A comparison of risk factors among HIV-infected adults with and without Hepatic Steatosis at Lagos University Teaching Hospital, Nigeria

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Background

- Non-Alcoholic Fatty Liver Disease (NAFLD) is the presence of intrahepatic fat of at least five percent of liver weight in the absence of competing liver disease etiologies.
- Spectrum of NAFLD includes hepatic steatosis, non-alcoholic steato-hepatitis with/without fibrosis (NASH), and cirrhosis.
- NAFLD is increasingly recognized as an important cause of liver disease in persons living with HIV (PLH).
- Abdominal ultrasonography can be used to assess hepatic steatosis, and is currently the most feasible and accessible screening tool for NAFLD in Africa.

Objective

- To determine the prevalence of hepatic steatosis in Nigerian PLH using abdominal ultrasonography, and determine associated risk factors.

Methods

- Cross-sectional descriptive study of HIV-infected adults >18 years HIV clinic and enrolled in an NCI-funded study at Lagos University Teaching Hospital between 11/18-2/20 examining biomarkers of HIV-associated hepatocellular cancer (HCC)
- Subjects with HCC were excluded.
- Demographic, clinical and laboratory data were compared between HIV-infected subjects with and without hepatic steatosis.
- Hepatic steatosis was defined as the presence of a hyperechoic liver on abdominal ultrasonography.
- All analyses were conducted using R version 4.0.2.

Acknowledgements

Results

236 HIV –infected patients enrolled
236 patients had Ultrasound
Prevalence of hepatic steatosis: 14 (5.9%)

Table 1: Baseline characteristics of study participants

Variables, median (IQR)	Overall	Hepatic steatosis	No hepatic steatosis	p-value
Female, n (%)	138 (58.5)	10 (71.4)	128 (57.7)	0.5
Age, years	47 (40.8, 54.0)	49.5 (45.5, 53.8)	46.5 (40.0, 53.8)	0.2
BMI, kg/m^2	27.4 (23.6, 31.3)	32.9 (27.4, 36.1)	27.2 (23.4, 30.7)	0.01
HIV duration, years	10 (7, 13)	13.5 (9.0, 14.8)	10.0 (6.3, 13.0)	0.04
ART duration, years	9.0 (3.0, 12.0)	13.5 (9.3, 14.0)	9.0 (3.0, 12.0)	0.01
Liver stiffness measure, kPa	4.8 (4.1, 6.95)	8.5 (6.7, 12.6)	4.8 (4.1, 6.5)	<0.01
Smoking, n(%)	14 (5.9)	0 (0)	14 (6.3)	0.7
Alcohol, n(%)	60 (25.4)	2 (14.3)	58 (26.1)	0.5
Herbs, n(%)	60 (25.4)	4 (28.6)	56 (25.2)	1.0
Hepatomegaly, n(%)	19 (8.1)	10 (71.4)	9 (4.1)	<0.01

Table 2: Laboratory parameters of study participants

Variables, median (IQR)	Overall	Hepatic steatosis	No hepatic steatosis	p-value
Pre-ART CD4, cells/mm^3	203 (107, 323)	226 (143, 323)	200 (102, 323)	0.6
On-ART CD4, cells/mm^3	515 (364, 668)	673 (537,1028)	497 (358, 653)	0.02
On-ART viral load, IU/mL	20 (0.0, 23)	20 (20, 54)	20 (0, 22.5)	0.3
Alanine transaminase, IU/L	13.4 (8.9, 19.5)	24.5 (13.5, 42.0)	13.2 (8.8, 19.3)	0.01
Aspartate transaminase, IU/L	24.5 (20.2, 29.4)	33.0 (23.9, 47.0)	24.3 (20.2, 28.8)	0.01
Platelet, cells/mm^3	213 (182, 254)	173 (162, 200)	215 (186, 255)	0.01
Hemoglobin, g/dL	12.8 (11.6, 14.1)	13.5 (12.1, 14.5)	12.8 (11.5, 13.9)	0.2
Protein, g/L	81.9 (77.5, 85.7)	81.5 (78.3, 84.3)	81.9 (77.4, 85.8)	0.8
Albumin, g/L	44.1 (41.9, 46.3)	43.7 (42.3, 45.6)	44.1 (41.9, 46.4)	1.0
Creatinine, umol/L	80.8 (66.6, 96.8)	81.3 (60.6, 95.0)	80.8 (67, 97.5)	0.6
Alphafetoprotein, IU/mL	89.3 (4.23, 98.6)	93.2 (64.2, 97.9)	89.1 (4.2, 98.6)	0.9
HBsAg positive, n(%)	15 (6.5)	1 (7.1)	14 (6.3)	1.0
Anti-HCV positive, n(%)	15 (6.5)	2 (14.3)	13 (5.9)	0.5

Conclusions

- There was a relatively low prevalence of fatty liver in this Nigerian cohort compared with other European and US cohorts (13-55%).
- Higher BMIs, and a longer duration of HIV and ART were observed in patients with steatosis compared to those without.
- Strategies to manage fatty liver in PLH including lifestyle changes and weight loss are recommended, as well as early linkage to specialist care.
- Further work is planned to examine independent risks factors associated with hepatic steatosis and liver outcomes in larger cohorts of PLH in this region, as well as exploring more sensitive measures of fatty liver disease.