subsets, points towards major differences in the immune mechanisms and pathogenesis between ICB-Hepatitis and AIH. Our results indicate T-cell-myeloid interactions as likely drivers of ICB-Hepatitis.

GS004

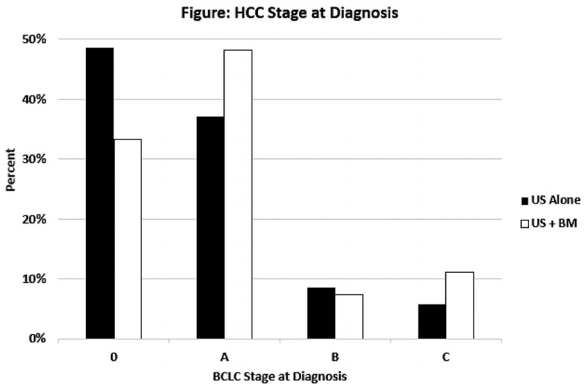
Prospective randomized controlled trial of biomarkers for early detection of hepatocellular carcinoma

Hooman Farhang Zangneh[1], Orlando Cerocchi[1], Korosh Khalili[2], Lima Awad El-Karim[2], Mara Vecchio[3], Jeffrey Winick[3], Yasuhiro Mori[4], Hiroyuki Yamada[4], Harry Janssen[1], Bettina Hansen[1,5], Morris Sherman[1], Jordan Feld[1]. *[1]University Health Network, Toronto General Hospital, Toronto Centre for Liver Disease, Toronto, Canada; [2]University Health Network, Joint Department of Medical Imaging, Toronto, Canada; [3]Fujifilm Healthcare Americas Corporation, United States; [4]Fujifilm Wako Pure Chemical Corporation, Osaka, Japan; [5]University of Toronto, Institute of Health Policy, Management and Evaluation, Toronto, Canada*
Email: jordan.feld@uhn.ca

Background and aims: Surveillance for hepatocellular carcinoma (HCC) is key to early diagnosis and access to potentially curative therapy. Small studies have suggested that addition of serum biomarkers (BM) to 6-monthly ultrasound (US) surveillance may allow for earlier HCC diagnosis. Prospective validation of the utility of BMs is lacking.

Method: Adults with cirrhosis or high-risk HBV infection (REACH-B score >8) followed at the Toronto Centre for Liver Disease were randomized to HCC surveillance with US alone (Group A) or US + BM (Group B) with measurement of alpha-fetoprotein (AFP), lectin-reactive fraction of AFP (AFP-L3) and des-gamma-carboxy prothrombin (DCP). Elevated BM levels and/or findings on US triggered CT/MRI for confirmation of HCC diagnosis. The primary outcome was the proportion of HCCs diagnosed at a curable stage (BCLC 0/A) within Milan criteria. Cox regression was used to evaluate the association of the GALAD score (BM + age/sex) with HCC.

Results: 1, 208 patients were enrolled with median age 59 (18–88) years; 72% were male. HBV and HCV were the most common underlying liver diseases (64% and 21%, respectively) and 770 (64%) were cirrhotic. In Group A, after a median follow-up of 34 (1.2–70.4) months and 9.2 US per patient, 35 HCCs were diagnosed, 31 (87%) in cirrhotics, of which the BCLC was 0 for 17 (49%), A for 13 (37%), B for 3 (9%) and C for 2 (6%). In Group B, after a median follow-up of 19 (0.1–60.4) months and 7.9 US per patient, 27 HCCs were diagnosed, 24 (89%) in cirrhotics, of which BCLC was 0 for 9 (33%), A for 13 (48%), B for 2 (7%) and C for 3 (11%). In Group A, 30/35 (86%) HCCs were diagnosed at a curable stage (BCLC 0/A), compared to 22/27 (81%) in group B ($p = 0.63$) (Figure). In group A, 32 (91%) HCCs were identified first by the study US, while 3 (9%) were found incidentally by imaging done for other reasons with a negative prior study US giving an overall sensitivity for US of 27/35 (77%). In group B, 21 (78%) HCCs were evident on US and 9 (33%) were associated with elevated BM of which 6 (22%) were found by BM with a negative corresponding US. Of these 6, BCLC was 0 for 2, A for 3 and C for 1, confirming that curable HCCs may be identified by BM when US is negative. The GALAD score was associated with HCC risk (HR 1.86, $CI_{95\%}$ 1.48–2.32, $p < 0.001$). The previously identified threshold of >-0.63 was associated with increased HCC risk (HR 6.05, $CI_{95\%}$ 2.4–15.3, $p < 0.001$) and 3 of the 5 advanced (BCLC B/C) HCCs in the BM group would have had imaging triggered by GALAD >–0.63 at an earlier visit.



Conclusion: The probability of diagnosing HCC in a curable stage was similar with US and US + BM. However, some HCCs were diagnosed by elevated BM with a negative US and the GALAD score may have identified additional HCCs earlier. Further analyses will determine if certain patient populations may benefit from use of these BM in routine HCC surveillance.

GS005

Development and validation of the gender-equity model for liver allocation (GEMA) to prioritize liver transplant candidates

Manuel Rodríguez-Perálvarez[1], Antonio M. Gómez-Orellana[2], Avik Majumdar[3], Geoff McCaughan[3], Paul Gow[4], David Guijo-Rubio[2], César Hervás[2], Michael Bailey[5], Emmanuel Tsochatzis[6]. *[1]Hospital Universitario Reina Sofía, University of Córdoba, IMIBIC, CIBERehd, Department of Hepatology and Liver Transplantation, Córdoba, Spain; [2]University of Córdoba, Department of Computer Science and Numerical Analysis, Córdoba, Spain; [3]Royal Prince Alfred Hospital, Morrow Gastroenterology and Liver Centre and Australian National Liver Transplant Unit, Sydney, Australia; [4]The University of Melbourne, Austin Health, Victorian Liver Transplant Unit, Melbourne, Australia; [5]Australian and New Zealand Intensive Care Research Centre (ANZIC RC), Department of Epidemiology and Preventive Medicine, Melbourne, Australia; [6]Royal Free Hospital and University College London (UCL), Sheila Sherlock Liver Unit and UCL Institute for Liver and Digestive Health, London, United Kingdom*
Email: ropeml@hotmail.com

Background and aims: The model for end stage liver disease (MELD) and its sodium-corrected variant (MELD-Na) have created gender disparities in accessing liver transplantation (LT). We derived and validated a new model that replaced creatinine with the Royal Free glomerular filtration rate (PMID: 27779785) within the MELD and MELD-Na formulas.

Method: The "Gender-Equity Model for liver Allocation" (GEMA) and its sodium-corrected variant (GEMA-Na) were trained and internally validated in adults listed for LT in the United Kingdom (2010–2020) using generalized additive multivariate Cox regression. The models were externally validated in an Australian cohort (1998–2020). The primary outcome was mortality or delisting due to clinical deterioration at 90 days. The Greenwood-Nam-D'Agostino test was used to test calibration.

Results: The study comprised 9, 320 patients: 5, 762 patients for model training, 1, 920 patients for internal validation, and 1, 638 patients for external validation. The prevalence of the primary outcome ranged from 5.3% to 6%. In the internal validation cohort, GEMA and GEMA-Na showed a Harrell's c-statistic = 0.752 and 0.766, respectively, for the primary outcome, which were significantly higher than those of the MELD score (0.712) and the MELD-Na score (0.742). Results were consistent in the external validation cohort. Among women, these differences were more pronounced (see Harrell's c-statistics in the table). GEMA and GEMA-Na were adequately calibrated and prioritized differently 43.9% and 41.8% of