



Lecture 8 : Medical Surgical Nursing

Hepatic Failure:

What is hepatic failure?

The liver is the second largest organ in the body and performs several different functions.

The liver processes everything you eat and drink, which it converts into energy and nutrients for your body to use. It filters out harmful substances, such as alcohol, from your blood, and helps your body to fight off infection.

Exposure to viruses or harmful chemicals can harm the liver. When your liver is damaged, you may develop hepatic (liver) failure. In those with liver damage, the liver may eventually stop functioning correctly.

Liver failure is a serious condition. If you develop liver failure, you should receive treatment immediately.

Liver failure is a life-threatening condition that demands urgent medical care. Most often, liver failure happens gradually, over many years. It's the final stage of many liver diseases. But a rarer condition known as acute liver failure happens rapidly (in as little as 48 hours) and can be difficult to detect at first.

Liver failure happens when large parts of the liver become damaged beyond repair and the liver can't work anymore.



Types of hepatic failure:

Acute liver failure

Acute liver failure is loss of liver function that occurs rapidly in days or weeks usually in a person who has no pre-existing liver disease. It may happen suddenly, without showing any symptoms.

Acute liver failure is less common than chronic liver failure, which develops more slowly.

Acute liver failure, also known as fulminant hepatic failure, can cause serious complications, including excessive bleeding and increasing pressure in the brain. It's a medical emergency that requires hospitalization.

Common causes of acute liver failure include poisoning from mushrooms or drug overdose, which can occur from taking too much acetaminophen (Tylenol).

Chronic liver failure

Chronic liver failure develops more slowly than acute liver failure. It can take months or even years before you exhibit any symptoms. Chronic liver failure is often the result of cirrhosis, which is usually caused by long-term alcohol use. Cirrhosis occurs when healthy liver tissue is replaced with scar tissue.

During chronic liver failure, your liver becomes inflamed. This inflammation causes the formation of scar tissue over time. As your body replaces healthy tissue with scar tissue, your liver begins to fail.

There are three types of alcohol-related liver failure:

- **Alcoholic fatty liver disease:** Alcoholic fatty liver disease is the result of fat cells deposited in the liver. It generally affects those who drink a lot of alcohol and those who are obese.
- **Alcoholic hepatitis:** Alcoholic hepatitis is characterized by fat cells in the liver, inflammation, and scarring. According to the American Liver Foundation, up to 35 percent of people who drink heavily will develop this condition.
- **Alcoholic cirrhosis:** Alcoholic cirrhosis is considered the most advanced out of the three types. The American Liver Foundation says that some form of cirrhosis affects 10 to 20 percent of people who drink heavily.

Causes of hepatic failure:

The causes of acute liver failure, when the liver fails rapidly, include:

- **Acetaminophen overdose:** Large doses can damage your liver or lead to failure.
- **Hepatitis and other viruses.** **Hepatitis A, hepatitis B and hepatitis E** can cause acute liver failure. Other viruses that can cause acute liver failure include Epstein-Barr virus, cytomegalovirus and herpes simplex virus.
- **Prescription medications.** Some prescription medications, including antibiotics, nonsteroidal anti-inflammatory drugs and anticonvulsants, can cause acute liver failure.
- **Reactions to certain herbal medications:** Some kill cells in your liver. Others damage the duct system that moves bile through it.



- **Eating poisonous wild mushrooms:** A kind called *Amanita phalloides*, also known as death cap, contains toxins that damage liver cells and lead to liver failure within a couple of days.
- **Autoimmune hepatitis:** As with viral hepatitis, this disease, in which your body attacks your liver, can lead to acute liver failure.
- **Wilson's disease:** This genetic disease prevents your body from removing copper. It builds up in, and damages, your liver.
- **Acute fatty liver of pregnancy:** In this rare condition, excess fat gathers on your liver and damages it.
- **Shock:** Overwhelming infection (sepsis) and shock can severely impair blood flow to the liver, causing liver failure.
- **Diseases of the veins in the liver:** Vascular diseases, such as Budd-Chiari syndrome, can cause blockages in the veins of the liver and lead to acute liver failure.
- **Industrial toxins:** Many chemicals, including carbon tetrachloride, a cleaner and degreaser, can damage your liver.
- **Cancer:** Cancer that either begins in or spreads to your liver can cause your liver to fail.
- **Long-term alcohol consumption:** It also leads to cirrhosis.
- **Cirrhosis:** Things like drinking alcohol for many years or having hepatitis scar your liver can make it hard or impossible for your liver to work.
- **Fatty liver disease:** Extra fat cells can build up on your liver. Nonalcoholic fatty liver disease often affects people who are overweight, obese, or have high cholesterol. Alcohol-related fatty liver disease affects heavy drinkers.

Liver Disease Progression:

- **Stage 1: Inflammation:** In the early stages, your liver will be inflamed and could be tender. Or it may not bother you at all.
- **Stage 2: Fibrosis/scarring:** If you don't treat the inflammation, it will cause scarring. As scar tissue builds up in your liver, it stops blood flow, which keeps the healthy parts from doing their job and makes them work harder.
- **Stage 3: Cirrhosis:** The scar tissue takes over, and with less and less healthy tissue to do its job, your liver won't work well, or it won't work at all.
- **Stage 4: End-stage liver failure/disease:** This is an umbrella term for several conditions, including swollen liver, internal bleeding, loss of kidney function, fluid in your belly, and lung problems. Only a liver transplant can cure it.

Signs and Symptoms of hepatic failure:

- Nausea
- Loss of appetite
- Fatigue
- Diarrhea
- Jaundice, a yellowish color of the skin and eyes
- Weight loss
- Bruising or bleeding easily
- Itching
- Edema, or fluid buildup in the legs



- Ascites, or fluid buildup in the abdomen
- Pain in your upper right abdomen
- Abdominal swelling
- Vomiting
- A general sense of feeling unwell (malaise)
- Disorientation or confusion
- Sleepiness

Diagnosis of hepatic failure:

Tests and procedures used to diagnose liver failure and liver disease include:

- **Blood tests:** These let your doctor know how well your liver is working. You might get a prothrombin time test, which measures how long it takes your blood to clot. With acute liver failure, blood doesn't clot as quickly as it should.
- **Imaging tests:** These take pictures that let your doctor see what's going on in your liver and figure out what's causing the problem. He may recommend
 - **Ultrasound**
 - **Abdominal computerized tomography (CT) scanning**
 - **Magnetic resonance imaging (MRI)**
- **Biopsy:** The doctor will use a needle to remove a small piece of liver tissue and look at it in the lab. A transjugular liver biopsy is a special procedure that lets the doctor put the needle into a vein in your neck.



Treatment of hepatic failure:

Treatment depends on the stage of the disease

- **Medication:** Acetylcysteine can reverse acute liver failure caused by an acetaminophen overdose. But you have to take it quickly. There are also medications that can reverse the effects of mushrooms or other poisons.
- **Supportive care:** If a virus causes liver failure, a hospital can treat your symptoms until the virus runs its course. In these cases, the liver will sometimes recover on its own.
- **Liver transplant:** If your liver failure results from long-term damage, the first step may be to try to save whatever part of your liver still works. If that fails, you'll need a liver transplant. Fortunately, this procedure is often successful.

Complications of Liver Failure:

- **Cerebral edema:** Fluid buildup is a problem with liver failure. In addition to your belly, it can also pool in your brain and lead to high blood pressure there, too much fluid causes pressure to build up in your brain.
- **Blood clotting problems:** Your liver plays a big role in helping your blood clot. When it can't do that job, you're at risk of bleeding too freely.
- **Infections, like pneumonia and UTIs:** End-stage liver disease can make you more likely to get infections.
- **Kidney failure:** Liver failure can change the way your kidneys work and lead to failure.



Prevention of Liver Failure:

- **Follow instructions on medications:** If you take acetaminophen or other medications, check the package insert for the recommended dosage, and don't take more than that. If you already have liver disease, ask your doctor if it is safe to take any amount of acetaminophen.
- **Tell your doctor about all your medicines:** Even over-the-counter and herbal medicines can interfere with prescription drugs you're taking.
- **Drink alcohol in moderation, if at all:** Limit the amount of alcohol you drink to no more than one drink a day for women of all ages and men older than 65 and no more than two drinks a day for younger men.
- **Avoid risky behavior:** Get help if you use illicit intravenous drugs. Don't share needles. Use condoms during sex. If you get tattoos or body piercings, make sure the shop you choose is clean and safe. Don't smoke.
- **Get vaccinated:** If you have chronic liver disease, a history of any type of hepatitis infection or an increased risk of hepatitis, talk to your doctor about getting the hepatitis B vaccine. A vaccine also is available for hepatitis A.
- **Avoid contact with other people's blood and body fluids:** Accidental needle sticks or improper cleanup of blood or body fluids can spread hepatitis viruses. Sharing razor blades or toothbrushes also can spread infection.
- **Don't eat wild mushrooms:** It can be difficult to tell the difference between a poisonous mushroom and one that is safe to eat.



- **Take care with aerosol sprays:** When you use an aerosol cleaner, make sure the room is ventilated, or wear a mask. Take similar protective measures when spraying insecticides, fungicides, paint and other toxic chemicals. Follow product instructions carefully.
- **Watch what gets on your skin:** When using insecticides and other toxic chemicals, cover your skin with gloves, long sleeves, a hat and a mask.
- **Maintain a healthy weight:** Obesity can cause a condition called nonalcoholic fatty liver disease, which may include fatty liver, hepatitis and cirrhosis.
- **practicing safe sex:** Be sure to use barrier protection (condoms) when having sex.
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- **If you get a tattoo or a body piercing, make sure the conditions are sanitary and all equipment is aseptic** (free of disease-causing germs).
- **Maintain a healthy weight .**
- **Eat a proper diet from all of the food groups.**

When to see a doctor

Acute liver failure can develop quickly in an otherwise healthy person, and it is life-threatening. If you or someone you know suddenly develops a yellowing of the eyes or skin; tenderness in the upper abdomen; or any unusual changes in mental state, personality or behavior, seek medical attention right away.