[1]*Sorbonne University, Brain and Spine Institute – Institut du Cerveau et de la Moelle Epinière, ICM, Inserm U 1127, CNRS UMR 7225, Assistance Publique-Hôpitaux de Paris, Pitié-Salpêtrière Charles Foix Hospital, Department of Neurology, Neurological Intensive Care Unit, Paris, France*
[2]*Sorbonne Université, Brain Liver Pitié-Salpêtrière (BLIPS) Study Group, INSERM UMR_S 938, Centre de recherche Saint-Antoine, Maladies métaboliques, biliaires et fibro-inflammatoire du foie, Institute of Cardiometabolism and Nutrition (ICAN), Assistance Publique – Hôpitaux de Paris, Groupement Hospitalier Pitié-Salpêtrière-Charles Foix, Service d'hépato-gastroentérologie, Service d'hépatologie, Unité de Soins Intensifs d'Hépato-gastroentérologie, Paris, France*
[3]*Sorbonne Université, Brain Liver Pitié-Salpêtrière (BLIPS) Study Group, Assistance Publique – Hôpitaux de Paris, Groupement Hospitalier Pitié-Salpêtrière-Charles Foix, Service de neuroradiologie, Paris, France*
[4]*Sorbonne Université, Brain Liver Pitié-Salpêtrière (BLIPS) Study Group, INSERM UMR_S 938, Centre de recherche Saint-Antoine, Maladies métaboliques, biliaires et fibro-inflammatoire du foie, Institute of Cardiometabolism and Nutrition (ICAN), Assistance Publique – Hôpitaux de Paris, Groupement Hospitalier Pitié-Salpêtrière-Charles Foix, Département de Neurologie, Unité de réanimation neurologique, Paris, France*
*Corresponding author. Address: Sorbonne Université, Unité de réanimation neurologique, Département de neurologie, Groupe hospitalier Pitié-Salpêtrière Charles Foix, Assistance Publique-Hôpitaux de Paris, 47-83 boulevard de l'hôpital, 75013 Paris Cedex 13, France; Tel.: +33(0)1.42.16.27.70, Fax: +33(0)1.42.16.19.89.
E-mail address: nicolas.weiss@aphp.fr

Reply to: "Magnetic resonance spectroscopy: A surrogate marker of hepatic encephalopathy?"

To the Editor:

We have read the Letter by Hermann *et al.*[1] in detail in which they summarize their ^{1}H-MRS findings in a cohort of adult patients with cirrhosis. Their study suggests that abnormal ^{1}H-MRS using clinically available magnets is highly predictive of abnormal psychometric tests in a population with compensated liver disease (median model for end-stage liver disease score of 10). What's more, an abnormal spectrum appeared to be more predictive of HE than the hallmark finding of hyperintense signal in the T_1 weighted sequences. We are confident that this interesting clinical observation is auspicious for forthcoming studies using higher resolution spectroscopy, following the advent of 7 Tesla magnets in the clinical arena, which will lead to the detection of additional metabolites, as shown by our pre-clinical study performed at 9.4 Tesla.[2] Finally, a series of consensus recommendations on clinical ^{1}H-MRS are now available,[3,4] recommending appropriate methodology to improve the quality of future MRS studies and increase MRS standardization, with the final aim of improving the clinical utility of MRS.

Financial support

Financial support was provided by the SNSF project no 310030_173222/1, the EU: FP7-PEOPLE-2012-ITN project 316679 TRANSACT and by the CIBM (UNIL, UNIGE, HUG, CHUV, EPFL, as well as the Leenaards and Jeantet Foundations), the CHUV and the HUG.

Conflict of interest

The authors declare no conflicts of interest that pertain to this work.

Please refer to the accompanying ICMJE disclosure forms for further details.

Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jhep.2019.08.003.

References

Author names in bold designate shared co-first authorship

[1] Hermann B, Rudler M, Galanaud D, Thabut D, Weiss N. Magnetic resonance spectroscopy: a surrogate marker of hepatic encephalopathy?. J Hepatol 2019;71:1055–1057.
[2] **Braissant O**, **Rackayová V**, Pierzchala K, Grosse J, McLin V, Cudalbu C. Longitudinal neurometabolic changes in the hippocampus of a rat model of chronic hepatic encephalopathy. J Hepatol 2019;71:505–515. https://doi.org/10.1016/j.jhep.2019.05.022.
[3] Oz G, Alger JR, Barker PB, Bartha R, Bizzi A, Boesch C, et al. Clinical proton MR spectroscopy in central nervous system disorders. Radiology 2014;270:658–679. https://doi.org/10.1148/radiol.13130531.
[4] Wilson M, Andronesi O, Barker PB, Bartha R, Bizzi A, Bolan PJ, et al. Methodological consensus on clinical proton MRS of the brain: review and recommendations. Magn Reson Med 2019;82:527–550. https://doi.org/10.1002/mrm.27742.

Valérie A. McLin[1]
Olivier Braissant[2]
Cristina Cudalbu[3,*]
[1]*Swiss Pediatric Liver Center, Department of Pediatrics, Gynecology and Obstetrics, University Hospitals Geneva, and University of Geneva Medical School, Switzerland*
[2]*Service of Clinical Chemistry, University of Lausanne and University Hospital of Lausanne, Lausanne, Switzerland*
[3]*Centre d'Imagerie Biomedicale (CIBM), Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland*
Corresponding author. Address: Centre d'Imagerie Biomedicale (CIBM), Ecole Polytechnique Fédérale de Lausanne (EPFL), Lausanne, Switzerland. Tel.: +41216937685.
E-mail address: cristina.cudalbu@epfl.ch