Source : www.thehindu.com Date : 2018-08-12

COUNTING ON A NEW TEST

Relevant for: Science & Technology | Topic: Biotechnology, Genetics & Health related developments

A newly discovered biomarker in human urine may help clinicians predict the success of treatment for patients of Severe Alcoholic Hepatitis (SAH). This will help avert risks involved in giving the standard steroid treatment to patients who are not likely to benefit from it.

SAH, which is caused due to chronic alcohol abuse, progresses fast and results in death in 60% of cases. Unlike Hepatitis B and C, which are treatable with drugs, therapeutic options for SAH patients are limited. Corticosteroid therapy is available but not all patients respond to it. Those who do not respond to steroid therapy have a high risk of infections and may die within three months. That's why patients need to be classified clinically to predict their likely response to steroid treatment.

The study

In the new study at the New Delhi-based Institute of Liver and Biliary Sciences (ILBS), scientists collected baseline data about urine metabolome (the range of the metabolic products) in 140 patients with SAH using ultra-high-performance liquid chromatography and high-resolution mass spectrometry.

They were put on steroid treatment and categorised as responders and non-responders based on a parameter called the Lille score after one week of treatment. Further analysis identified certain urine metabolites that were significantly higher in non-responders.

A total of 212 features were annotated and identified using various metabolomics and biochemical databases for metabolite identification. The analysis helped zero in on nine urinary metabolites prominent in non-responders. These significantly correlated with severity indices (like MELD or Model of End stage Liver Diseases) and mortality.

Based on all this data and analysis, researchers have concluded that one particular urinary metabolite — acetyl-L-carnitine — can be used as a biomarker to predict non-response. "Acetyl-L-carnitine at a level of less than 2,500 nanogram per millilitre could reliably segregate survivors from non-survivors," said Jaswinder Singh Maras, who conducted the study.

"We also assessed if changes in urine metabolome in patients with SAH were linked to alterations in liver gene expression. This highlighted that the change observed in the urine metabolome corresponds to liver anomaly," he added.

Window of opportunity

"Acetyl-L-carnitine is a noninvasive marker and its quantitation in the urine of SAH patients could help clinicians categorise (baseline) patients who have high predisposition to non-response and non-survival. This could provide a window of opportunity to clinicians to treat these patients differently as compared to those who may respond to treatment," said Dr. Shiv Kumar Sarin, director of the ILBS.

Scientists at the ILBS now plan to customise a dipstick test which will be cost effective for prediction of non-response to corticosteroid therapy and survival chances of patients.

“This study is the first demonstration of the utility of urine to determine treatment responsiveness in SAH. These findings could form the basis for the development of a cost-effective dipstick screening test for restricting steroid use to patients with a good likelihood of responding. Such a urine test for SAH could provide a practical point-of-care assessment that may delineate metabolic changes, predict mortality, and potentially personalise treatment strategies,” according to Dr. Shilpa Chokshi, Institute of Hepatology, Foundation for Liver Research, U.K.

However, she said, the findings needed to be confirmed and replicated with patients from different centres worldwide. In addition to Dr. Sarin and Dr. Maras, the research team included Dr. Sukanta Das, Dr. Shvetank Sharma, Dr. Saggere M. Shasthry (ILBS, New Delhi), Dr. Benoit Colsch, Christophe Junot, (Department of Pharmacology and Immunoanalysis, CEA-Saclay, University of Paris) and Richard Moreau (Center for Research on Inflammation, Paris). The results of the study have been published in the journal *Hepatology Communications*. — India Science Wire

Report cites lack of supportive work environment, inadequate skills of health care providers

This finding is important, given that the mite-borne disease can be treated easily if doctors look for it early

END