

Fatty Liver

Fatty liver is a problem in which an abnormal amount of fat deposits in the liver. Fat enters the liver from the intestines after being digested. It may enter the liver from fatty tissue elsewhere in the body, or it may be made in the liver. Patients unable to break down fat, develop abnormal fat areas within liver cells and the entire liver.

A fatty liver is the most common cause of abnormal liver tests when no disease is present. Fatty liver can be caused by certain chemicals, diet problems, or by family heredity. Drugs and chemicals that can cause fatty liver include alcohol, tetracycline, methotrexate, valproic acid, cortisone and cortisone-like medications, carbon tetrachloride, and other solvents. Of these, alcohol is by far the most common cause. Liver inflammation may come from exposure to these toxins and is responsible for the symptoms of fever, tiredness, and yellow skin. People who do not drink and have a fatty liver are classified as having Non-Alcoholic Fatty Liver Disease. Most people with this also have what is known as the Metabolic Syndrome. If you have any 3 of the following, you may have the metabolic syndrome. The metabolic syndrome is associated with a high rate of heart disease.

- Fasting blood sugar above 110 mg/dL
- Fasting triglycerides above 150 mg/dL
- Low HDL (good cholesterol)—males < 40, females < 50
- Large waist size—males > 40 inches, females > 35 inches
- High blood pressure—systolic > 135, diastolic > 85

Nutritional causes of fat in the liver include starvation, poor nutrition, or obesity. Fat in the liver can also occur with rapid or extreme weight loss such as what might occur following an intestinal or gastric bypass operation for obesity. Severe cases can lead to cirrhosis of the liver (severe scarring of the liver).

The hormonal causes of fatty liver include diabetes, high cholesterol, and fatty liver of pregnancy. Fatty liver during pregnancy occurs near the end of pregnancy and may cause early delivery of the baby or miscarriage.

Fat in the liver may not have any specific signs or symptoms. Sometimes patients will feel a dull pain in the right upper abdomen. Blood tests may show increased liver chemistries. A fatty liver can be seen on an ultrasound, CT, or magnetic resonance (MRI) of the liver. To know definitely if it is fatty liver, a liver biopsy will need to be done.

Fatty liver caused from alcohol use can worsen into a more severe disease including alcoholic hepatitis and cirrhosis.

Treatment of fatty liver depends on the cause. A fatty liver due to alcohol can be cured if alcohol use is stopped. Likewise, a fatty liver caused by drug use or chemical exposure can be cured if the drug is stopped or the chemical exposure stopped.

To avoid the development of fatty liver:

- Do not drink alcohol in excess
- Eat a healthy, balanced diet. Avoid concentrated sweets, saturated fats, and foods high in cholesterol. Whenever possible use healthy, unsaturated fats (olive oil, canola oil), instead of butter, lard, and corn oil.
- Seek medical advice

Hepatitis

Hepatitis means liver inflammation or irritation. Chronic hepatitis is inflammation of the liver which you have for longer than 6 months. Hepatitis can be caused by viruses, medications, disorders of the immune system, and disorders of iron and copper metabolism. Chronic hepatitis may develop after an acute episode of Hepatitis B or C.

A blood test may show inflammation of the liver. Other tests can be done to see if you have been exposed to a virus. Your doctor may take a piece of your liver, a biopsy. The biopsy may help determine how long you have had the inflammation or how much damage there is to your liver. A biopsy will also tell if you are developing cirrhosis (severe scarring within the liver).

Symptoms of chronic hepatitis can be tiredness, some pain in the upper stomach area, loss of appetite, and general aches and pains. However, many people have no symptoms at all. As damage to the liver progresses, you may develop yellow skin color (jaundice), itching, swelling, confusion, or problems with walking.

What the doctor may do for your hepatitis will depend on the cause of your hepatitis. Chronic Hepatitis B and C are treated with medications that fight viruses. These medications are taken for long periods of time. The disease may occur again after stopping the medications. The medications also have side effects. There is on-going research into the treatment of Hepatitis. Interferon is one of the medications used to treat Hepatitis. Steroids are used for autoimmune hepatitis. The disease often returns when the steroids are stopped; therefore, most patients with autoimmune hepatitis may have to take steroids for the rest of their lives.

Liver transplant may be an option for people when Hepatitis progresses to cirrhosis and complications of cirrhosis develop. However, Hepatitis B or C can return even after a liver transplant.

Viral Hepatitis

Hepatitis A - People with chronic hepatitis or cirrhosis should be tested to see if they have been exposed to the Hepatitis A virus. If they have not been exposed, they should receive a vaccine to protect them from the Hepatitis A virus. A person is at risk for Hepatitis A if they eat raw seafood from dirty water, or are exposed to waste water, such as after a natural disaster.

Hepatitis B & C— Exposure to infected blood or body fluids may cause Hepatitis B or C. People who live with or have sex with people who have Hepatitis B or C, are IV drug users, have multiple tattoos or a history of blood transfusions before 1995 should be tested for the diseases. If Hepatitis B, they should get the Hepatitis B vaccine. All pregnant women should be tested for Hepatitis B. Babies born to mothers that have Hepatitis B need to be given the vaccine so that they do not get the infection from their mother. Unfortunately, there is no vaccine for Hepatitis C.

For people with hepatitis, your diet should be well-balanced and low in salt. By eating a low salt diet, you can avoid problems with swelling. High carbohydrate, high protein, or low fat diets often do not help, and sometimes may be harmful. Whenever possible, olive oil or canola oil should be used over other fats (corn oil, butter). A multivitamin may be taken, but you should not take different vitamins (especially a lot of vitamin A). Before taking any vitamin or mineral supplements, talk to your doctor. People with chronic hepatitis should not use alcohol and should never eat raw shellfish—these can make your hepatitis worse. A good exercise program can help with the tiredness caused by chronic hepatitis. Do not take medicines that are not absolutely necessary. Regular visits with a doctor are very important to manage your hepatitis.

HIV & Liver Disease

Advances in treatment for HIV have resulted in longer survival of infected patients and it is no longer considered a terminal disease. HIV positive, viral load negative patients with liver failure, often due to coinfection with HCV, are now potential candidates for transplant. Strict criteria, developed by the NIH, are used for selection of patients. Each patient is evaluated and considered on an individual basis. If you have any questions or would like to be evaluated for transplant, please call for more information.

Interferon Therapy

Interferon is a natural protein made by your body in response to infections. It is one of the many parts of your immune system. Your body makes 3 major types of interferon: alpha, beta, and gamma. Alpha interferon is the type used for treating hepatitis. Because of its chemical structure, interferon must be administered by injection. The injection is given directly under the skin (subcutaneously), similar to an insulin injection. Interferon is given along with Ribavirin, which is a pill.

Most patients receiving interferon will experience side effects. Flu-like symptoms (headache, fever, chills, muscle aches, joint pains, and loss of appetite) are the most common side effects of interferon therapy. Drinking more fluids will alleviate some of the side effects. These symptoms are generally worse following the first few injections. Other side effects that occur less often include: nausea, diarrhea, dizziness, and irritation at the site of injection. After several weeks of therapy, patients may experience irritability and depression. Severe depression may occur in patients with a history of depression and in those individuals who are depressed prior to starting their therapy. Hair thinning tends to occur after several months of treatment, but it grows back when treatment is stopped.

Interferon causes a drop in blood counts (platelets, red blood cells, and white blood cells). In some patients the falling counts may require the interferon dose be reduced, or even stopped. It is vital that you have your blood work monitored according to the schedule given to you by your doctor. Some patients need closer monitoring than others. Generally we recommend blood counts be checked at least once a month during therapy. Liver tests are generally monitored less often. In rare cases, interferon may lead to thyroid problems. Thyroid tests may be monitored before and during treatment. Interferon may cause a flare of autoimmune diseases. Patients on interferon may also be more susceptible to infections.

We suggest that people on interferon and Ribavirin avoid taking dietary supplements and herbal remedies. However, we do recommend that you take the following vitamin supplements as they may reduce the side effects of combination therapy:

- Folic acid 1-3 mg per day
- Vitamin E 400-800 units per day
- Multivitamin without iron 1-3 tablets per day

Cirrhosis

Cirrhosis is scarring of the liver that occurs when the liver tries to repeatedly heal itself when it is damaged. When the liver does this, scar tissue (fibrosis) may develop. Over time, the scar tissue increases to the point where it replaces entire areas of normal liver.

Many patients with cirrhosis will have abnormal liver blood work. Patients may not develop symptoms for a long time. Common sequelae of cirrhosis include esophageal varices which can bleed, ascites which may need to be drained and get can infected, severe leg swelling, and encephalopathy(confusion). Many of these problems happen because the blood flow through the liver is abnormal from the scarring. Therefore, the blood flows differently and is not able to be cleaned by the liver.

Esophageal Varices and Bleeding

Esophageal varices are the enlarged veins in the lower end of the esophagus (swallowing tube). These form when cirrhosis of the liver blocks blood from flowing through the liver. Once the blood is blocked from flowing through the liver, it must find another way to return to the heart. The veins around the esophagus and stomach provide a path for blood to return to the heart. Over time, these veins become larger and develop into varices. If the pressure within these veins becomes high enough, the veins can rupture, leading to life threatening bleeding.

The most common symptoms of bleeding varices include weakness, light-headedness, nausea, vomiting of blood or coffee colored material, and bowel movements that are bloody or black. Bleeding from varices is a medical emergency. If you have signs of bleeding, someone should take you to the nearest hospital immediately.

If bleeding occurs, there are several ways to treat it:

Endoscopic Therapy: Bleeding from varices can usually be stopped with endoscopic therapy. The endoscope is a flexible instrument that is put through the mouth to examine the esophagus, stomach, and small intestine. Generally 3-5 endoscopy sessions are needed to treat varices. Until the varices are treated, bleeding may occur in many patients. Varices may come back after being treated, but this generally takes 6 months or more. This treatment works best for esophageal varices.

Shunt Procedures: A surgical shunt is a procedure that takes blood away from the liver and lowers pressure in the varicose veins around the esophagus and stomach. This procedure works well with controlling bleeding from varices; however, other complications can occur. The surgical shunt involves major surgery. There are several types of surgical shunts that can be done. The type of shunt for a patient is determined by your surgeon. Surgical shunts are reserved for patients whose main problem from cirrhosis is bleeding.

TIPS is an abbreviation for Transjugular Intrahepatic Portal-systemic Shunt, and it refers to a shunt procedure that is performed without surgery. A TIPS is inserted through a vein in the right side of the neck. By creating a shunt within the liver, the flow of blood within the varicose veins is reduced and bleeding can be prevented. A TIPS is much less risky than a surgical shunt. In addition, having a TIPS rarely interferes with performing a liver transplant in the future.

Variceal bleeding may be prevented by medicines that lower pressure within the vein and within the varices. Inderal is the drug most often used. In some patients Inderal alone is not effective and another drug may need to be added. Avoid aspirin and arthritis medications that cause ulcers. These medications can cause varices to bleed.

Ascites

The fluid that collects in the abdomen as a result of cirrhosis is called ascites. Symptoms that are common include pain in the abdomen, abdominal swelling, loss of appetite, back pain, shortness of breath, fluid retention and leg swelling.

The treatment for ascites is a low salt diet and water pills. When salt restriction alone does not help, patients are treated with diuretics (water pills). When diuretics do not work, patients may need to have the fluid removed by placing a needle into the abdomen in order to draw out the extra fluid. This procedure is called a paracentesis. Diuretic treatment often causes severe muscle cramps. Muscle cramps can be managed by lowering your salt intake and taking magnesium supplements.

Bacterial Peritonitis

An infection within the ascites fluid is called bacterial peritonitis. Usually the symptoms include increased ascites, abdominal pain, fever, and confusion (worsening encephalopathy). The treatment includes hospitalization and intravenous antibiotics.

In order to prevent peritonitis in patients with ascites, a daily dose of oral antibiotics is prescribed. Preventive antibiotics are recommended for patients

with severe ascites and for those who have experienced a previous bout of peritonitis.

Hepatic encephalopathy

Hepatic encephalopathy is a brain dysfunction caused by the collection of toxic chemicals in the blood stream. The healthy liver acts as a filter to remove harmful substances from the blood. With cirrhosis, the liver is not able to remove toxic chemicals. These chemicals remain in the blood and eventually enter the brain, causing a variety of disturbances with brain function. The most common toxin is ammonia. Symptoms of hepatic encephalopathy include fatigue, sleepiness, confusion, depression, irritability, personality changes, forgetfulness, slurred speech, tremors (shakes), and problems with balance. As the condition worsens, patients become sleepier and eventually lapse into a coma. Some patients with encephalopathy develop a peculiar odor on their breath from the toxins.

The treatment for hepatic encephalopathy reduce the levels of ammonia and other toxins that are produced in the intestine as food is digested. The longer food remains in the colon, the more toxins are absorbed. Laxatives are used to avoid constipation. Frequent bowel movements allow the toxins to leave the body. Lactulose is the preferred medication because it clears more ammonia from the intestines than other laxatives. Antibiotics taken by mouth kill some of the bacteria present within the intestines that produce the dangerous toxins. The most commonly used antibiotics for this condition are neomycin and Flagyl. Reducing the amount of protein in the diet may be useful in some patients. However, excessive protein restrictions may cause malnutrition. Talk to your doctor about the amount of protein you should eat. Certain medications may increase the brain's sensitivity to ammonia and other toxins. These medications include sedatives (Valium, Ativan, Xanax), pain medications (Darvocet, codeine, Vicodin, Percocet, Demerol), anti-nausea agents (Phenergan, Compazine), and antihistamines (Benadryl). Do not take these medicines unless you talk to your doctor.

Hepatocellular Carcinoma (HCC or Liver cancer)

Cancer of the liver (hepatocellular carcinoma, HCC, or hepatoma) can occur as a complication of cirrhosis. Patients with cirrhosis caused by hemochromatosis, alpha-1-antitrypsin deficiency, and those patients with cirrhosis caused by long-standing infection with hepatitis B and C viruses are at risk for HCC. Men are more likely to develop HCC than women, drinkers more likely than non-drinkers, and smokers more likely than non-smokers.

Patients with small, slow-growing HCC can be cured with surgery or liver transplantation. Small tumors are those that are smaller than 5 cm or 2 inches in diameter. Patients with large tumors, or who have more than 3 tumors, or those

with rapidly growing tumors cannot be cured with surgery or transplantation. These patients may be candidates for other therapies such as chemoembolization, alcohol ablation, radiofrequency ablation, and cryotherapy. These procedures may temporarily control or shrink the tumor.

The diagnosis of HCC is often very difficult. A blood test for HCC (alpha-fetoprotein or AFP) is unreliable but is often used as a screening for the presence of HCC. Unfortunately, only about 1/3 of patients with HCC will have very high levels of AFP. Most patients have normal or mild AFP elevations. In addition, many patients with hepatitis B and C infections will have AFP elevations and no evidence of HCC. Thus, the use of AFP has limitations. It may have more value when combined with an imaging test (see below).

The other screening for HCC involves the use of imaging studies or scans (ultrasound, CT, MR). Scans are very good at detecting the presence of tumors in the liver when the liver is otherwise healthy. Scans are not as useful when cirrhosis is present. Cirrhosis has the appearance of varying size nodules throughout the liver. CT scanning seems to be a little better than ultrasound. CT is more expensive and has some risks that are not seen with ultrasound. The goal of screening is to find the tumors that are most likely to be cured with early detection (that is, the slow-growing, non-aggressive liver tumors). We prefer to use ultrasound in combination with AFP for the early detection of HCC. We screen patients every year with AFP and ultrasound, but stagger the tests so that you will have either an ultrasound or AFP every 6 months. If anything suspicious is found, additional testing may be performed.

A liver biopsy is not required to prove the presence of HCC and biopsies are often avoided in these situations. First, the biopsy may be falsely negative for cancer. There are many reasons for a negative biopsy. The most common explanation is that the wrong spot was biopsied. Even with CT scanning, it is very hard to hit the precise spot and obtain enough tissue to make the diagnosis of liver cancer. In some cases the tumor looks so much like the normal liver that the pathologist cannot establish the diagnosis on the basis of the small amount of tissue obtained.

If you have cirrhosis there are some things you can do which may reduce your chance of developing liver cancer:

- Stop smoking
- Stop drinking alcohol, including non-alcoholic (actually low alcoholic) beer
- Consider undergoing treatment if you have viral hepatitis

Liver Biopsy

A liver biopsy is a minor procedure in which a small sample of liver (1-3 cm in length, 0.1 cm in width) is removed using a needle device. Since the liver is in the right side of the abdomen, a biopsy is usually performed by going in between the ribs on the right side of the abdomen or lower chest.

Biopsies are usually done in the morning between 8:30 and noon. This is an Outpatient Procedure. You will spend the better part of the day at the hospital for the biopsy. However, the procedure takes less than an hour. The Outpatient Surgery Department at Tulane University Hospital & Clinic would like you to arrive about one hour before the procedure. We prefer that you have only a light breakfast or a Carnation Instant Breakfast before leaving home.

Biopsy results are usually available in 2-4 days. Sometimes special tests are required which may take several weeks to complete; however, an initial report is usually available within several days. We will schedule a follow-up appointment with you to talk about the results. If you have not been given an appointment, please call or write to schedule a follow-up.

Prior to having a biopsy we will order several blood tests to check how your blood clots. If you have a history of a bleeding problem or are taking medications that may thin your blood, let us know ahead of time.