

# Noninvasive tests for cirrhosis may help to avoid liver biopsy

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Newer ultrasound and magnetic resonance (MR) imaging tests yield encouraging initial results in diagnosing fibrosis (scarring) and cirrhosis of the liver, according to three studies in the October issue of the journal *Clinical Gastroenterology and Hepatology*.

With further research, these and other non-invasive imaging techniques may reduce the need for biopsies—procedures done to obtain a tissue sample—to determine the presence and severity of fibrosis and cirrhosis.

Two of the three new papers evaluated techniques of elastography—tests that evaluate reactions to ultrasound vibrations or energy waves as a means of measuring the elasticity or stiffness of the liver tissue. Lower elasticity (or higher stiffness) corresponds to increased fibrosis or scarring. When fibrosis becomes severe, it signals the presence of cirrhosis.

Dr. Jayant A. Talwalkar and colleagues of Mayo Clinic College of Medicine, Rochester, Minn., analyzed the current evidence on ultrasound-based transient elastography—the approach that has received the most research attention to date. Based on data from 18 previous studies, the ultrasound test was highly accurate in identifying patients with cirrhosis, defined as severe (stage IV) fibrosis of the liver. About 90 percent of patients with cirrhosis were correctly identified by ultrasound-based transient elastography. The test was somewhat less accurate in detecting less-severe fibrosis.

Because the studies used differing cutoff points, the analysis could not establish the true accuracy of this emerging technology. The researchers highlight the need for additional high-quality studies including patients with liver fibrosis ranging from mild to severe.

Dr. Meng Yin and colleagues, also of Mayo Clinic College of Medicine, evaluated a different approach to measuring liver elasticity/stiffness: MR elastography. Although the principle is the same as with the ultrasound technique, MR elastography measures reactions to mechanical shear waves, rather than ultrasound vibrations.

The researchers performed MR elastography in 50 patients with chronic liver disease and 35 normal volunteers. The test was nearly 100 percent accurate in identifying patients with any degree of liver fibrosis, including those with mild fibrosis. With further study, Dr. Yin and colleagues believe MR elastography could be a useful initial test for fibrosis—avoiding the discomfort and risks of liver biopsy for many patients, while potentially increasing the reliability of diagnosis.

Dr. Chen-Hua Liu and colleagues of National Taiwan University Hospital, Taipei, evaluated a different ultrasound technique for measuring fibrosis. Using widely available duplex Doppler ultrasound equipment, they measured the characteristics of blood flow in the vessels in and around the liver in patients with chronic hepatitis C—an increasingly important cause of fibrosis and cirrhosis.

The results showed that a specific measure of blood flow in the spleen—the splenic artery pulsatility index (SAPI)—was highly accurate in identifying fibrosis and cirrhosis. The authors believe that, with further study, the SAPI could also be a useful indicator of fibrosis/cirrhosis in other groups of patients with kidney disease.

Cirrhosis and related complications are responsible for over 40,000 deaths per year in the United States, with direct health care costs of more than \$1 billion. Several trends are likely to produce further increases in death and disease from cirrhosis, including the aging of the population; the epidemic of obesity, which leads to nonalcoholic fatty liver diseases; and the emergence of liver disease among patients with chronic hepatitis C.

Traditionally, liver biopsy has been the "gold standard" technique for diagnosing fibrosis and cirrhosis. However, in addition to pain and a risk of bleeding and other complications, liver biopsy is a costly technique that is prone to sampling errors. The new non-invasive imaging techniques may provide a useful new set of tools not only for diagnosing liver fibrosis and cirrhosis, but also for evaluating the effectiveness of new treatments for early-stage fibrosis.

"Application of current imaging modalities may help to define the presence of cirrhosis and even fibrosis in patients with suspected liver disease," commented Dr. C. Mel Wilcox, Editor of CGH. "Using Doppler ultrasound and MRI, these investigators found these modalities to be accurate and reproducible in detecting fibrosis and cirrhosis. Look for more studies using these non-invasive imaging studies, and perhaps others in the future."

Source: Elsevier

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