



# HEPATITIS

# INTRODUCTION

- Hepatitis is a broad term that means inflammation of liver.
- It is most commonly caused by viruses but also be caused by drugs(alcohol), chemicals, autoimmune diseases and metabolic abnormalities.

# ETIOLOGY OF HEPATITIS

Viral hepatitis

Alcoholic hepatitis

Autoimmune hepatitis

Non- alcoholic  
steatohepatitis(NASH)



**VIRAL  
HEPATITIS**

# INTRODUCTION

- Five types of hepatitis have been identified: Hepatitis A, B, C, D, E.
- Hepatitis A is always an acute, short-term disease, while hepatitis B, C, and D are most likely to become ongoing and chronic.
- Hepatitis E is usually acute but can be particularly dangerous in pregnant women.
- The hepatitis A and E viruses typically cause only acute, or short-term, infections.
- Other less common viruses can also cause liver disease. These include Cytomegalovirus(CMV), Herpes virus, Rubella virus, Epstein-bar virus(EBV).

# HEPATITIS A(Hep A)

- A highly contagious liver infection caused by the hepatitis A virus(HAV).
- Hepatitis A virus is a ribonucleic acid(RNA) virus of the enterovirus family.
- It can cause acute hepatitis with jaundice. Also cause acute liver failure. It does not cause long term infection.
- Incubation period is 3-5 weeks with an average of 28 days.

- It is transmitted primarily through the fecal-oral route.
- Source of infection is Crowded conditions, poor personal hygiene, Poor sanitation, Contaminated food, water, shellfish, person with subclinical infections, infected food handlers.
- More prevalent in underdeveloped countries. People who travel to developing countries more likely to get Hep A.

S/S

- Fatigue
- Fever
- Abdominal pain
- Nausea
- Jaundice
- Weight loss
- Itching
- Sharp pain in right upper quadrant of abdomen
- Anorexia



# D/E

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Blood tests: 2 kinds of antibodies to the virus. IgM antibodies and IgG antibodies.

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IgM antibodies show acute infection.

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IgG antibodies show previous infection or immunization.

# MANAGEMENT

- There are no drug therapies for the treatment of acute hepatitis A.
- Rest according to patient's level of fatigue.
- Hospitalization.
- Small, frequent feedings of a high calorie, low fat diet, proteins are restricted.
- Vit K injection if PT is prolonged.
- I.V. fluid and electrolyte replacement.
- Antiemetic drugs.

# HEPATITIS B (Hep B)

Hepatitis B virus can cause acute and chronic infection.

Acute hepatitis B infection may last up to 6 months (with or without symptom) and infected persons are able to pass these virus during these time.

Chronic hepatitis B is defined as persistence of HBsAg for 6 months or more after acute infection with HBV.

# Contd.

- Incubation period is 2-5 months.
- Hepatitis B virus is a complex structure with 3 distinct antigens:
  1. HBcAg- Hepatitis B core antigen.
  2. HBsAg- Hepatitis B surface antigen.
  3. HBeAg- An independent protein circulating in the blood.
- Mode of transmission is mainly sexual contact. Recognized as STD. It is much more infectious than HIV.

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Further mode of transmission are Parenteral or perimuscosal exposure to blood or blood products, perinatal transmission.

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Sources of infection are Contaminated needles, syringes, blood products. Homosexual men, Tattoo or body piercing with contaminated needles.

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Occurrence is for all ages, but mostly affects young adults worldwide.

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It is the main cause of cirrhosis and hepatocellular carcinoma worldwide.

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S/S

- Abdominal pain
- Dark urine
- Fever
- Joint pain
- Loss of appetite
- Nausea/ vomiting
- Fatigue
- Jaundice

# D/E

- Blood tests: AST, ALT, ALP,GGT, Serum proteins, PT, Urinary bilirubin, Urinary Urobilinogen, Total serum bilirubin.
- Serological tests: HBsAg, Anti-HBs, HBeAg, Anti-Hbe, Anti-HBe IgM, Anti- Hbe IgG, HBV genotyping.
- Liver ultrasound: Transient elastography can show the amount of liver damage
- Liver biopsy.
- Fibro tests

# MANAGEMENT

- Treatment of acute hepatitis B is indicated only in patients with severe hepatitis and liver failure. Rest, vitamin supplements, Avoid alcohol.
- Treatment of chronic hepatitis B :
- Nucleoside and Nucleotide analog such as Tenofovir, adenofovir, lamivudine.
- Interferon: Standard interferon( Intron A), Pegylated interferon ( PegIntron,)
- Liver transplant.



# HEPATITIS C(Hep C)

- Hepatitis c virus is an RNA virus.
- Incubation period is 14-180 days(average 56).
- In most cases it is transmitted through blood or blood products, prior to 1992. It is also transmitted through unprotected sex, and contaminated or unsterile needles.
- It is found in I.V. drug users and renal dialysis patients.
- It can result in both acute and chronic illness.
- Chronic HCV infection results in liver cirrhosis.
- There is no Vaccine for HCV.

## D/E

- Hepatitis C antibody.
- HCV genotyping.

# MANAGEMENT

- In a patient with acute hepatitis C , treatment with **Pegylated interferon** within the 12-24 weeks of infection reduce the development of chronic hepatitis C.
- **Chronic HCV.** Pegylated interferon, Ribavirin Rebetol, Protease inhibitors such as incivek and Boceprevir.

# HEPATITIS D OR DELTA HEPATITIS

HDV is a defective single —stranded RNA virus that can not survive on its own. It requires hepatitis B to replicate

Incubation period is 2-26 weeks.

Chronic carriers of HBV always at risk for

transmission Source of infection are same as HBV.

HDV infection is only possible if a person is already infected with hepatitis B or a person can be infected with both viruses at the same time.

D/E

- Anti-HDV
- HDV Antigen.

# TREATMENT

- Interferon,

# HEPATITIS E

- Hepatitis E virus(HEV) is an RNA virus and incubation period is 15-64 days.
- HEV has a fecal-oral transmission route.
- Source of infection is contaminated water, poor sanitation. Found in Asia, Africa and Mexico.
- More common in adults and severe in pregnant women.
- Hepatitis E usually resolves on its own within four to six weeks. Treatment focuses on supportive care, rehydration and rest.

## D/E

- Anti-HEV IgM and IgG.
- HEV RNA quantification.



# TREATMENT

- There is no specific treatment capable of altering
- the course of acute hepatitis E.  
As the disease is usually self-limiting, hospitalization is generally not required. Hospitalization is required for people with Fulminant hepatitis.

# PATHOPHYSIOLOGY

- During an acute hepatitis , liver damage is mediated by cytotoxic cytokines and NK cells.
- NK and cytokines causes lysis of infected hepatocytes. It leads to cholestasis.
- Liver cells can regenerate after acute infection.
- A chronic viral infection causes chronic inflammation and cause fibrosis over decades .
- Fibrosis can lead to cirrhosis.

# CLINICAL MANIFESTATIONS

- Clinical manifestations of viral hepatitis are classified into acute and chronic phases.
- manifestation of acute hepatitis are as follows:  
Symptoms are similar to mild flu.

# ACUTE HEPATITIS

- Anorexia
- Nausea, vomiting
- Constipation or diarrhea
- Right upper quadrant discomfort
- Malaise
- Fever
- Headache
- Arthralgias
- Urticaria
- Hepatomegaly
- Splenomegaly
- Weight loss
- Jaundice
- Dark urine
- Light stools
- Decreased sense of smell or taste
- Bilirubinuria

# CHRONIC HEPATITIS

- Malaise
- Easy fatigability
- Hepatomegaly
- Myalgias
- Elevated liver enzymes.

# COMPLICATIONS

- Dehydration, hypokalemia.
- Chronic carrier hepatitis.
- Cholestatic hepatitis.
- Fulminant hepatitis.
- Liver cirrhosis.
- Hepatocellular carcinoma( HBV, HCV)



**PREVENTIVE  
MEASURES**

# HEPATITIS A

- GENERAL MEASURES:

1. Hand washing
2. Proper personal hygiene
3. Environmental sanitation
4. Control and screening of food handlers
- s. Active immunization: HAV vaccine.



## contd

- USE OF IMMUNE GLOBULIN:

1. Early administration (1-2 weeks after exposure
2. Prophylaxis for travelers to areas where hepatitis A is common if not vaccinated with HAV vaccine.

FOR HEALTH CARE PERSONNEL: Use infection control precautions and wash hands after contact with a Patient or removal of gloves.

# HEPATITIS B & C

- GENERAL MEASURES:

1. Hand washing
2. Avoid sharing toothbrushes and razors.
3. Active immunization: HBV vaccine.
4. HBIG administration for one time exposure such as needle stick, contact of mucous material.

- SEXUAL TRANSMISSION:

1. Acute exposure: HBIG administration to sexual partner o HBsAg positive person.
2. Condoms use for sexual intercourse
3. HBV vaccine series administered to uninfected sexual partners.

- PERCUTANEOUS TRANSMISSION:

1. Screening for donated blood for HBsAg and Anti-HCV.
2. Use of disposable needles and syringes.

- FOR HEALTH CARE PERSONNEL:

1. Reduce contact with blood or blood containing secretions.
- z Dispose the needles properly.  
Use infection control precautions.