

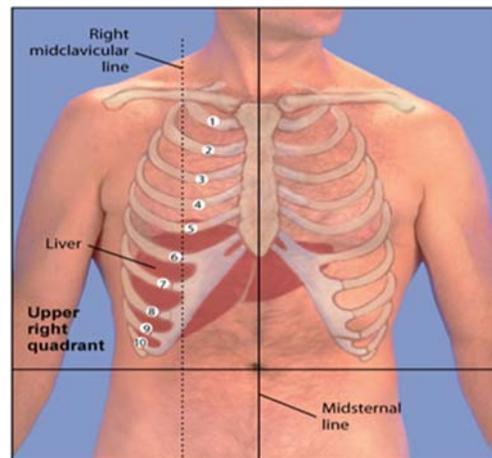
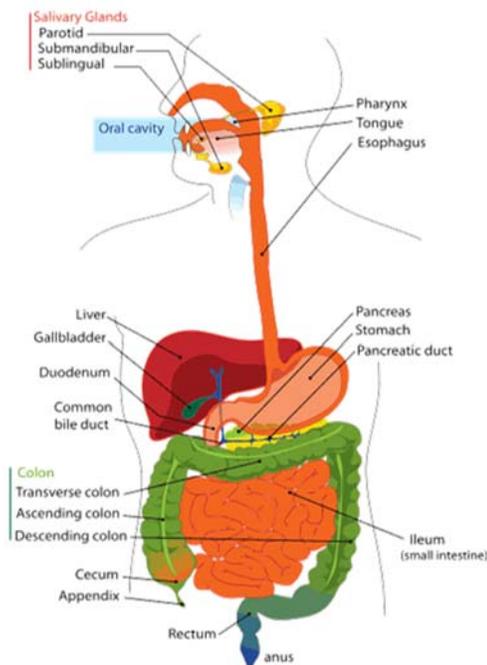


Lecture 4 : Medical Surgical Nursing

Hepatitis:

Anatomy & Physiology of the Liver:

- The largest internal organ in the body
- Located under the diaphragm in the upper right abdomen
- The word hepatic refers to the liver.
- The liver divided into four lobes .
- Blood from aorta delivered to liver via the hepatic artery
- Portal blood circulates through liver; transported to the inferior vena cava by the hepatic veins .
- After the skin, the liver is the body's largest organ and is found just under the rib cage on the right side of your body.



Anatomy & Physiology



Functions of the Liver:

- Metabolizes CHO, proteins, fat, Cholesterol.
- Metabolizes glucose and maintain normal blood glucose .
- Plasma protein synthesis.
- Storage of vitamins and minerals (A, B, D, B-complex, iron & copper).
- Forms blood clotting factors (Vitamin K).
- Detoxifies(remove) drugs & toxins (alcohol, opioids, sedative).
- Bile formation and secretion.
- Regulates hormone function .
- Phagocytic activities.
- Removing of ammonia.
- Acts as reservoir (store)for blood volume .

Hepatitis:

Definition: inflammation of the liver due to (caused by) virus, bacteria , fat in the liver , exposure to alcohol, chemicals (drugs) , toxins due to hepatobiliary disease ; may be acute or chronic in nature. When hepatitis is caused by a virus, the condition is called viral hepatitis.

Hepatitis is a medical term that means infection and inflammation of the liver, and hepatitis is caused by infection with a virus. There are seven types of hepatitis, each one caused by a different virus: A, B, C, D, E, F, and G. Types A, B, and C are by far the most common.

A chronic infection with hepatitis B, however, can be very serious. Chronic hepatitis B causes about 2000 to 4000 deaths in the United States each year. The infection can cause cirrhosis of the liver and it is a major cause of liver cancer.



Pathophysiology of Hepatitis :

Pathophysiology: metabolic functions and bile elimination functions of the liver are disrupted by the inflammation of the liver:-

- Locally, inflammatory process causes the liver to swell
- Bile channels compressed; damage the cells that produce bile
- Then blood flow through the liver is impaired, causing pressure to rise in the portal circulation
- Systemic effects related to altered metabolic functions performed by the liver and to the infectious response in viral hepatitis.

Types of hepatitis :

Hepatitis A, Hepatitis B , Hepatitis C , Hepatitis D Hepatitis E , Hepatitis G.

Hepatitis A virus (HAV) Infectious hepatitis :

- Transmission: Hepatitis A is spread from person to person by fecal-oral route, the virus enters the body through the mouth. This happens most often when someone eats food or drinks liquids that are contaminated with feces that contain the hepatitis A virus. usually contaminated foods.
- Hepatitis A can also be transmitted through contact with infected blood(blood transfusions) or direct contact by certain types of sexual contact, contaminated equipment but these routes of transmission not common, less than the fecal-oral route. symptoms last up to 2 months. Hepatitis A virus (HAV) lives in feces in the intestinal tract.

Signs and Symptoms (S/S) and Diagnosing of Hepatitis A:

- Abdominal pain
- Diarrhea
- Fatigue
- Fever



- Jaundice
- Loss of appetite
- Nausea
- Light stools
- Dark urine
- Labs
- **Prevention of Hepatitis A**
 1. Good hand washing
 2. Good personal hygiene
 3. Control and screening of food handlers
 4. Passive immunization
- **Incubation period :20-50 days (short incubation period)**
- **Incidence**
 - More common in winter months
 - Usually found in children and young adults
 - Infectious for 3 weeks prior and 1 week after developing jaundice
- **Clinical recovery 3-16 weeks**

Hepatitis B virus (HBV):

- Hepatitis B is a more serious disease than hepatitis A. The symptoms of a hepatitis B infection are more prolonged and more intense than those of a hepatitis A infection, and chronic hepatitis B is the cause of approximately 50% of all cases of liver cancer.
- Hepatitis B virus (HBV) lives in blood and other body fluids. HBV is transmitted from person to person through contact with the blood (contaminated blood or blood products) , or other body fluids (such as vaginal fluids, semen) of an infected person.
- **Transmission of Hepatitis B virus (HBV) :**
 1. Infected blood and body fluids, Infected blood can also be absorbed if it spray on a mucous membrane such as the



lining of the mouth or nose, or if the infected blood contacts an area of the skin that is scrape or cracked.

2. parenteral route with infusion
3. Ingestion or inhalation of the blood of an infected person
4. Contaminated needles, syringes, dental instruments
5. Other sharp instruments that break the skin (such as tattooing & body puncturing) .
6. Oral or sexual contact (sexually transmitted disease)
7. High risk individuals include morticians , homosexual males , IV drug users, persons with multiple sexual partners, healthcare workers, hemodialysis clients, people undergoing body tattooing & body puncturing (ear or body puncturing).
8. Hepatitis B can also be transmitted by blood spot contact in the eye.

Note : Hepatitis B is not transmitted by casual contact. You cannot be infected by hepatitis B by hugging or touching someone, by a cough or a sneeze, or by sharing eating .

● **Prevention of Hepatitis B:**

1. Screen blood donors
2. Immunization and Vaccine
3. Safe sex
4. No sharing of razors, toothbrushes, needles

Signs and Symptoms (S/S) of Hepatitis B:

- Abdominal pain
- Dark - colored urine
- Light - colored stools
- Labs
- Fever
- Fatigue
- Jaundice



- Loss of appetite
- Vomiting
- Dyspepsia (indigestion)
- Hepatomegaly
- Splenomegaly
- Enlarged lymph nodes.
- Malaise
- Weakness

Hepatitis C virus (HCV):

Hepatitis C is the most common blood-borne disease in the United States. There are approximately 5 million cases of hepatitis C infection in the United States. Hepatitis C infection is the most common cause of liver cancer.

Hepatitis C virus has been found in ascites, menstrual fluid, saliva, semen, spinal fluid, and urine. However, if someone suffered a parenteral exposure to one of these fluids (Spinal fluid infected with hepatitis C spray onto a laceration) or if someone was exposed to a large amount of one of these fluids, transmission could possibly occur.

- The hepatitis C virus (HCV), called the ‘silent epidemic’.
- worldwide cause of chronic hepatitis, cirrhosis, liver cancer.
- Usual incubation period 7-8 weeks.
- The hepatitis C virus can also cause diabetes, kidney disease, non-Hodgkin’s lymphoma, and skin and blood disorders.
- **Prevention :**
 1. Safe sex
 2. No sharing of razors, toothbrushes, needles
 3. Screen blood donors.

People have a high risk of HCV infection:

1. Used IV injection drugs.
2. Received blood or blood products or an organ transplant



3. Received kidney treatment (hemodialysis).
4. Received an accidental injury from a needle or syringe.
5. Been injected or scratched during vaccination, surgery, blood transfusion.
6. Received tattoos or body puncturing .
7. Shared personal items with an HCV-infected person (e.g., razors, nail clippers, toothbrush); exposure to contaminated equipment .
8. Shared intranasal and inhalation drug use equipment.
9. Unprotected sexual contact(multiple partners).
- 10.Undiagnosed liver disease.
- 11.Children born to HCV infected mothers. Hepatitis C can be transmitted from an infected mother to a newborn child.

Transmission of hepatitis C virus is NOT associated with:

1. Coughing; sneezing
2. Sharing food and water supplies
3. Hugging or kissing
4. Shaking hands
5. Using toilet seats
6. Breastfeeding unless nipples are cracked and bleeding

Signs and Symptoms (S/S) of Hepatitis C virus (HCV):

- 80% asymptomatic
- HBV/ S/S
- Fatigue
- Abdominal pain
- poor appetite
- Jaundice
- Headache
- Joint aches(pain of joint)
- Muscle aches
- Nausea
- Labs



Hepatitis D Virus (HDV):

- Transmitted through oral-fecal contaminated water, course of illness be like hepatitis A.
- Hepatitis D is same risk factors as HBV.
- Hepatitis D Virus (HDV) Reservoir: humans Animals: chimpanzee and pigs .
- Source of infection: same as Hepatitis-B
- Incubation: 2-26wk.
- Hepatitis D signs and symptoms Similar to those with hepatitis B(HBV S/S) May progress to chronic active hepatitis and cirrhosis .
- Prevention :HBV vaccine.

Hepatitis E virus (HEV):

- Transmission: fecal-oral route, contaminated water supplies in developing nations; rare in U.S.
- Epidemics occur in countries such as India, Mexico.
- Affects young adults; pregnant women.
- Hepatitis E Hepatitis E Virus (HEV) Reservoir: Infected Humans and Animals: wild and domestic esp. swine (pig).
- Incubation: 14-60 days.
- Period of Communicability: -Not known. - Hepatitis-E virus has been detected in stools 14 days after the onset of jaundice and approximately 4 weeks after ingestion of contaminated food or water and persists for about 2 weeks.
- Source of infection: Contaminated water in areas of poor sanitation household member, sex partners, shared injection equipment.
- Hepatitis E signs and symptoms Similar to those with hepatitis B(HBV S/S) .
- No vaccine.



Hepatitis G (HGV):

Hepatitis G (HGV) is not well understood but is spread through contaminated blood, body fluids, needles.

Phases of Hepatitis (Manifestations):

- Before jaundice stage: Malaise, severe headache, right upper quadrant abdominal pain, Chills and fever, nausea, vomiting, diarrhea, anorexia, sore throat , rash, enlarged liver and lymph nodes, electrolyte imbalance, abdominal tenderness, arthralgia (joint pain) .
- Jaundice stage : 5 – 10 days after of onset ,Jaundice of skin, sclera, and mucous membranes , elevation of serum bilirubin , pruritus, light brown or clay colored stools , brown urine(dark urine), malaise.
- Post- Jaundice stage : Fatigue, malaise, and liver enlargement , pain subsides.

Diagnosis of Hepatitis – lab findings (Laboratory tests):

1. Lab tests for viral **antigens and antibodies** associated with types of viral hepatitis : (Detection of the virus or its antibodies in the blood).
2. ↓ **serum albumin & proteins.**
3. ↑ Serum & urinary bilirubin levels(Urinalysis bilirubinuria)
4. **Liver biopsy:** tissue examined to detect changes.
5. **Liver function tests:**
Elevated levels of serum enzymes (↑ ALP, LDH, GGT, AST, ALT)



- Alanine aminotransferase (ALT).
 - Aspartate aminotransferase (AST).
 - Alkaline phosphatase (ALP).
 - Gamma-glutamyltransferase (GGT).
 - Lactic dehydrogenase (LDH).
6. **MRI and CT Scans:** If the results of blood tests or ultrasound indicate you may be at risk for liver cancer,
7. **Ultrasound:** A doctor may recommend an ultrasound to see whether the liver is inflamed.

Medical treatment :

- Diet : high calorie, high carbohydrate, moderate to high protein, and moderate to low fat with supplementary vitamins.
- Fluid management
- Bed rest
- Avoid substances toxic to the liver especially alcohol
- Drug therapy
 1. Prevention of HAV and HBV(Vaccines)
 2. Alpha interferon (Hepatitis B+ Hepatitis C)
 3. Lamivudine
 4. Ribavirin (Rebetol) → (Hepatitis C)
 5. Antipyretics (Acetaminophen)
 6. Immune globulin :(past exposure , Current or recent infection)
 7. Corticosteroids
 8. Antiemetics (Zofran)



9. Vitamins (B, K).

Note: Chronic infection with hepatitis B is treated with anti-viral drugs. These drugs do not cure the disease, but they can prevent the patient from developing cirrhosis and liver cancer.

Complications of Hepatitis:

1. Chronic hepatitis.
2. Fulminant hepatitis: is a complication of HBV that leads to liver failure
3. Toxic hepatitis.

Nursing Assessment:

- General health state, drug and alcohol use, chemical exposure, dietary habits, blood transfusions, recent travel, gastrointestinal disturbances, and changes in skin, urine, or stools .
- Vital signs, skin, weight changes, and mental status.

Nursing Diagnoses::

- Impaired Physical Mobility
- Imbalanced Nutrition: Less than Body Requirements
- Risk for Infection (transmission) r/t ↓ immune function
- Fatigue and Anxiety
- Knowledge deficit
- Deficient Fluid Volume
- Risk for Impaired Skin Integrity

Nursing Management:

1. Physical & emotional rest (bed rest).



2. Optimal food and fluid intake for facing weight loss & to speed recovery.
3. Patient & family education
4. Medications include:
(Vitamin K, Antihistamines for relief of itching (pruritis), Antiemetics for relief of vomiting, Skin care)
5. Reduce fatigue

Nursing Teaching about prevention and Control of Hepatitis :

Nurses play an important role in educating people living with hepatitis about preventing transmission. Prevention messages may include the following:

1. People who inject should use sterile needles and syringes and new injecting equipment every time they inject drugs , and wash hands immediately before and after injecting.
2. Use condoms where there is the possibility of blood contact during sex.
3. Restrict use of alcohol, no more than two alcoholic drinks a day.
4. When breastfeeding, milk from cracked or bleeding nipples should stop until the lesions are healed.
5. Do not share needles , toothbrushes, razors, shavers, barber's haircutting equipment.
6. Protection of Contacts of a Case.
7. Do not share or reuse tattoo or body- puncturing equipment.
8. Adequate sanitation and hygiene, proper disposal of human wastes



9. Personal hygiene and hand washing , before eating and after using the toilet ,also especially for food handlers
10. Blood and body fluids precautions.
11. Vaccinate against hepatitis .
12. Prevent from sexual activity during communicable period, Practicing safer sex will minimize the risk of transmission of hepatitis B .(use of condoms prevent from multiple partners).
13. Drink only purified or bottled water
14. Maintain a healthful, balanced diet.
15. Disinfection of contaminated foods
16. Patients and families must be teach on the transmission of disease
17. Educational programs should be designed in order to sure sanitary(healthy) disposal of feces.

Standard preventive measures and Safe Injection Practices:

1. Consider all blood as potentially infectious. Consider all body fluids
2. Follow hand washing protocols. Wash your hands before and after performing patient care; use soap and water.
3. Use personal protective equipment (PPE) face masks/face shields, gloves, gowns, hair covers , and shoe covers.
4. Understand and use respiratory hygiene .
5. Maintain a safe and clean environment to reduce the risk of contamination and transmission of diseases.
6. Proper sterilization of non-disposable instruments.
7. Understand and follow safe injection practices. The three most important rules of safe injection practices are:
 - Syringes, needles, etc. that have been used for one patient should never be re-used



- Always place used needles and sharps in a sharps container. Never place them in an common trash can.
- Careful handling of needles/sharps .

The hepatitis B vaccine should be given to the following groups:

1. Health care workers (HCPs) who may be exposed to blood or body fluids.
2. All children , especially children who are born to mothers who are infected with hepatitis B.
3. People who live in large groups and in close contact, e.g., military personnel, people who are incarcerated.
4. People who have blood clotting disorders.
5. People who have liver disease or are infected with hepatitis C
6. IV drug abusers.
7. Men who have sex with men.
8. Patients who require hemodialysis on a routine basis.
9. People who are infected with HIV.
10. People who travel to endemic areas.
11. Anyone who has, or has had a sexually transmitted disease.
12. Anyone living with someone who has a chronic hepatitis B infection.