Prevalence And Factors Associated With NAFLD In People With HIV

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BACKGROUND

Non-alcoholic fatty liver disease (NAFLD) may be more common in PLHIV than in the general population.

We assessed the prevalence of liver steatosis and fibrosis in PLHIV and explored associations with demographic-, metabolic-, environmental-, and HIV-specific factors, including antiretroviral therapy (ART).

METHODS

Design
Cross-sectional data from the 2000HIV cohort

Participants
PLHIV on longterm ART, N = 1075

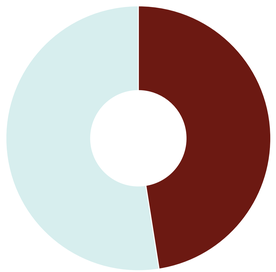
Instruments and statistical analysis
Transient elastography
- Steatosis (controlled attenuation parameter, CAP)
- Fibrosis (liver stiffness measurement, LSM)

Logistic regression analysis
- Demographics
- Metabolic comorbidities
- Laboratory assessments including lipid profile and liver function tests
- HIV-characteristics
- Exposure to ART

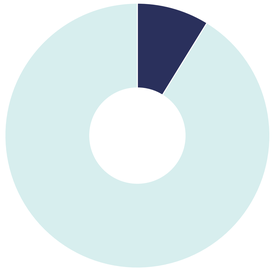
NAFLD in PLHIV is most strongly associated with traditional **metabolic risk factors**

RESULTS

Steatosis: 47.5%



Fibrosis: 8.8%



aOR (95% CI)	
Age 1.43 [0.98 – 2.09]	
Fat layer thickness 4.58 [1.98 – 10.59]	***
T2DM 0.53 [0.02 – 11.53]	
Lipid lowering therapy 3.56 [0.89 – 14.16]	
Past hepatitis B 0.57 [0.24 – 1.35]	
Past hepatitis C 0.69 [0.15 – 3.27]	
Triglycerides 2.53 [1.32 – 4.87]	**
Glucose 1.36 [0.78 – 2.39]	
ALT 1.46 [1.08 – 1.99]	*
CD4 at enrollment 1.22 [1.06 – 1.40]	**
CD8 at enrollment 1.05 [0.97 – 1.14]	
Cumulative: INSTI 0.91 [0.75 – 1.12]	
Cumulative: D4T 0.74 [0.53 – 1.03]	
Cumulative: RAL 1.77 [1.00 – 3.13]	

aOR (95% CI)	
Age 1.17 [0.89 – 1.55]	
Fat layer thickness 3.02 [1.54 – 5.93]	**
T2DM 2.23 [0.76 – 6.55]	
Myocardial infarction 1.56 [0.39 – 6.29]	
Glucose 1.12 [0.91 – 1.37]	
ALT 1.22 [1.10 – 1.35]	***
VL zenith 1.00 [1.00 – 1.00]	*

Results of multivariable logistic regression analysis with steatosis (left table) or fibrosis (right table) as dependent variable and significantly associated factors in model 1 as independent variables. Model 1: dependent variable (steatosis or fibrosis) ~ variable of interest + confounders (age and fat layer thickness). Fat layer thickness = total thickness of superficial tissues layers (incl skin, muscle, subcutaneous and visceral fat) between transducer and liver capsule. * P-value 0.01 - 0.05; ** P-value 0.001 – 0.01; and *** P-value < 0.001

CONCLUSIONS

- Liver steatosis and fibrosis affect nearly one in two and one in ten PLHIV in this cohort, respectively.
- NAFLD was most strongly associated with traditional NAFLD risk factors.
- Of HIV-specific factors, only exposure to stavudine (D4T), integrase strand transfer inhibitors (INSTIs), and CD4+ and CD8+ T cell counts at enrollment were associated to steatosis. CD4+ T cell count at enrollment remained predictive of steatosis in multivariable analysis.

ADDITIONAL KEY INFORMATION

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Vos et al. Front Immunol 2022 Dec 20; 13:982746