HCV Laboratory Tests

Several laboratory (blood) tests are used for hepatitis C virus (HCV). These include liver function tests, HCV viral load, genotype tests, the IL28B genetic test, and blood clotting tests.

LIVER FUNCTION TESTS

Liver function tests do not measure how the liver functions. Instead, they measure the levels of enzymes found in the liver, heart, and muscles and the levels of proteins found in the blood. Enzymes are proteins that cause or increase chemical reactions in living organisms. High enzyme levels can indicate liver damage caused by medications, alcohol, hepatitis, toxic fumes, or substance use. Different patterns of these enzymes, when some are elevated and others are normal, can help your healthcare provider identify specific health problems and monitor liver health.

Liver function tests include:

- **Alkaline phosphatase (ALP):** enzyme found in bone, the liver, and other tissues. Damaged liver cells release increased amounts of ALP into the blood. Elevated levels of ALP in the blood are most commonly caused by liver disease or bone disorders.
- **Alanine amino transferase (ALT):** enzyme found mostly in the cells of the liver and kidneys. ALT is a useful test for detecting liver damage and disease. It is used with the AST test to monitor liver health. Sometimes the ALT test is used to see if treatment is improving liver function.
- **Aspartate amino transferase (AST):** enzyme found in the heart and liver. AST is used with ALT to detect liver damage and disease.
- **Bilirubin:** an orange-yellow pigment primarily produced by the normal breakdown of red blood cells (RBCs). Bilirubin is ultimately processed by the liver so that it can be removed from the body. High levels can cause jaundice, a condition where the whites of the eyes and sometimes the skin turn yellow. High levels of bilirubin can indicate liver disease but might also be unimportant if caused by the antiretroviral medications (ARVs) indinavir (Crixivan) and atazanavir (Reyataz).

Proteins:

- **Albumin:** a small protein made by the liver. It is the major protein in blood and makes up about 60% of the total protein in the blood. It maintains water balance in the cells, carries nutrients to the cells, and removes waste products. Low albumin is generally a sign of nutrition problems. Because albumin carries so many substances in the blood, low albumin levels can lead to inaccurate low results for other laboratory tests, especially calcium and testosterone.
- **Total protein:** measures albumin as well as all other proteins in blood. Proteins are important

building blocks of all cells and tissues and are essential for body growth, development, and health.

VIRAL LOAD TESTS

The HCV viral load test counts how many HCV particles are in the blood. This is similar to the HIV viral load test but there are some important differences:

- HCV viral loads are measured in International Units (IUs). One IU is approximately 3 copies of HCV.
- HCV viral loads are much higher than HIV viral loads. HCV viral load can be several million. Less than about 400,000-600,000 IUs per milliliter (IU/mL) is considered low.
- The HIV viral load is used to predict disease progression. However, this is not the case with HCV viral load. Higher HCV viral loads do not indicate faster disease progression. However, they predict response to HCV treatment: the lower the viral load, the more likely HCV treatment is to work.
- The HCV viral load is used to see if HCV treatment is working and how fast the viral load becomes undetectable. When the viral load becomes undetectable during HCV treatment and stays that way for 6 months after treatment is stopped, it is called a Sustained Virologic Response (SVR). This usually persists for 10 years or more and is considered a cure.

HCV GENOTYPE TESTS

There are more than 6 different types of HCV, identified by a number. There are also subtypes, which are given a letter. For example, there are genotypes 1a and 1b. They are identified by analyzing a blood sample to determine the genetic code of the virus. The most common type of HCV in North America is genotype 1. Genotypes 2 and 3 are much less common in North America.

IL28B GENETIC TEST

Researchers have recently discovered a link between a person's genetic code and their response to standard treatment. The genetic code of a large group of people with HCV genotype 1 was analyzed. The IL28B test may become an important tool to guide HCV treatment.

BLOOD CLOTTING TESTS

Some tests might be used if liver biopsy is being considered as a diagnostic procedure. With a biopsy, there is a risk of bleeding. Blood clotting tests measure how quickly the blood forms clots which stop bleeding. Abnormal values on these tests may indicate advanced liver disease.

- **Prothrombin Time / International Normalized Ratio (PT/INR):** the most common blood clotting test. A small sample of blood is tested in the laboratory to see how long it takes for a clot to form.
- **Platelet count** indicates the number of platelets in the blood. People with advanced liver disease may have fewer platelets and may be more likely to bleed after a liver biopsy.

MORE INFORMATION

Lab Tests Online: Liver Panel

Lab Tests Online: Coagulation Factors

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