

Almost all the organs of the body contain some fat. Fat cells provide insulation, protection, and are an efficient way to store extra energy. After a typical meal, dietary fat is absorbed by the intestines and enters the blood stream which carries the fat directly to the liver. Normally, this fat is metabolized in the liver and converted to energy. If the amount of fat delivered is excessive, it is stored in the liver and other tissues. The normal liver contains about five percent fat. The rest of the liver is made up of liver cells called hepatocytes which do all the work of the liver. When the amount of fat in the liver exceeds 10 percent, healthy liver cells are replaced by fat cells. This condition is termed a fatty liver disease, or steatosis.

Incidence of Fatty Liver Disease

Recent surveys have shown fatty liver to be much more common than previously recognized. It now affects about 23 percent of adult Americans and has become the most common cause of abnormal liver blood tests in the US population.

Risk Factors for Fatty Liver Disease

The typical patient is an older, obese woman who may be diabetic, but fatty liver affects both sexes and may occur in those of normal weight. It is also quite common in those who consume excessive amounts of alcohol.

Natural History of Fatty Liver Disease

There are two types of fatty liver – that seen in alcoholics and that which occurs in non-drinkers. It has been recognized for centuries that chronic alcoholism can cause progressive liver failure. The first stage of alcoholic liver disease is a fatty liver. At this stage, the damage is often reversible if the individual becomes totally abstinent. But with continued drinking, liver disease progresses leading to cirrhosis. Liver cells die and are replaced by scar tissue. When excessive scar tissue develops (cirrhosis), the liver fails. So, an alcoholic with a fatty liver who continues to drink may be causing irreversible liver disease.

Until recently, it was believed that in non-drinkers a fatty liver was just a curiosity – a consequence of being overweight or a diabetic. New scientific studies have identified non-alcoholic fatty liver as a separate disease entity also with potentially serious consequences. It is now believed that 10-20 percent of non-drinkers who have a fatty liver will also go on to develop liver cirrhosis. Why this happens is not known. Fatty liver has become the most common cause of cirrhosis in non-drinkers.

Non-alcoholic Steatohepatitis (NASH)

In 1980, scientists noted changes on liver biopsies in non-alcoholics that looked very much like the liver damage seen in chronic alcoholics who continue to drink. In addition to excess fat, there were signs of dying liver cells (necrosis), and inflammation. They termed this condition non-alcoholic steatohepatitis, commonly referred to as NASH. (The phrase “steato” simply means fat and “hepatitis” means liver inflammation.) The presence of dying liver cells and inflammation makes NASH a more severe form of fatty liver. Patients with NASH are at risk of progression to cirrhosis.

Risk Factors for Fatty Liver Disease

As mentioned above, the main cause is deposition of excessive fat within the liver. There are many reasons why this might happen including:

- Alcoholism
- Non-Alcoholic Fatty Liver
 - Type II diabetes, non-insulin dependent or obesity – more than 10 percent over ideal weight
 - High blood fats, especially high triglyceride levels
 - Certain drugs like prednisone, estrogen, amiodarone, tamoxifen
 - Intestinal bypass for obesity
 - Extensive surgical removal of small intestine
 - Total parenteral nutrition (TPN)

Symptoms of Fatty Liver Disease

Most patients with fatty liver are asymptomatic. If the liver becomes enlarged, one may experience vague right-upper quadrant (RUQ) abdominal pain or nausea.

Diagnosis of Fatty Liver Disease

Typically, a patient is diagnosed with a fatty liver after routine blood tests are performed for another reason and abnormally elevated liver enzymes are discovered. Perhaps they tried to donate blood and were rejected. It may have been an insurance physical or just a routine checkup. The most common abnormality in the blood tests is two to three-fold elevation in liver enzymes called AST and ALT.

In non-alcoholic fatty liver other liver tests are usually normal. In any case, these individuals are usually referred to a specialist to investigate the underlying cause. If there is a history of chronic alcohol abuse, the underlying cause is usually obvious. In non-drinkers, investigation usually focuses on searching for other potential causes of hepatitis (inflammation of the liver); viral infection, hemochromatosis (iron overload), Wilson's disease (copper overload), alpha-one antitrypsin deficiency, gallstones, cancer or fatty liver.

Non-alcoholic fatty liver is suspected in any adult who has unexplained elevated liver blood tests and drinks no more than two alcoholic drinks daily. To investigate further, more blood tests are usually required. Imaging studies such as a sonogram or CT scan are helpful in ruling out cancer and gallstones. They can also help determine if the liver contains excessive fat. If NASH is suspected or the diagnosis unclear, a needle liver biopsy is often performed. This is the only way to differentiate simple benign fatty liver from NASH.

Treatment for Fatty Liver Disease

At present, there is no proven therapy to reverse a fatty liver directly. Therefore, treatment is usually directed at the underlying cause. Alcohol must be stopped completely. Potentially offending medications may need to be changed, if possible. Uncontrolled diabetes must be better controlled. High serum cholesterol and triglycerides need to be reduced. Excessive weight must be lost through a diet and exercise program. Several reports suggest that the use of ursodeoxycholic acid (URSO), a natural bile salt, may be helpful.

Learn more at liverfoundation.org