

Medications and the Liver

Overview

Introduction

One of the main functions of the liver is to break down substances that we take by mouth, including medications, herbs and supplements. This process usually takes place efficiently and without causing any harm. When new medications are developed, they are extensively tested in many people prior to being approved for general use. During this period careful tests are done to ensure that the liver is not damaged. For this reason, the vast majority of the medications currently available are safe even for people with known liver disease.

Despite these safeguards sometimes medications can harm the liver. In some instances, a person can have a rare tendency that makes their liver susceptible to injury after taking a certain medication – we call this an idiosyncratic reaction. It happens in very rare instances and often cannot be predicted. Occasionally, medications that proved safe during testing are found to be potentially harmful when they are released for general use and millions of people take it. In other instances, people with liver disease may be at increased risk of developing liver damage when certain medications are used. Medications that are known to be toxic to people with liver disease usually carry a warning regarding its use in people with liver problems.

What are the symptoms of medication-related liver injury?

In most cases substantial liver damage can occur before symptoms appear. Typical symptoms of liver disease may include malaise, nausea, lack of appetite, discomfort on the right upper corner of the abdomen, generalized itching, dark urine and jaundice (yellow discoloration of the eyes and skin), but many people have no symptoms at all. Blood tests can usually detect evidence of liver damage before symptoms develop. When a medication known to possibly cause liver damage is used, your physician may recommend that blood tests be checked periodically after starting the medication so that any evidence of liver damage can be detected before symptoms appear.

What blood tests are used to detect liver damage from medications?

Usually there is no need to monitor the liver tests when a medication is started. If your physician is planning on using a medication that in the past has been shown to rarely cause liver damage, the most common test used to monitor the liver is a liver panel, which consists of several blood tests that detect liver damage. These tests are: AST (aspartate aminotransferase), ALT (alanine aminotransferase), AP (alkaline phosphatase) and bilirubin. There are many other causes for elevated liver tests. For that reason your physician may obtain a baseline liver panel prior to starting a medication to be sure that it is normal.

Minor elevations of these tests may occur after starting a medication and do not indicate significant liver damage. Generally speaking physicians are most concerned about medication-induced liver damage when the levels of AST and ALT rise 3 to 5 times or more over baseline or if there is an increase in bilirubin. If the elevations are minor, the medication is continued and the liver tests monitored. In most cases, the liver tests will return to normal despite continuing the medication.

What are some of the common medications that can cause liver damage?

Probably the best known medication that can damage the liver is acetaminophen, also known as Tylenol®. This medication is widely available without prescription and is present in many of the cold and flu remedies sold in drugstores as well as in prescription pain medications. Most pain medications that are labeled as “non-aspirin” have acetaminophen as its main ingredient.

Acetaminophen, when used as directed, is extremely safe even for people with liver disease. However, taking too much acetaminophen at once, or taking a high dose of acetaminophen continuously over several days can cause damage to the liver. Healthy individuals should not take more than 1,000 mg of acetaminophen per dose, and should not take more than 4,000mg in one day (i.e. maximum of 1,000 mg every 6 hours). In addition, even healthy persons should avoid taking 4,000mg of acetaminophen daily for more than 3 to 5 days. Patients with liver disease should restrict the daily amount of acetaminophen to 2,000mg per day, or even less if severe liver disease is present. Even if you have no liver disease, always use the smallest amount of acetaminophen needed to obtain relief.

People who drink alcoholic beverages regularly are at higher risk of developing severe liver damage from acetaminophen. Drinking alcohol regularly changes the way the liver breaks down certain medications. In the case of acetaminophen, alcohol use leads to accumulation in the liver of a toxic byproduct of acetaminophen that can kill the liver cells. People who drink alcohol regularly should not take acetaminophen or take it rarely if at all.

Do cholesterol lowering medications cause liver damage?

Another common group of medications that can affect the liver are the cholesterol lowering medications commonly known as “statins”; a group that includes

many of the currently prescribed medications to lower cholesterol. These medications have been used in millions of people with an excellent safety record and very little evidence of liver damage, even when used in people with mild liver disease. It is not rare, however, for people to develop minor elevations of the liver tests soon after they start taking these medications. In the vast majority of cases, these elevations are less than 3 times the baseline level and the levels return to normal despite continued use of the medication. While it is a good idea to monitor the liver tests when these medications are started, the medication should not be stopped if only a minor elevation of liver tests is noted.

Can supplements and herbs cause liver damage?

Definitely! Supplements and herbs, despite being “natural” can be toxic to the liver. The production and distribution of these supplements is not regulated as carefully as the production of prescription medications. “Natural” products can be sold with little testing and with no proof of efficacy. Sometimes the herb or supplement itself can cause liver damage. In other cases, impurities or toxins introduced during the preparation of the product may be toxic to the liver. Some of the natural products known to be toxic to the liver include chaparral, comfrey tea, kava, skullcap, and yohimbe, but there are many others. Even vitamin supplements can be harmful if taken in excess. Too much iron or vitamin A can result in significant liver damage.

Are people with liver disease at increased risk of liver damage from medications?

With very rare exceptions, people that have mild liver disease can safely take most common prescription and non-prescription medications at the recommended dose. Having mild liver disease such as hepatitis C or fatty liver does not increase the risk that a given medication will be toxic to the liver, however, if a person with pre-existing liver disease happens to develop liver injury from a medication, the resulting liver damage may be more severe than would occur in an otherwise healthy person with the same reaction. For that reason, whenever possible, physicians prefer to use “liver-safe” medications when we know a person has liver disease.

People with more severe types of liver disease such as cirrhosis have to be more careful regarding the types and dose of medications they take. While the ability of the liver to properly break down and utilize medications is preserved even when severe liver disease is present, there are some medications that should not be used or should be used at reduced dose when given to patients with advanced cirrhosis.

What can I do to decrease the risk of liver damage from medications?

There are several things you can do:

1. Always keep a list of all the prescription and non-prescription medications that you take, including herbs, vitamins and supplements. Bring this list with you to every physician’s appointment.
2. The fewer medications you take the better. This includes herbs, supplements, prescription and non-prescription medications. If you have several physicians prescribing medications for you, be sure all of them are updated on your current list of medications.
3. When using non-prescription medications, be sure to read the label carefully and never exceed the recommended amount. Avoid taking the maximum recommended dose for a prolonged period without consulting a physician.
4. If you are taking several medications, be sure the ingredients are not the same; otherwise you may risk taking an accidental overdose.
5. If you drink a significant amount of alcohol daily, avoid or restrict the use of acetaminophen; never take the maximum recommended dose.
6. If you have liver disease, make sure that your physician is aware of your diagnosis and the severity of your liver disease.
7. If you have advanced liver disease such as severe cirrhosis, it is a good idea to consult with the liver specialist before starting new medications.

Author

Jorge L. Herrera, MD, FACP, University of South Alabama College of Medicine, Mobile, AL