Acute Viral Hepatitis

INTRODUCTION

- **Hepatitis** = widespread damage to hepatocytes with inflammatory changes.
- **Acute hepatitis** = Result in limited or massive necrosis of the liver parenchyma resulting in liver failure.
- **Chronic hepatitis** = long standing inflammation and Later replacement of liver parenchyma by fibrous tissue
  - Ultimately leading to cirrhosis.

TYPES OF HEPATITIS

TWO MAJOR GROUPS

1: Acute Hepatitis

A: Infective

B: Non-infective

2: Chronic Hepatitis

A: Infective

B: Non-infective

CAUSES OF ACUTE HEPATITIS

- **VIRAL**
  1. Hepatitis A virus
  2. Hepatitis B virus
  3. Hepatitis C virus
  4. Hepatitis D virus
  5. Hepatitis E virus
  6. Hepatitis G virus
  7. Cytomegalo, Epstein-Barr, Herpes Simplex, Yellow Fever viruses
- **Post viral infection** - Reye's syndrome (Aspirin associated)
- **Non-Viral infections**

  Misc; Amoebic , other bacterial
- **Drugs**
  - **Chloroquine , NSAID ,**
  - **Lamovudine, Zidovudine,**
  - **Doxorubicin, Methotrexate**
- **Poisons** (Mushrooms, Carbon tetrachloride)
- **Metabolic** (Wilson's disease , fatty change in pregnancy)
- **Ischaemic** (CCF,Budd-Chiari syndrome)

CAUSES OF CHRONIC HEPATITIS

- **Viral** - B,C,D
- **Toxins** – Alcohol , Drugs
- **Biliary obstruction**
  1. Primary biliary cirrhosis
  2. Secondary biliary cirrhosis – stricture , stone , neoplasms
- **Metabolic diseases**
  1. Heamochromatosis – Primary and secondary
  2. Wilson's disease
  3. Alpha-1 antitrypsin deficiency
- **Hepatic congestion**
  - Budd chiari syndrome,CCF,
- **Unknown** – Autoimmune , cryptogenic

VIRAL HEPATITIS – A REVIEW

Viral hepatitis needs detail discussion as

- It is responsible for more than 90% cases of both acute and chronic hepatitis
- Types A and E cause only acute hepatitis and spread by feaco-oral route
- Types B,C and D cause both acute & chronic hepatitis and are transmitted by blood and blood products and body fluids

Causes:

	Hepatitis A HAV Infective hepatitis	Hepatitis B HBV serum hepatitis	Hepatitis D HDV	Hepatitis C HCV Post transfusion hepatitis	Hepatitis E HEV Epidemic/ Entral
virus	27 nm RNA	42 nm DNA Hepa virus	35 nm Incomplete RNA+HBsAg	30 – 60 nm RNA flavi firus	32 nm RNA
transmission	Feco-oral	▪ Paraentral and post transfusion ▪ Sexual low risk 1-5 % ▪ Intrauterine low risk <5%			Feco-oral
Incubation p.	2 – 6 weeks	2 – 6 months	2 – 6 months	2 – 6 months	2 – 6 weeks
Chronicity &liver cancer	no	Yes	Yes	Yes	No
Immunization -passive	Non specific Ig	Specific Ig	IgM		Non specific Ig
-active	HAV vaccine danger	Heptavax HBV vaccine	Heptavax HBV vaccine		

Pathogenesis

- Initial viremia, with inflammation of GIT mucosa.

- Intrahepatic localization lead to
  - cellualar edema & inspissation of bile
  - Diffuse necrosis
  - intrahepatic cholestasis
- Other organ:
  - Splenomegaly
  - Lymphoadenopathy
  - Hypoplasia of BM

Clinical picture

Pre-icteric stage or prodromal stage:

- 3 – 9 days
- Sudden onset of influenza like symptoms
- fever - headache – malaise – muscular pain
- Anorexia is marked with nausea – vomiting – distension
- Pain in Rt hypochondrium & epigastrium
- Dark urine – pale stool
- Transient itching

- Examination: fever with relative bradycardia + enlarged tender liver

Clinical picture

Icteric stage: 2-4 weeks

- Jaundice with fever
- Improvement of general condition
- Anorexia, nausea & vomiting diminish or disappear
- Urine is dark brown & frothy
- Stool are clay in color – bulky – offensive – greasy

Examination:

- Soft tender enlarged liver & Spleen is enlarged
- Gerelized lymphoadenopathy

Clinical picture

Recovery stage:

- Signs & symptoms gradually disappear
- Jaundice may persist for some times
  - due to affinity of bile pigment to elastic tissue
- Complete recovery of liver may take up to 6 months

Investigation:

- L F T :

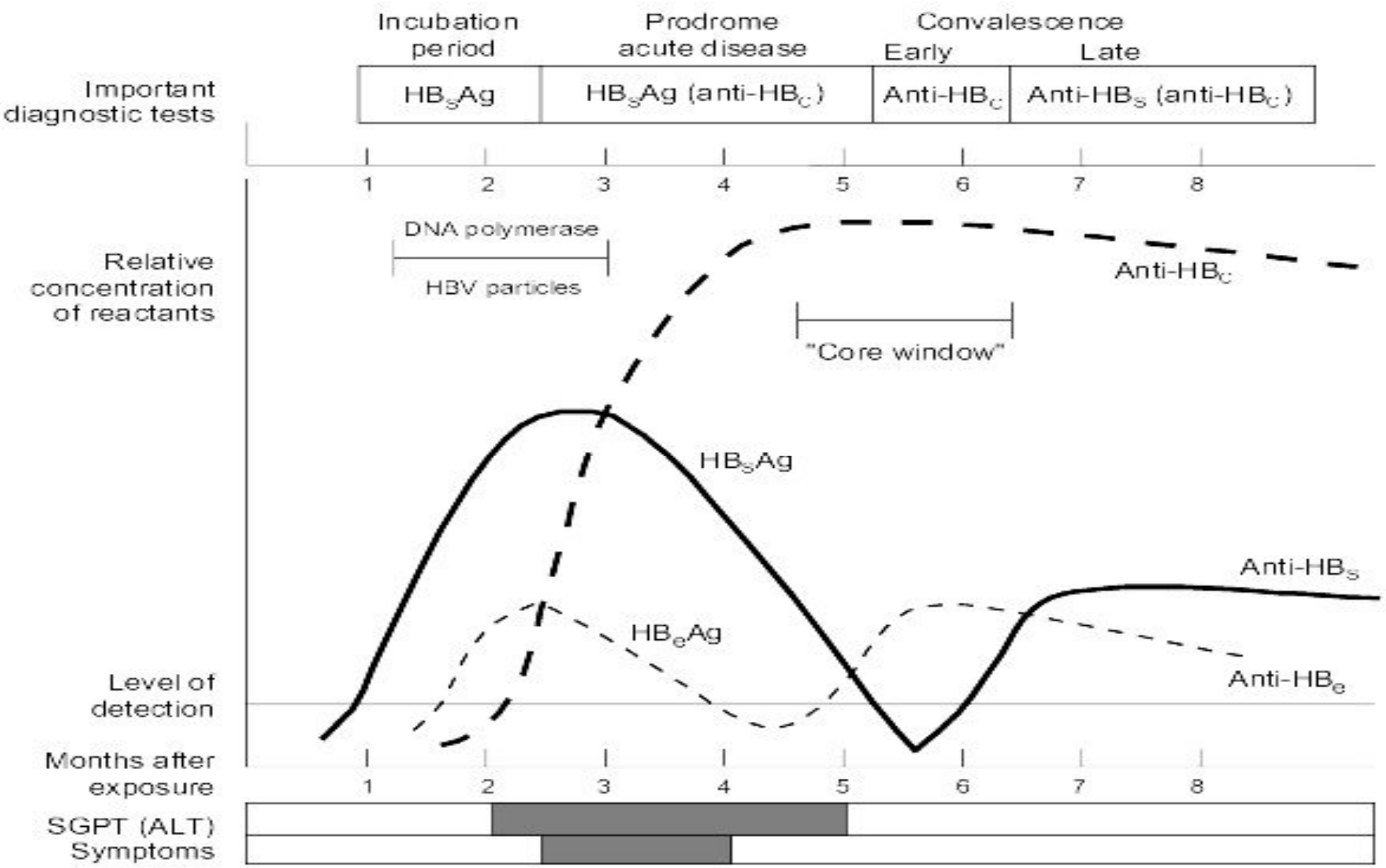
1. Serum Total , Direct & Indirect Bilirubin
2. ALT = from 500 – 2000 IU/L
3. AST = from 500 – 2000 IU/L (Non Specific) ALT > AST
4. Alkaline phosphatase (Non Specific)
5. 5'nucleotidase (specific for malignancy)
6. GGT (specific for acute alcoholism)

- Complete Blood Count:
- Leucopenia with relative lymphocytosis

- Urine :
- Bile Pigment + ve
- Bile salt : +ve
- Urobilinogen :

- Stool:
- Pale – clay with staetorrhea (_____ jaundice)
- Decrease Stercobilinogen
- Serology

HEPATITIS B PROFILE



Serologic and clinical patterns observed during acute hepatitis B viral infection. From Hollinger FB and Dreesman GR, *Manual of Clinical Immunology*, 2nd ed, Rose NR and Friedman H, eds, Washington, DC: American Society for Microbiology, 1980, with permission.

After Acute infection of Hepatitis B Virus

- 1-2 days = HBsAg
- 3-4 days = Anti HBcAg antibody & HBeAg
- Anti HBcAg antibody remain longer period
- 4-5 days = Anti HBcAg antibody for 9-10th day
- After 5-6 days = Anti HBsAg antibody
- Anti HBsAg antibody remain longer period

Hepatitis B Marker

Antigen	Significance
HBsAg (surface)	➢Appear after 6 week ➢Acute infection, for 3 months ➢Chronic infection if >6 months
HBcAg (core)	➢Detected on Liver Biopsy only ➢Not serum
HBeAg	➢Reflect ongoing viral replication (chronicity)
Anti HBs	➢Appear after 3 months ➢Reflecting recovery & immunity
Anti HBc	➢Appear after 2 months ➢Reflecting severe acute & chronic form
Anti HBe	➢Appear after 2.5 months ➢Non replicating virus
HBV DNA	➢For viral replication & chronicity

•Serological gap:

- Window Period of Several Week
  - Between Disappearing of HBs Ag & Appearance of Anti HbsAg Antibody
- Anti HBcAg Antibody may represent serological evidence of recent HBV infection

- Blood free from Hbs Ag & Anti Hbs (but containing anti – HBC) is the major cause of transfusion HBV infection

Course & Complication:

Complete recovary:

- Occur in most cases of virus A – E
- Less common in virus B – D
- Very less in virus C

Relapse:

- Characteristic of virus C – less common in B – D

Fulminant hepatitis: (Acute liver failure)

- Acute hepatic necrosis
- After typical onset
- Deep jaundice , Vomiting , Encephalopathy & Coma
- Patient usually dies in 10 days

Prolonged cholestasis

- Cholestatic jaundice
- After 3 Weeks of jaundice
- Condition improves but Deep jaundice
- Patients starts to itch
- This is due to intra hepatic Biliary obstruction by inflammation
- Jaundice persist to 6 months then recovery

Post hepatitis syndrome:

- Anxiety , fatigue , anorexia, Rt upper abdominal discomfort
- Palpable liver raised of diaphragm in X Ray
- LFT & biopsy are normal

Treatment

Rest

- Bed rest till LFT normal

Diet

- Plenty of Carbohydrate
- Enough Protein should be given , except with Liver failure
- Avoid Fats
- Alcohol & hepatotoxic drugs contraindicated

Drugs

- Dextrose Saline
- Antacid = Proton pump inhibitor
- Anti Emetic
- Multi vitamins – Vitamin-K
- Laxative
- Cholestyramine
- Corticosteroids = in fulminant Cholestatic jaundice
- Interferon = To reduce risk of chronic hepatitis in acute hepatitis C

Prophylaxis

- Screening of blood for Hepatitis Ag
- Disposable syringes
- Avoid sharing razors or tooth brush

Passive prophylaxis:

Hepatitis A

Hepatitis B: (HBIG) rich with anti HBs

Active prophylaxis

- Hepatitis A: Inactivated HAV to be repeated after 6 -12m
- Hepatitis B: Recombinant HBV vaccine (Heptavax) 3 doses (0 - 1 - 6 months and booster every 3 years)

High risk people

- Medical doctors & nurses
- Blood bank & Laboratory Technician
- Patients of
  - Hemophiliac
  - Thalassemia
  - Sickle cell anemia
- Drug abusers
- Babies born to HBsAg +ve mother
- HBV is prophylactic against hepatitis D viral infection

HEPATITIS -B

- **HBsAg**
  - appears in late and remains for up to 6 months.
- **Anti-HBs**
  - Confers immunity to HBV infection.
  - Appears after 3-6 months of acute infection & following vaccination.
  - In past infection, Anti HBsAg + Anti HBcAg both are present
  - Post vaccination cases only Anti HBsAg is present.
- **HBeAg**
  - Indication of active viral replication
  - Indication of increased infectiousness.
  - It appears for a short time at the onset of the illness.

- **Anti HBeAg**:
  - Appears late in acute illness and indicate cessation of viral replication .
- **Anti-HBc IgM**
  - HBcAg does not appear in the blood.
- **Anti-HBc IgM + IgG**
  - Detectable after acute HBV infection.
  - Useful screen for past HBV infection.
  - This may be the only sign of infection in the window period.

Hepatitis B Spread

HBV is a **blood borne** and **sexually transmitted** pathogen that is spread through :

- ✓ **Percutaneous and mucosal exposures to infected blood and body fluids**,
- ✓ **injection drug use**,
- ✓ **sexual intercourse** with an infected partner,
- ✓ **perinatal transmission from mother to child**,
- ✓ **chronic hemodialysis**,
- ✓ **Tattooing** with shared, contaminated needles.
- ✓ **HBV is viable for at least 7 days on environmental surfaces**
- ✓ And can be transmitted by sharing contaminated household items such as razors and toothbrushes.

Hepatitis B - Prognosis

- 85-90%
  - Eventually clear HBsAg from the blood
  - Develop antibodies to HBsAg (anti-HBs)
  - That confer long-term protection from re-infection.
- 10-15%
  - Chronic HBV infection (HBsAg-positive for 6 months or longer).
- 5-10 %
  - Chronic HBV infection (HBsAg-positive)
  - Chronic hepatitis
- 1-5%
  - Cirrhosis and Hepatocellular carcinoma

SEROLOGY IN ACUTE HBV INFECTION:

Early illness

- HBsAg
- Anti HBc (IgM)
- HBeAg

Late illness

- Anti HBsAg
- Anti HBcAg (IgG)
- HBeAg - indicate active viral replication
- Anti HbeAg - Indicate either low replication or viral clearance
- HBsAg for 6 months

Hepatitis B Treatment

1. No effective therapies
2. largely supportive.
3. Antiviral therapies for chronic hepatitis B include
   - interferon
   - adefovir dipivoxil
   - lamivudine.

Thank you