What is Fibrosis?

Foreword
Chronic infection with hepatitis C or hepatitis B virus (HCV or HBV) can lead to long-term liver damage including fibrosis, cirrhosis, and hepatocellular carcinoma (liver cancer). It is estimated that about 10-25 percent of people with chronic hepatitis C will develop cirrhosis, a process that usually takes 20-30 years. This fact sheet will discuss fibrosis.

The Fibrosis Process
Liver fibrosis refers to the accumulation of tough, fibrous scar tissue in the liver. Formation of scar tissue is a normal bodily response to injury, but in fibrosis this healing process goes wrong. When hepatocytes (functional liver cells) are injured due to infection with a virus, heavy alcohol consumption, toxins, trauma, or other factors, the immune system is activated to repair the damage. The injury or death (necrosis) of hepatocytes stimulates inflammatory immune cells to release cytokines, growth factors, and other chemicals. These chemical messengers direct support cells in the liver called hepatic stellate cells to activate and produce collagen, glycoproteins (such as fibronectin), proteoglycans, and other substances. These substances are deposited in the liver, causing the build-up of extracellular matrix (nonfunctional connective tissue). At the same time, the process of breaking down or degrading collagen is impaired. In a healthy liver, the synthesis (fibrogenesis) and breakdown (fibrolysis) of matrix tissue are in balance. Fibrosis occurs when excessive scar tissue builds up faster than it can be broken down and removed from the liver.

Fibrosis Risk Factors
Liver fibrosis does not occur at the same rate in all individuals, and in some people with chronic hepatitis C or B fibrosis remains stable or may even regress over time. Several factors influence fibrosis progression. Fibrosis occurs more rapidly in men than in women, and also in older people – particularly those over age 50. Progression does not seem to be linear; that is, the process appears to accelerate as more damage occurs. Immune system compromise, for example due to coinfection with HIV or use of immunosuppressive drugs after a liver transplant, also has been
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Fibrosis is the process of scarring in the liver. It begins with inflammation and liver injury and can lead to cirrhosis, a condition in which the liver is severely scarred and its ability to function is impaired. The development of fibrosis is typically monitored by measuring the extent of scarring in the liver.

Effects of Fibrosis

In the early stages of fibrosis, the liver functions relatively well and few people experience symptoms. But as the inflammation and liver injury continue, scar tissue builds up and connects with existing scar tissue, which can eventually disrupt the metabolic functions of the liver. If the disease progresses, it can lead to cirrhosis, a condition in which the liver is severely scarred, its blood flow is restricted, and its ability to function is impaired.

Treatment and Future Prospects

It was once thought that fibrosis was irreversible, but research has shown that treatment for hepatitis C can slow or halt fibrosis progression, and potentially even reverse existing liver damage. Studies have shown that fibrosis stabilization and regression are most likely when HCV positive individuals treated with HCV therapy achieve a sustained virological response (SVR, continued undetectable HCV viral load six months after the completion of therapy), but improvement has also been seen in some partial responders and nonresponders.

It is very important to know the fibrosis stage or health of the liver so that the appropriate decisions can be made for managing hepatitis C. There are many steps people can take to help slow down HCV disease progression:

- Consider HCV medical treatments, which can slow disease progression and possibly reverse fibrosis.
- Get regular exercise and rest.
- Learn about and practice stress reduction measures.
- Eat a healthy, well-balanced diet that follows the USDA’s guidelines at www.choosemyplate.gov/. This diet is low in fat and salt, high in whole-grain products, and has enough protein. Protein is in meats, chicken, turkey, cheeses, nuts and beans.
- Don’t use recreational drugs.
- Don’t drink alcohol, or at the very least, limit how much you drink.
- Take your prescriptions as instructed by your doctor.

Measuring Fibrosis

There are many tests to measure fibrosis and cirrhosis. The most common test is the percutaneous liver biopsy. This outpatient procedure involves inserting a biopsy needle through the ribcage into the liver. It is usually preceded by an ultrasound to look for any nodules and to locate a section of the liver to remove a portion of liver tissue. The liver tissue sample is removed and examined by a pathologist who will issue a report on the health of the liver.

There are various non-invasive tests that are used to replace the liver biopsy. In 2013 the Food and Drug Administration (FDA) approved the Fibroscan. The Fibroscan is a machine that sends vibration waves through the liver to estimate the amount of scarring.

But since HCV treatment cure rates are approaching 90% many medical providers are less likely to perform a liver biopsy or Fibroscan unless there is evidence of serious disease progression or if insurance companies are requiring a test as a condition of approval of treatment.

For more information about liver biopsies and non-invasive markers of liver fibrosis see the HCSP fact sheets: Non-Invasive Markers of Liver Fibrosis and Fibroscan.
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- Be careful when mixing over-the-counter drugs, prescription drugs, herbal supplements, street drugs and/or alcohol.
- Stay away from poisonous liquids and fumes including solvents, paint thinners, and bug killers. If you have to use such chemicals, cover your skin, wear gloves and a mask and keep the windows open to allow air in.
- Do not eat raw or undercooked shellfish, which may have diseases that can be harmful to the liver.
- Ask your doctor to give you both the hepatitis A and the hepatitis B vaccinations.
- Become a strong self-advocate by learning as much as you can about hepatitis C.

Related publications:

- HCV Disease Progression: What is Acute Hepatitis C?  
  www.hcvadvocate.org/hepatitis/factsheets_pdf/Acute_HCV.pdf
- HCV Disease Progression: What is Cirrhosis  
- HCV Disease Progression: What is Steatosis  

For more information:

- Americans with Disabilities Act  
  www.ada.gov
- Centers for Disease Control and Prevention  
  www.cdc.gov
- National Cancer Institute:  
  www.cancer.gov
- Mayo Clinic  
  www.mayoclinic.com

Visit our websites to learn more about viral hepatitis:

www.hcvadvocate.org • www.hbvadvocate.org • www.hepatitistattoos.org

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