases (arrhythmias or cardiomyopathy) or neurological/psychiatric symptoms

- Hemochromatosis can lead to **cardiomyopathy** and it predisposes to **HCC**

Acute pancreatitis

- Main causes are **gallstones** and **alcohol**

GET SMASHED

- **G**allstones
- **E**thanol
- **T**rauma
- **S**teroids
- **M**umps
- **A**lcohol, autoimmune
- **S**corpion venom
- **H**ypertriglyceridemia, ↑Ca, hypothermia
- **E**RCP
- **D**rugs (azathioprine, mesalazine, Bendroflumethiazide, frusemide, didanosine, pentamidine, sodium valproate)

Features

- Gradual or sudden **severe epigastric pain** or central abdominal pain (radiates to the back, relieved by sitting forward)
- **Vomiting** is prominent
- **Tachycardia**
- Fever
- Jaundice
- **Shock**
- **Rigid abdomen** with local **tenderness**
- **Periumbilical bruising** (Cullen's sign)

Investigations

1. **Serum amylase**: >1000U/mL (or around 3-fold upper limit of normal). However, **lipase levels** are more sensitive and more specific but takes more time to rise following an attack (>24h)
2. **CT with contrast**

Treatment

- **Fluid resuscitation**, **analgesia** and **nutritional** support
- **IV antibiotics** (e.g. IV imipenem) after obtaining culture
- **Laparoscopy** → only when there's infection or necrosis

Albumin

- Made is the Liver
- Its half-life is about 20 days so it's a good parameter for **chronic liver disease**
- Its main **function** is to regulate the oncotic pressure of blood, it also binds to enzymes and hormones
- Shifts fluid into the intravascular compartment
- Produces only a transient effect but it's useful in cases of intravascular fluid deficit and edema
- Also, useful to obtain diuresis in hypoalbuminemic patient

Chronic pancreatitis

Causes → **alcohol,** smoking, autoimmune

Features

- **Epigastric pain**
  - **Episodic** with short periods of severe pain
  - **Pain free intervals** are specific to chronic pancreatitis
  - Radiates to the back
  - Relieved by sitting forward
  - Exacerbated by eating
- **Steatorrhea**
  - Due to malabsorption of fats from the lack of pancreatic lipase secretion which results on **weight loss**
  - Sometimes described as "loose, offensive stools which are difficult to flush"
- **Diabetes**
- **Jaundice**
  - A late presentation due to obstruction of CBD

Investigations

1. **Serum amylase/lipase**
2. **US**
3. **CT with contrast**
   - *Gold standard*
   - Shows evidence of pancreatic calcification

Management

- Pain → **Analgesia**
- Steatorrhea or malabsorption → **Pancreatic enzymes supplements and fat-soluble vitamins**
- Diabetes → **Oral hypoglycemics and insulin**

Drug-induced hepatitis

- Drugs → *Co-amoxiclav, flucloxacillin, steroids, Sulphonylurea*
- Lab → Elevated bilirubin + massive increase in ALP and AST
- History of alcohol intake

Mediastinitis

- May occur after esophageal perforation (after endoscopy)
- Anterior mediastinitis → pain located in the substernal region
- Posterior mediastinitis → pain in the epigastric region with radiation to the interscapular region
- X-ray may show **widened mediastinum** or **air in the mediastinum**

Notes

- **Alcoholic hepatitis** → look for **GGT** in acute cases, **AST** is higher than ALT in chronic cases
- **Hematogenous** spread to the **liver** from the lungs is the most common route of metastasis
- **TTF-1** is a protein seen by immunostaining which is used as a clinical marker of **lung adenocarcinoma**
- **Gastroenteritis**
  - Very common in hospitals, especially with the spread of **norovirus**
  - They present with acute onset of diarrhea (sometimes with vomiting) and abdominal pain
  - Pain is usually central, could be epigastric
  - Patients with gastroenteritis should be isolated and given a single side room until diarrhea resolves
- **Dysentery** → infection of the intestine that leads to severe diarrhea (**blood** + **mucous**) and abdominal pain
- **Cancer head of pancreas** → Courvoisier sign (painless obstructive jaundice with a palpable mass)
- **Celiac disease** is associated with **lymphoma**
- **Ulcerative colitis** and **Crohn's disease** are associated with **colon cancer**
- In **IBS** → bloating, constipation alternating with diarrhea + NO blood in stool
- **Fecal calprotectin** → biochemical measurement of the protein calprotectin in the stool, if elevated → **IBD,** if normal, suspect **IBS**
- **Proctalgia fugax** → Severe recurrent rectal pain in the absence of any organic disease, may occur at night, after bowel actions or after ejaculation. Anxiety could be an associated feature
- If the patient has Ascites + bleeding → ***Terlipressin***
- If the patient has Ascites without bleeding → ***Perform ascitic fluid aspiration****, to detect Neutrophil count, gram stain, culture and obtain protein level*
- Raised neutrophil count **>250** → *Start antibiotic treatment*
- Most accurate test would be a **culture** but it takes days
- **Spontaneous bacterial peritonitis**
  - One of the complications of Ascites
  - Includes abdominal pain, rebound tenderness, absent bowel sounds and fever
  - Organism usually reaches the peritoneum via hematogenous spread
- Recurrent abdominal pain (often peri-umbilical) with episodic headache in a child with no abnormal finding on examination and investigation, pain interferes with normal activities and associated with anorexia, nausea, vomiting → ***Abdominal migraine*** → ***Reassure***