Poster # 648

MR Elastography Detects Higher Liver Fibrosis in Uncontrolled HIV Infection in the MASH Cohort

Baum MK[1], Martinez SS[1], Ehman R[2], Sherman KE[3], Greer PJ[1], Chen J [2], Laird R[1], Laird A[2], Seminario L[1], Johnson A[1], Alohaly A[1], Mudgal M[1], Sneij A[1], Tamargo J[1], Campa A[1]

1. Florida International University, Miami, Florida, USA; 2. Mayo Clinic, Rochester, Minnesota, USA
3. University of Cincinnati, Cincinnati, Ohio, USA

Marianna K Baum, PhD
Florida International University
11200 SW 8th Street, AHC-5 327
Miami, FL 33199
Phone: 305-348-2888
Email: baumm@fiu.edu

BACKGROUND

Magnetic Resonance Elastography (MRE) is a non-invasive, highly accurate method to assess hepatic fibrosis, which is needed for therapeutic decisions or predicting disease outcomes (Huwart et al., 2006; Huwart et al., 2007; Rouviere et al., 2006; Yin et al., 2014). Studies to date have reported contradictory results regarding association between HIV mono-infection and liver fibrosis, possibly due to the difficulty in obtaining liver biopsies and using less accurate non-invasive indicators of liver disease in this population (Crum-Cianflone et al., 2009; Blackard et al., 2011; Anadol et al., 2018). The objective of this study was to examine the relationship between the extent of liver fibrosis in HIV mono-infected and un-infected adults in the Miami Adult Studies in HIV (MASH) cohort.

METHODS

Data presented here have been updated from the submitted abstract. After consenting, 228 HIV mono-infected and 115 HIV/HBV/HCV un-infected adults from the Miami Adult Studies in HIV (MASH) cohort, an observational cross-sectional study was conducted. Demographics were collected and CD4 cell count and HIV viral load were obtained from medical charts. Controlled HIV viral load was defined as having <400 copies/mL. MRE was conducted on a 3T Siemens MAGNETOM Prisma MRI and mean stiffness of the liver was calculated through an inversion algorithm that

METHODS (Cont.)

generates elastogram/stiffness maps of the tissue in kilopascals. Statistical analyses were completed using frequencies, Wilcoxon Two-Sample test and regression models.

RESULTS

Table 1: Population Statistics

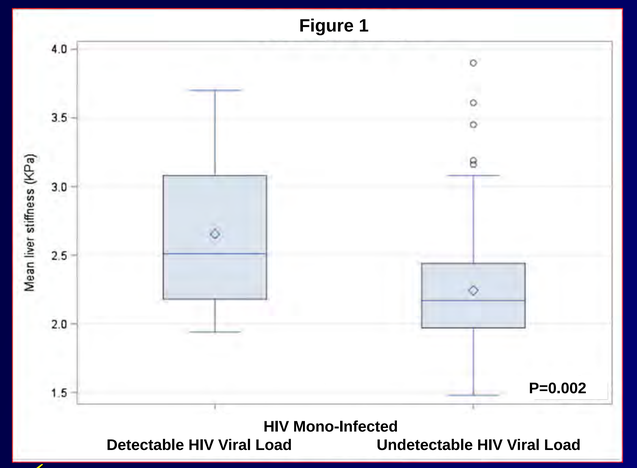
Characteristic	HIV Mono-Infected N=228	HIV Sero-negative N=115
Age, years	53 (49-59)	55 (49-61)
Male Gender[a] n(%)	132 (57.9)	57 (49.6)
Race Ethnicity[a] n(%)		
White Non-Hispanic	11 (4.8)	12 (10.4)
White Hispanic	49 (21.5)	24 (20.9)
Black Non-Hispanic	150 (65.8)	72 (62.6)
Black Hispanic	2 (0.9)	4 (3.5)
Other	16 (7.0)	3 (2.6)
Detectable HIV Viral Load[a] n(%)	25 (11.0)	------
Laboratory Values	Median (IQR)	
CD4 Cell Count, cells/μL	513.5 (335-804)	------
HIV Viral Load, copies/mL	2.1 (1.7-3.5)	------
MRE Stiffness Score, kPa	2.2 (2.0-2.5)	2.2 (1.9-2.5)
BMI, kg/m^2	28.6 (24.9-32.5	29.5 (24.8-34.0)

✓ The median age of the HIV infected groups was 53 years (IQR=49-59) and of the un-infected group was 55 years (IQR=49-61). About half were male in both groups, 57.9% and 49.6% respectively, and the majority were African American, 65.8% and 62.6%, respectively. Of those with HIV, 11% had detectable viral load.

RESULTS (Cont.)

✓Among HIV infected participants, those who had undetectable HIV viral load had lower mean liver stiffness compared to those with detectable HIV viral load [2.170 kPa (IQR=1.970-2.440) vs. 2.510 kPa (IQR=2.180-.3.080), P=0.002) (Figure 1).

Figure 1: Comparison of MRE stiffness score between HIV mono-infected with undetectable HIV viral load and detectable HIV viral load



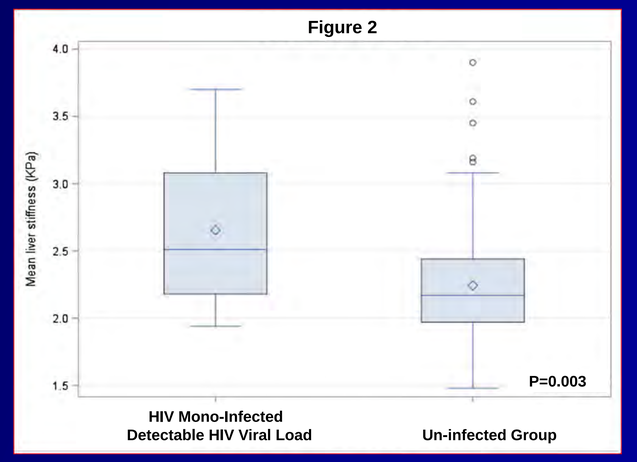
✓Those who had detectable HIV viral load had a significantly higher mean liver stiffness compared to the un-infected group 2.510 kPa (IQR=2.180-.3.080) vs. 2.185 kPa (IQR=1.940-2.450), P=0.003] (Figure 2).

✓In a regression analysis, those with detectable HIV viral load had significantly higher mean liver stiffness than those with undetectable HIV viral load (β=0.409, SE=0.140, P=0.004) after controlling for age, BMI, and CD4 cell count .

RESULTS (Cont.)

✓There were no significant difference in MRE stiffness between HIV infected with undetectable viral load and the un-infected group. Additionally, there were no differences in MRE liver stiffness by gender.

Figure 2: Comparison of MRE Stiffness Score between HIV mono-infected with detectable viral load and HIV un-infected group



CONCLUSIONS

MRE, an accurate, non-invasive method to detect liver fibrosis in a cohort of HIV infected and HIV/HBV/HCV un-infected adults, shows that detectable HIV viral load is associated with more advanced liver fibrosis than when HIV viral load is undetectable or when patients are not infected. These results indicate a deleterious effect of the HIV virus on the liver and confirm earlier reported analyses using FIB-4 to estimate liver fibrosis in similar cohorts.

Supported By: National Institute on Drug Abuse, Grant # U01DA040381