

DIAGNOSIS

New noninvasive test to diagnose NASH by analysing exhaled breath

A research team from The Netherlands has developed a new noninvasive test that measures volatile organic compounds in exhaled breath to diagnose NASH.

“Histological evaluation of liver biopsies is the gold standard for diagnosis of NASH, but this procedure is associated with morbidity and high costs,” explains author Sander Rensen. “Hence, only patients at high risk are biopsied, leading to undertreatment and increased mortality.” By developing a noninvasive test, the authors aimed to address this unmet need.

The researchers used gas chromatography–mass spectrometry to analyse breath samples from 65 obese or overweight patients undergoing surgery. Liver biopsy samples confirmed that 39 patients had NASH and 26 did not have NASH. Results from the breath test were compared to the biopsy results and plasma levels of transaminases.

Levels of three volatile organic compounds (*n*-tridecane, 1-propanol

and 3-methyl-butanonitrile) in exhaled breath were found to distinguish between patients who did or did not have NASH. The positive and negative predictive values indicate that this test is accurate in >80% of patients, which is much higher than tests that use plasma levels of transaminases. The breath test reduced the percentage of undiagnosed patients from >60% to 10%, and of misdiagnosed patients from 50% to 18% compared with measuring plasma levels of transaminases.

The authors conclude that breath analysis has the potential to guide treatment of hepatic disease, but note that their results need to be validated. A small handheld device could then be developed to diagnose NASH.

Claire Greenhill

Original article Verdam, F. J. *et al.* Non-alcoholic steatohepatitis; a non-invasive diagnosis by analysis of exhaled breath. *J. Hepatol.* doi:10.1016/j.jhep.2012.10.030