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NAFLD

A gut microbiome signature for advanced fibrosis diagnosis in NAFLD

Abundances of specific gut microbiota species can accurately predict advanced fibrosis in patients with NAFLD, according to new research.

The identification of noninvasive biomarkers to diagnose and stage NAFLD has become a a key research priority, owing to the rapidly increasing NAFLD prevalence and the inherent risks of liver biopsy. Liver fibrosis, which occurs in the later stages of progressive NAFLD, is strongly associated with liver-related events and long-term outcomes, meaning that early identification of liver fibrosis could improve management and treatment of patients. The explosion of research on the gut microbiota in the past decade has revealed associations between gut microbiota dysbiosis and NAFLD risk and severity. Accordingly, Loomba and colleagues sought to identify gut microbial features that could accurately predict advanced fibrotic liver disease.

The prospective cohort study included 86 patients with biopsy-proven NAFLD, of which 72 had stage 0–2 fibrosis and 14 had stage 3–4 advanced fibrosis. Using whole-genome shotgun sequencing of stool DNA samples, the researchers determined the abundance of individual bacterial species, and then constructed a diagnostic classifier model containing the most important predictors of fibrosis severity. The final model possessed an area under the receiver operating characteristic curve (AUROC) of 0.936 for detecting advanced liver fibrosis, and comprised patient age, Shannon diversity, BMI and the stool abundances of 37 gut microbe species.

Although they acknowledge that development of a test to identify NAFLD-associated liver fibrosis in clinical settings represents a substantial challenge, the investigators believe that a gut microbiome signature derived from stool could be an alternative to current noninvasive diagnostic modalities. "The metagenomics signature may also be used in conjunction with other non-invasive serum/plasma or imaging-based tests to detect fibrosis, advanced fibrosis, and cirrhosis," the authors write.

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ORIGINAL ARTICLE Loomba, R. *et al.* Gut microbiome-based metagenomic signature for non-invasive detection of advanced fibrosis in human nonalcoholic fatty liver disease. *Cell Metab.* **25**, 1054–1062 (2017)