

H29 New Test for Liver Disease

July 2007

Intro: Every day, doctors use ultrasound, CT scans and MRIs to see inside the body without making an incision. Those tests are great at showing size and structure, but they don't show important physical properties such as tissue stiffness, which, for example, is a sign of fibrosis in the liver. But researchers at Mayo Clinic have developed technology that uses sound waves to see if a patient's liver is harder than it should be – if it's developing fibrosis. It's called Magnetic Resonance Elastography, and it offers a non-invasive alternative to liver biopsy.

Video

Total running time 2:07

**Michelle Hamilton
Has Autoimmune Hepatitis**

Audio

MOST DAYS, MICHELLE HAMILTON GOES ABOUT TASKS WITHOUT THINKING ABOUT HER LIVER DISEASE.

“I HAVE AUTOIMMUNE HEPATITIS. IT'S A DISEASE WHERE YOUR BODY ATTACKS YOUR LIVER.” MOST OF THE TIME IT'S SILENT, BUT OCCASIONALLY THIS CHRONIC DISEASE FLARES, CAUSING FATIGUE AND JAUNDICE. THEN MICHELLE HAS A BIOPSY TO SEE IF THE FLARE UP CAUSED FIBROSIS OR STIFFENING OF HER LIVER.

Michelle Hamilton

“IT’S NOT SOMETHING I LOOK FORWARD TO DOING.” BUT THE LAST TIME, INSTEAD OF A BIOPSY, MICHELLE HAD A NEW PROCEDURE DEVELOPED AT MAYO CLINIC CALLED MAGNETIC RESONANCE ELASTOGRAPHY, OR MRE. IT COMBINES MRI TECHNOLOGY AND LOW FREQUENCY SOUND WAVES.

**Richard Ehman, M.D.
Mayo Clinic Radiologist**

“THIS IS AN IMAGE OF THE UPPER ABDOMEN. THIS VERY LARGE ORGAN IS THE LIVER. LOOKING AT THIS LIVER WITH REGULAR MRI, IT’S NOT POSSIBLE TO TELL WHETHER THIS PERSON HAS FIBROSIS.”

BUT MAYO CLINIC RADIOLOGIST DR. RICHARD EHMAN DEMONSTRATES THAT WHEN USED DURING AN MRI, THE NEW MRE TECHNOLOGY SHOWS, ON A COLOR SCALE, THE STIFFNESS OF

Richard Ehman, M.D.
Mayo Clinic Radiologist

A LIVER. HERE'S HOW IT WORKS:
"THIS DRUM GENERATES WAVES IN
THE ABDOMEN."

THE DRUM IS PLACED ON THE
PATIENT'S ABDOMEN. THE SOUND
WAVES MOVE THROUGH STIFF
TISSUE AND SUPPLE TISSUE AT
DIFFERENT RATES. A COMPUTER
ANALYZES THE DIFFERENCES AND
SHOWS WHAT IS HEALTHY, SOFT
TISSUE AND WHAT IS NOT. LIKE IN
THIS OTHER PATIENT.

Richard Ehman, M.D.
Mayo Clinic Radiologist

"THIS SHOWS THE SOUND WAVES
MOVING THROUGH THE TISSUES
OF THE UPPER ABDOMEN. THIS IS
THE FINAL PRODUCT OF THIS
DIAGNOSTIC TEST. IT'S CALLED AN
ELASTOGRAM."

AND IT SHOWS IF A PATIENT HAS
FIBROSIS AND WHERE IT IS IN THE
LIVER. BEING ABLE TO SEE THE
WHOLE LIVER IN THIS WAY – NOT
JUST THE SITE WHERE THE

Standup
Vivien Williams
Reporting

BIOPSY WAS TAKEN – MAY HELP
DOCTORS DECIDE WHAT TO DO
NEXT.

Jayant Talwalkar, M.D.
Mayo Clinic Hepatologist

“IT CAN GIVE US AN IDEA OF HOW
TO PROCEED WITH TREATMENT.”
DR. JAYANT TALWALKAR SAYS
TREATMENT FOR MICHELLE WHO
HOPES TO NEVER UNDERGO AN
INVASIVE BIOPSY AGAIN. FOR
MEDICAL EDGE, I'M VIVIEN
WILLIAMS.

Anchor tag:

Michelle's liver is still healthy – she does not have fibrosis. She said in addition to being easy to go through the procedure was sort of like having a massage.

Many liver diseases including autoimmune Hepatitis, Hepatitis C and alcoholism can lead to fibrosis. And if the condition is not successfully treated the disease can progress to cirrhosis, for which the only treatment is liver transplantation. MRE is another tool in the fight against the progression of these diseases.

And Dr. Ehman says future uses of MRE may include imaging the breast, prostate and other organs.

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