New tool to identify persons with nonalcoholic fatty liver disease

July 13 2016

Researchers have developed a diagnostic model that is highly predictive of nonalcoholic fatty liver disease (NAFLD). Referred to as the Framingham Steatosis Index (FSI), this novel model may become a cheaper and easier alternative to screen for liver fat, the major feature of this condition.

With the increasing rates of obesity, NAFLD is now the most common chronic liver disease in the United States, with 10-35 percent of the general population affected. Other risk factors for NAFLD include type 2 diabetes mellitus, elevated triglycerides and the metabolic syndrome. Currently, the diagnosis of NAFLD requires evidence of hepatic steatosis (fatty liver) on computed tomography (CT) scans or liver biopsy - both of which are costly, burdensome and impractical to implement on a large scale. NAFLD has been linked to developing advanced liver and cardiovascular disease. With such a large population at risk for NAFLD, there is an urgent need for non-invasive tools to assist clinicians in diagnosing NAFLD.

Using data from the Framingham Heart Study (FHS) researchers performed a cross-sectional study of more than 1,000 members of the Framingham Third Generation Cohort. FHS participants with fatty liver disease were identified by abdominal CT scans. Researchers evaluated a comprehensive list of demographic, clinical and laboratory parameters including liver enzymes such as alanine aminotransferase (ALT) and aspartate aminotransferase (AST) and the ratio of AST:ALT to identify people with hepatic steatosis.

The data was analyzed to find a set of predictors of hepatic steatosis. The researchers found that a model that includes age, gender, hypertension, triglyceride levels, diabetes and the ratio of AST:ALT correlated with NAFLD. The FSI was then externally validated and was found to be an effective surrogate diagnostic index for NAFLD. The findings appear in the journal *Clinical Gastroenterology and Hepatology*.

"Clinically, the FSI may be useful to help identify NAFLD patients or those at high risk for steatosis who may benefit from abdominal imaging. Additionally, the ALT:AST ratio may be considered a useful surrogate for hepatic steatosis (versus either ALT or AST alone) especially for future population-based studies," explained corresponding author Michelle Long, MD, assistant professor of medicine at Boston University School of Medicine (BUSM), who is also a gastroenterologist at Boston Medical Center (BMC).

Provided by Boston University Medical Center