AMMON-OHE: A MACHINE LEARNING MODEL TO PREDICT OCCURRENCE OF OVERT HEPATIC ENCEPHALOPATHY IN PATIENTS WITH CIRRHOSIS

DESCRIPTION OF THE TECHNOLOGY

Overt hepatic encephalopathy (OHE) is a severe complication of cirrhosis associated with increased ammonia levels due to liver failure or the presence of portosystemic shunts. OHE has a high impact on the patient's quality of life. In addition, it has been associated with increased hospitalisations and mortality. The prediction of OHE using current neuropsychometric tests is a challenge. Thus, new readily available diagnostic tools are needed.

Researchers from INCLIVA and University College London (UCL) have developed a mathematical prognostic model developed by machine learning, denoted AMMON-OHE (Fig.1). This model accurately predicts the probability of developing OHE in patients with cirrhosis based on gender, diabetic status, albumin, creatinine and ammonia normalised to the upper limit of normal. AMMON-OHE.

This advantageous approach uses routinely available data. Compared to existing neuropsychometric tests, AMMON-OHE has superior performance, with potential to replace current gold standard approaches to predict OHE. By identifying high-risk patients, AMMON-OHE enables proactive preventive therapy, potentially reducing morbidity, mortality and associated costs. In addition, as a complementary biomarker, AMMON-OHE can monitor treatment and avoid unnecessary interventions, further improving patient outcomes.

APPLICATION

Companies specialized in medical devices for OHE risk prediction.

ADVANTAGES

- ✓ Greater diagnostic accuracy than current neuropsychometric tests.
- ✓ Broad applicability, as it is suitable for a variety of clinical settings, including outpatient, hospital and emergency departments.
- ✓ Predictive modelling using readily available clinical and laboratory data.
- ✓ Potential as a predictive biomarker of OHE for therapeutic interventions.

STATE OF DEVELOPMENT

Model developed to accurately predict which patients with cirrhosis will develop OHE within up to five years. Work is currently underway to determine which patients with decompensated cirrhosis are likely to develop OHE during hospitalisation and whether it functions as a biomarker to select patients for preventive therapies.

INTELLECTUAL PROPERTY RIGHTS

UK Patent Application GB202303652A with priority date 13 March 2023 and PCT/G2024/050668 applied on 12 March 2024.

COLABORATION SOUGHT

Biotech or software companies interested in signing a licensing agreement or co-developing this technology.

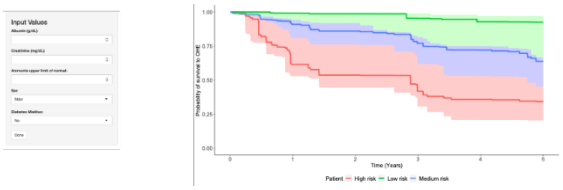

Fig. 1. AMMON-OHE model.

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