# Viral Hepatitis

- liver Inflammation caused by viral infection.
caused by
Common → Hepatitis A, B, C, D, E
Rare → Cytomegalovirus, Epstein-Barr virus.
Rare → Herpes Simplex, Yellow Fever.

## Hepatitis A (HAV)

- Only Acute state, no chronic carriers.
- Transmission → Faeco oral Route, Travellers
- Serology → HAV IgM antibody = Active
HAV IgG antibody = Recovery or Vaccination.

## Hepatitis E (HEV)

- Only Acute state, no chronic carriers.
- Transmission → Faeco oral Route.
- Serology → HEV IgM antibody = Active
HEV IgG antibody = Recovery or No Vaccination
- When occurs in Pregnant women causes acute Fulminant Hepatitis

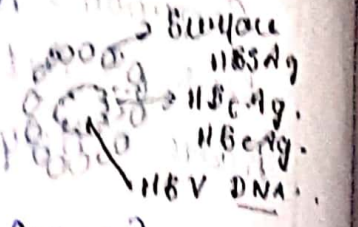
## Hepatitis C (HCV)

- Acute & Chronic
- Transmission → Intravenous Drug abuses, Unscreened blod transfusion, Vertical transmission, Pregnancy, Iatrogenic, Needle stick injury.

Tests:
→ Enzyme Immunoassay → HCV IgG → Not Protective
→ Recombinant Immunoblot → ↑ Specificity, ↓ Sensitivity
→ HCV RNA Test (with PCR).
. ↑ Sensitivity.
- Shows Viral RNA in Blood.
- If Decreases shows recovery.

# Hepatitis B (HBV)

- Acute + Chronic ∈ 20% overall population is chronic carriers, leading cause for liver cancer
- Transmission + Same as HCV




Serology

① PCR → Viral RNA HBV DNA in Blood

② Hepatitis B surface antigen (HBsAg)
- HBsAg is the indicator of active infection and appears very early after infection.
- Anti-HBsAg appears late then the disappearance of the HBsAg.
- In between gap is called window period.
- Recovered people do not have HBsAg and have Anti-HBsAg for life.

③ Hepatitis B Core Antigen (HBcAg)
- HBcAg is not found in blood, but anti HBcAg appears early.
- First appears as IgM and changes to IgG.
- IgM (Anti HBc) can reveal the acute infection when HBsAg has disappeared and before anti-HBsAg has appeared.

④ Hepatitis B e antigen (HBeAg)
- It indicates viral replication, and anti HBeAg occurs immediately.

Chronic Hepatitis → ↑ HBsAg, anti HBc (IgG), and HBeAg or anti HBe Ag indicates viral replication.

Acute Hepatitis → ↑ HBsAg, anti HBc (IgM) and HBeAg +, ↑ HBV DNA.

- It can co-exist with HIV injection
- Can cause Cirrhosis → Hepatocellular Carcinoma
So levels of HBsAg & Alphafetoprotein should be checked

Hepatitis D Virus (HDV) (Delta Virus)

- It can infect only in the presence of pre-existing HBV virus
- Occurs by Coinjection or Superinjections. (Severe)
- Serology
  - HDV IgM or IgG → Not protective
    ↳ Active injection

## Pathophysiology

Hepatitis Virus
↓
Injection
↓
MHC I molecule
↓
CD8+ T cells
↓
Cytotoxic killing
Cell Apoptosis
↓
Councilman Body (portal tract & lobules)
↓
Liver Damage
↓
↓ Glucuronyl Transferase
↑ ALT, ↑ AST, ↑ GGT, ↑ AP
Hepatomegaly

## Types

1) Acute → A, E → < 6 months
2) Chronic → B & C → > 6 months

Symptoms

Acute

- Nausea, vomiting
- Right upper Quadrant pain
- ↑↑↑ Bilirubin
  - Jaundice
  - Pruritis, Dark Urine
  - clay colored stools.
- Hepatomegaly.

Chronic

- Asymptomatic
- Fever, Fatigue, Loss of appetite.
- Extra hepatic
  - Arthralgia
  - Skin rashes
- → No megaly.
- → Symptoms of Cirhosis if present

Lab Investigations

Serology :- CBC → ↓ Thrombocytes.

Liver Function Test

- ↑ Bilirubin → Unconjugated
- ↑ Urobilinogen
- ↑ ALT, ↑ AST, ↑ GGT, Alkaline Phosphatase
- ↑ LDH;
- → ↓ Albumin = 3.5, A : G ratio = ↓ 1.5 to 3 : 1.
- ↑ Immunoglobulin,
- ↓ PT & APTT.
- ↑ Plasma Ammonia & Aminoaciduria → Acute Fulminant Hepatic
- → ↑ Antinuclear antibody
- → Ultrasound → Cirhosis.
  - Biopsy, FNAC
- → ERCP & MRCP.

Management

- Testing during Pregnancy
- Sexual protection, Drugs