New radiological procedure for the diagnosis of liver disease

June 19 2018

Universitätsmedizin Berlin have successfully tested a new technology for use in the assessment of overweight adolescents with liver disease. Known as 'time-harmonic elastography' (THE), the technology enables physicians to determine the disease's severity without having to resort to invasive liver biopsies. The results of this research have been published in *Radiology*.

Nonalcoholic fatty liver disease is the most common chronic liver disease in overweight adolescents. In most cases, the disease will remain stable for decades without causing significant impairment of liver function. If the disease progresses, persistent inflammation in the liver will cause the formation of excess connective tissue—a stage known as liver fibrosis. Eventually, the disease may damage the liver's entire cellular structure, resulting in liver cirrhosis.

"Time-harmonic elastography is a new, ultrasound-based technology used to measure liver fibrosis. It works without the need for invasive liver biopsies," explains Dr. Christian Hudert, a pediatric gastroenterologist from Charité's Center for chronically sick children (SPZ). Until now, the grading and staging of liver disease has only been possible through the analysis of tissues taken at biopsy. Elastography is capable of visualizing differences in the elasticity of different tissues. In patients with liver fibrosis, excess connective tissue causes the liver to be stiffer than a normal liver and means that liver stiffness constitutes a measure of disease progression.

The trolley on which the patient is positioned during their examination is a special and defining characteristic of Charité's THE technology. This trolley produces vibrational waves, which are not unlike those produced by a massage chair. Using ultrasound technology, these waves are then measured inside the liver tissue, thus providing information on liver stiffness. In contrast to previous elastography techniques, this technology is capable of taking measurements at greater tissue depths, making it particularly suitable for use in obese patients.

This study used the newly-developed technology to examine 67 adolescents with nonalcoholic fatty liver disease. Liver stiffness measurements were used to determine the degree of fibrosis present. Summing up the study's findings, Dr. Hudert explains: "The THE technology was shown to be capable of accurately distinguishing between patients with no fibrosis or mild fibrosis and patients with moderate or advanced fibrosis." Should the technology prove successful in further studies, it may eventually reduce the need for patients to undergo invasive liver biopsies. The THE method is also particularly suitable for use in the long-term monitoring of patients and may help to verify the success of weight loss treatment options as well as their impact on the outcome of liver disease.

More information: Christian A. Hudert et al, US Time-Harmonic Elastography: Detection of Liver Fibrosis in Adolescents with Extreme Obesity with Nonalcoholic Fatty Liver Disease, *Radiology* (2018). DOI: 10.1148/radiol.2018172928

Provided by Charité - Universitätsmedizin Berlin

Citation: New radiological procedure for the diagnosis of liver disease (2018, June 19) retrieved 19 April 2024 from

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.