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PATHOPHYSIOLOGY

UNIT 4

TOPIC :

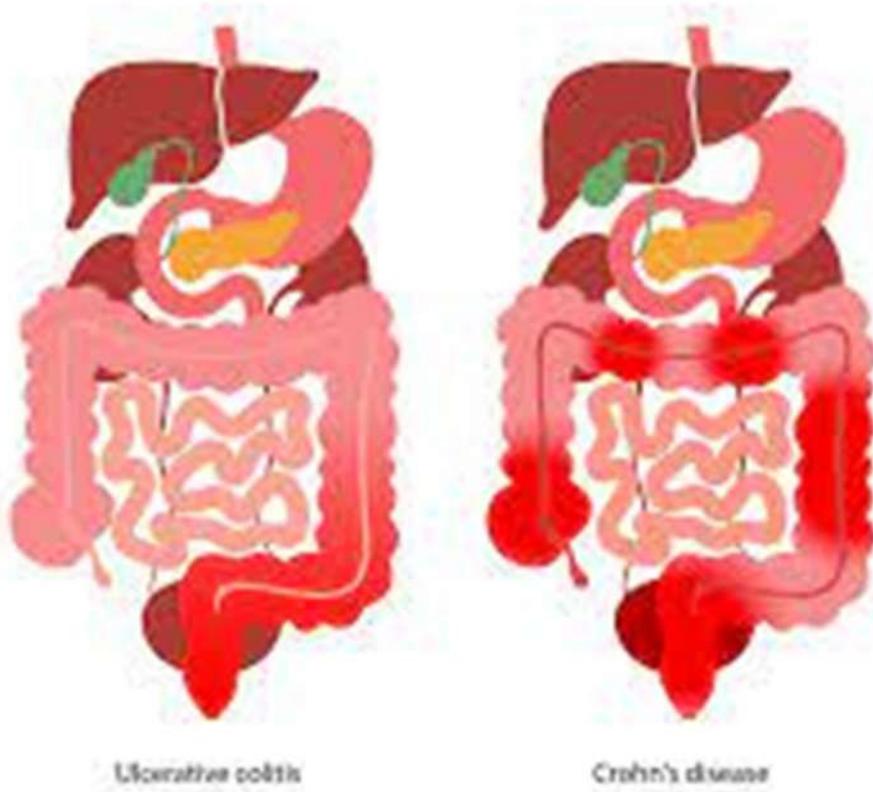
- **Inflammatory bowel diseases, jaundice, hepatitis (A,B,C,D,E,F)**
alcoholic liver disease.



Inflammatory Bowel Disease

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

INFLAMMATORY BOWEL DISEASE (IBD)



Types

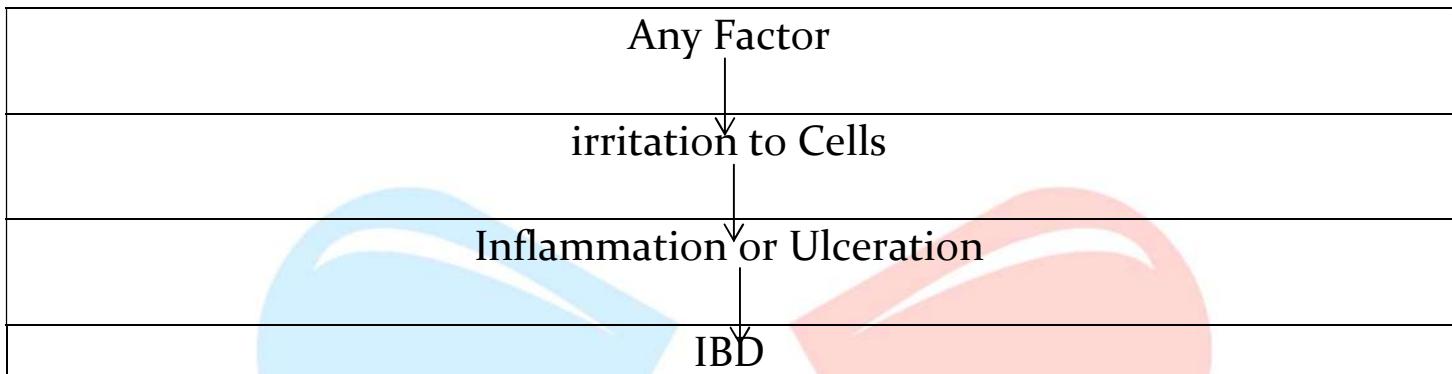
- **Crohn's Disease** : If there is inflammation in intestine it is called Crohn's disease.
- **Ulcerative Colitis** : If there are inflammation and ulceration in large intestine it is called Ulcerative Colitis.

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

Jaundice

- Jaundice is a clinical condition characterized by yellowish discoloration of the skin, sclera (white of eyes), and mucous membranes due to increased levels of bilirubin in the blood (hyperbilirubinemia).
- It is a symptom, not a disease, and usually indicates an underlying liver or biliary disorder.



Types of Jaundice

Type	Cause	Bilirubin Affected
Pre-hepatic	Excess RBC breakdown (hemolysis)	↑ Unconjugated bilirubin
Hepatic	Liver cell damage	↑ Both conjugated and unconjugated bilirubin
Post-hepatic	Obstruction of bile flow	↑ Conjugated bilirubin
Neonatal (in newborns)	Immature liver, hemolytic disease	↑ Unconjugated bilirubin

Etiology (Causes)

Pre-hepatic Jaundice

- Hemolytic anemia
- Malaria
- Thalassemia
- Sickle cell anemia

Hepatic Jaundice

- Viral hepatitis (A, B, C, etc.)
- Alcoholic liver disease
- Cirrhosis
- Drug-induced liver damage (e.g., paracetamol overdose)
- Genetic disorders (e.g., Gilbert's syndrome)

Post-hepatic Jaundice

- Gallstones
- Biliary tract tumors
- Pancreatic cancer
- Bile duct stricture
- Parasites (e.g., liver flukes)

Pathogenesis

- Cause (e.g., hemolysis or liver dysfunction)
- ↑ Bilirubin (unconjugated or conjugated depending on cause)
- Bilirubin deposits in skin and sclera
- Yellow discoloration (jaundice)

Clinical Manifestations

- Yellowing of skin and eyes
- Dark-colored urine (due to excess conjugated bilirubin)

- Pale or clay-colored stools (in obstructive jaundice)
- Itching (pruritus in obstructive cases)
- Fatigue and weakness
- Nausea, vomiting
- Right upper abdominal pain (in hepatic or obstructive causes)

Non-Pharmacological Management

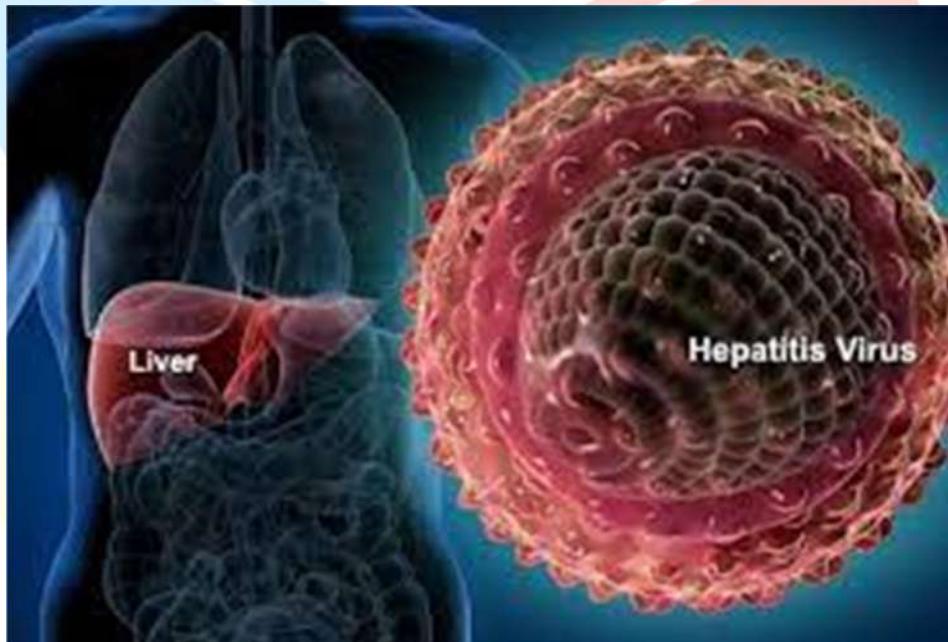
- ◆ Avoid alcohol and liver-toxic drugs
- ◆ Maintain good hydration and nutrition
- ◆ Hygienic food and water intake (to prevent viral hepatitis)
- ◆ Vaccination for hepatitis A and B
- ◆ Manage underlying condition (e.g., treat infection, remove gallstones)

Pharmacological Management

Cause	Treatment
Hepatitis (viral)	Antivirals (e.g., for hepatitis B, C)
Hemolytic anemia	Treat underlying cause; folic acid
Obstructive jaundice	ERCP/surgery to remove stones or obstruction
Pruritus (itching)	Cholestyramine, antihistamines
Liver damage	Hepatoprotective agents (silymarin, ursodiol)

Hepatitis

- The inflammation of liver is called hepatitis , this inflammation may be due to injury or infection
- The most common cause of hepatitis is hepatitis viruses different type of viruses caused hepatitis like hepatitis A ,B,C,D,E,F
- Hepatitis occurs due to other reasons also like alcohol, drugs , and disturbance in metabolism.



Types

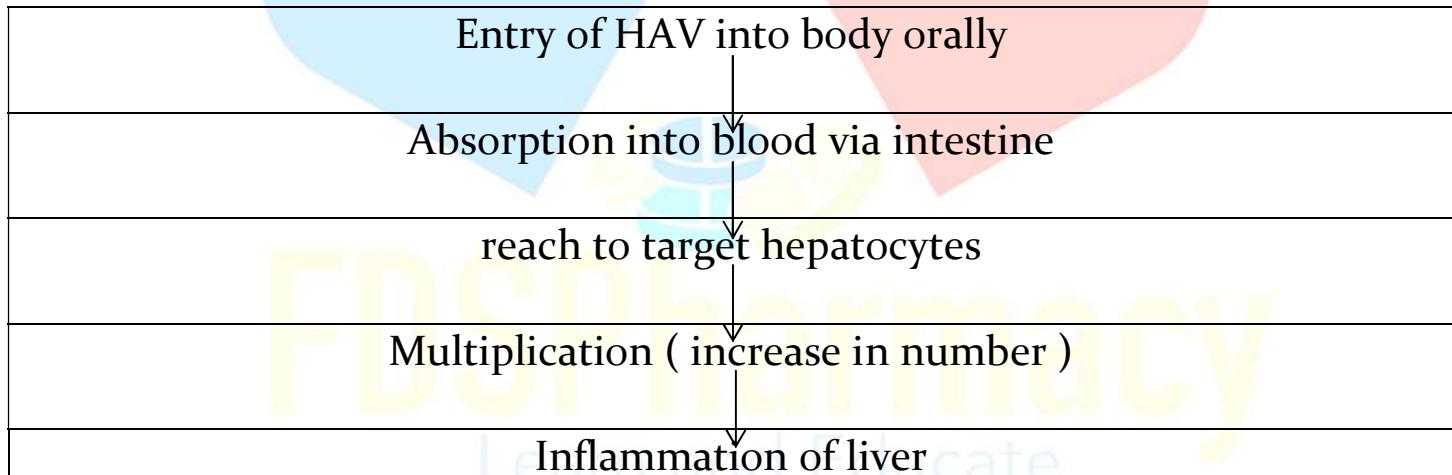
- **Hepatitis A** : It is typically transmitted through contaminated food or water, and symptoms include fatigue, nausea, vomiting, and jaundice. Most people recover within a few weeks without specific treatment.
- **Hepatitis B and C** : These transmitted through blood and bodily fluids, and can lead to chronic infection, cirrhosis, and liver cancer. These types of hepatitis can be asymptomatic for years, and people may not realize they have the infection until liver damage has already occurred.

➤ **Hepatitis D** : It is a rare form of hepatitis that only occurs in people who are already infected with hepatitis B. It can lead to severe liver damage and cirrhosis.

Etiology

- Hepatitis A Virus
- Hepatitis B virus
- Hepatitis C Virus
- Hepatitis D Virus etc.

Pathogenesis



Clinical Manifestations

- ✚ Fatigue
- ✚ Nausea and vomiting
- ✚ Pain in upper side of abdomen
- ✚ Clay color stool
- ✚ Appetite loss
- ✚ Fever
- ✚ Dark color urine
- ✚ Jaundice
- ✚ Itching in intestine
- ✚ Pain in joints

Non Pharmacological Management

- ❖ Prevention of hepatitis involves good hygiene practices, such as handwashing and safe food preparation, vaccination (for hepatitis A and B), and avoiding high-risk behaviours such as unprotected sex and sharing needles.
- ❖ Early diagnosis and treatment of hepatitis is important to prevent longterm liver damage and complications.

Pharmacological managements.

- ❖ No treatment is available for Hepatitis A . If infection is detected in early stage the infection can be stopped by hepatitis A Vaccine or Hepatitis A Immunoglobulin.
- ❖ For hepatitis B- Interferon alpha, lamivudine, telbivudine, adenofovir, tenofovir, emtricitabine.
- ❖ For hepatitis C- Ribavirin, boceprevir, imeprevir, sofosbuvir



Alcoholic Liver Disease (ALD)

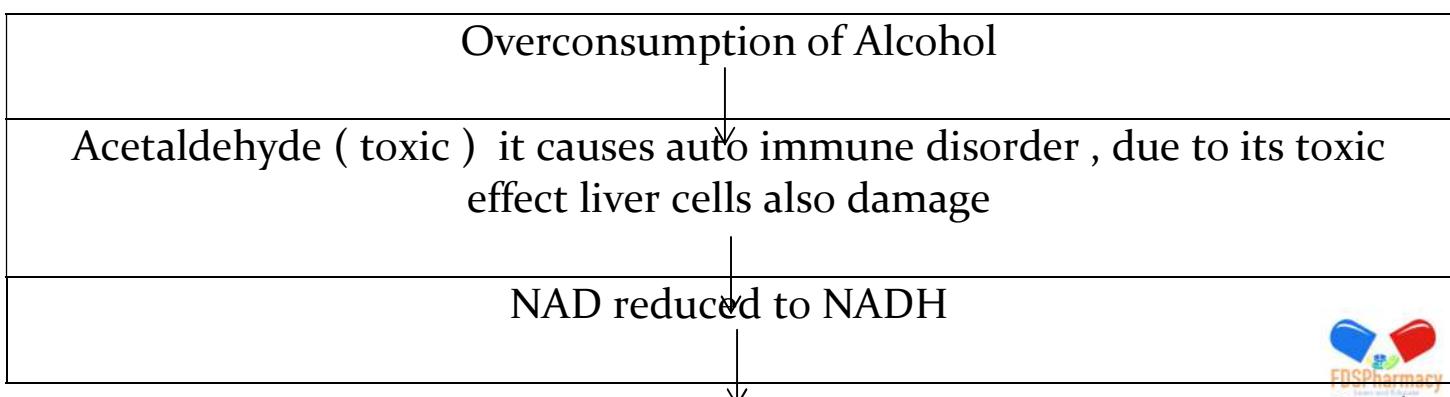
- The Structural and functional changes (damage) of liver due to overconsumption of alcohol is called ALD.
- Consumption of 60-80 g/ day (about 75-100 ml/day) for 10 to 20 years for men.
- 20 g /day (about 25 ml /day) for women . Women are at the double risk of getting ALD



Etiology

- Overconsumption of alcohol

Pathogenesis



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