Liver Fibrosis Changes Over 3 Years of Tenofovir-Based ART in HIV-HBV Coinfection

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BACKGROUND

- Tenofovir-based therapy can reduce HBV DNA and reverse hepatic fibrosis in HBV monoinfection.
- Despite long-term antiretroviral therapy (ART), hepatic inflammation and fibrosis were common among HIV-HBV patients in North America.

METHODS

- We analyzed data from an active prospective cohort of Zambian adults (18+ years) who were HIV-positive, HBsAg-positive, and started combination TDF + XTC + EFV.
- At start and yearly on therapy we measured CD4, HBV DNA, serum transaminases, and liver stiffness (LSM), based on transient elastography (Fibroscan 402; Echosens, France).
- Unhealthy alcohol use was defined as AUDIT-C score of 3+ for women and 4+ for men.
- We categorized LSM as no-minimal fibrosis (<7.9 kPa; METAVIR stage F0-1), significant or advanced fibrosis (7.9-9.5; F2-3), and cirrhosis (>9.5; F4).
- HBV DNA suppression was <=20 IU/ml
- HIV RNA suppression was <=40 copies/ml.
- Upper normal ALT (ULN) was 19 U/L for women, 30 for men.
- Among participants with LSM at ART start and >=1 measure on ART, we described HBV and HIV suppression, ALT levels, and regression and progression of liver fibrosis.

Table 1. Cohort characteristics (n=234)

Median age, years	34
Male sex, n (%)	142 (60.8)
Baseline unhealthy alcohol use, n (%)	102 (43.9)
Median baseline CD4 count, cells/mm3	198
Median baseline HBV DNA, IU/ml	5400
Baseline HBeAg-positive, n (%)	81 (44.3)
Baseline ALT elevation, n (%)	102 (47.9)
Baseline transient elastography, n (%)	
No-minimal fibrosis (METAVIR 0-1)	195 (83.3)
Significant/advanced fibrosis (METAVIR 2-3)	16 (6.8)
Cirrhosis (METAVIR 4)	23 (9.8)
Median (IQR) time on ART, years	2.6 (1.7-3.8)

Main findings:
→Regression of liver fibrosis and cirrhosis was common during tenofovir DF-based ART for HIV-HBV.
→Persistent ALT elevation was seen in ~20% of patients at last follow-up, likely due to non-HIV/HBV-related causes such as alcohol abuse.

Figure 1. Change in liver stiffness on ART

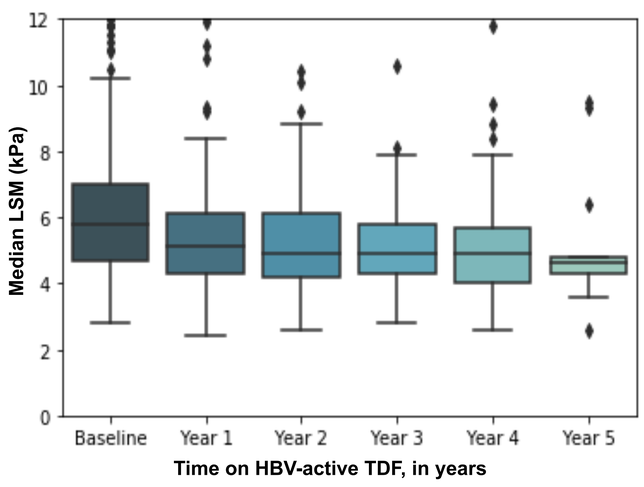
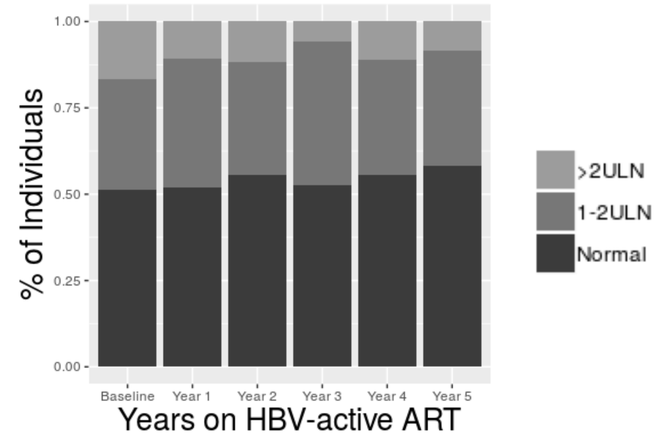


Table 2. Virological and liver outcomes

Outcomes	# analyzed	# (%) with outcome
HIV RNA <40 by 1 year	76	63 (80.2)
HBV DNA <20 by 2 years	182	160 (87.9)
Regression, from F4 to F0-1/2-3	23	18 (78.3)
Regression, from F2-3 to F0-1	16	13 (81.2)
Progression, from F0-1 to F2-3/4	195	5 (2.6)
Progression, from F2-3 to F4	16	1 (6.2)

Figure 2. ALT elevation during ART



CONCLUSIONS

- Among those with baseline fibrosis/cirrhosis, the majority experienced significant disease reduction within several years of tenofovir DF-based ART.
- Among those with no-minimal baseline hepatic fibrosis, progression of disease on-therapy was rare (2%).
- A significant minority of patients had ongoing ALT elevation, likely due to non-HIV/HBV causes.
- The clinical significance of ongoing ALT elevation in these patients should be further evaluated.

ADDITIONAL KEY INFORMATION

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