Level of Alcohol Use and Advanced Hepatic Fibrosis in HIV-Infected and Uninfected Patients

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Background

Impact of alcohol use on hepatic outcomes is poorly understood among patients with HIV or chronic HCV infection.

Specific Aim

To examine the association between alcohol use and advanced hepatic fibrosis in HIV+ and HIV- persons, with and without Hepatitis C.

Methods

- Veterans Aging Cohort Study (VACS) patients from 8 sites
- Enrolled June 1, 2002 to September 30, 2010 and reporting current alcohol consumption

Alcohol use

- Alcohol Use Disorders Identification Test (AUDIT)-C questionnaire at enrollment and ICD-9 diagnosis codes
- Categorized alcohol use in last year
  1. Non-hazardous: consumed alcohol, but less than hazardous levels
  2. Hazardous: AUDIT-C score ≥4 or >6 drinks on one occasion
  3. ICD-9 diagnoses consistent with alcohol abuse/ dependence <1 year before enrollment

Advanced Hepatic Fibrosis

FIB-4 >3.25

$$\text{FIB-4} = \frac{\text{AGE} * \text{AST}}{\text{PLT} * (\text{ALT}^{1/2})}$$

- Validated marker of advanced fibrosis compared to liver biopsy in alcoholic liver disease, viral hepatitis, HIV/HCV co-infection.[1]

Analysis

- Determined prevalence of outcomes by level of alcohol consumption, and HIV/HCV status
- Cross-sectional association using logistic regression to estimate adjusted odds ratios

Results

Table 1 **Characteristics of 3,565 participants reporting alcohol use at enrollment in the Veterans Aging Cohort Study, N (%) except as noted.**

Characteristic	HIV/HCV Coinfected (N = 701)	HIV Monoinfected (N = 1,410)	HCV Monoinfected (N = 296)	HIV/HCV Uninfected (N = 1,158)	p
Age (years)					
Median (IQR)	50 (47,54)	47 (41,54)	51 (47,54)	50 (44,56)	**
Male sex	687 (98.0)	1372 (97.3)	285 (96.3)	1095 (94.6)	**
Race/ethnicitiy					
White	81 (11.6)	364 (25.8)	31 (10.5)	288 (24.9)	**
Black	529 (75.5)	869 (61.6)	222 (75.0)	685 (59.2)	
Hispanic	62 (8.8)	127 (9.0)	36 (12.2)	139 (12.0)	
Other	29 (4.1)	50 (3.5)	7 (2.4)	46 (4.0)	
Alcohol					
Non-hazardous	242 (34.5)	719 (51.0)	60 (20.3)	458 (39.6)	**
Hazardous or binge	249 (35.5)	512 (36.3)	70 (23.6)	401 (34.6)	
Alcohol diagnosis	210 (30.0)	179 (12.7)	166 (56.1)	299 (25.8)	
HBV infection	37 (5.3)	54 (3.8)	13 (4.4)	13 (1.1)	**
Diabetes mellitus	86 (12.3)	138 (9.8)	49 (16.6)	196 (16.9)	**
BMI, kg/m^2					
Median (IQR)	24 (22,27)	25 (22,28)	26 (23,30)	29 (26,33)	**
HIV-1 RNA (copies/ml)					
≤ 400	336 (47.9)	624 (44.3)			
CD4 cell count (cell/mm^3)					
<200	181 (25.8)	302 (21.4)			
200-500	333 (47.5)	656 (46.5)			
>500	187 (26.7)	452 (32.1)			

**p <0.001 for comparison between groups

Figure 1 **Prevalence of advanced hepatic fibrosis (FIB-4 >3.25) by alcohol use and HIV/HCV status.**

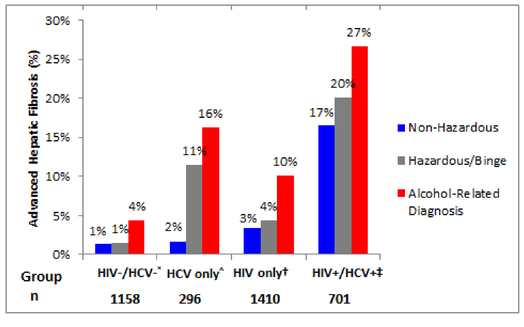

Figure 2 **Association between alcohol use and advanced hepatic fibrosis (FIB-4 >3.25), stratified by HIV and HCV.**

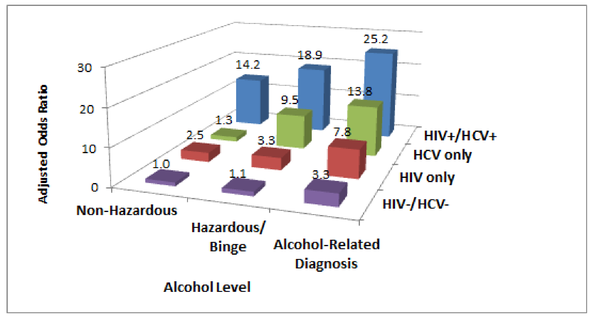

Table 2 **Adjusted association between alcohol use and advanced hepatic fibrosis (FIB-4 >3.25).**

		HIV infected (N = 2,111)			HIV uninfected (N = 1,454)		
		FIB4 >3.25		Adjusted	FIB4 >3.25		Adjusted
Characteristic		N	(%)	OR (95% CI)	N	(%)	OR (95% CI)
Overall		210	(10)		61	(4)	
Alcohol	Non-hazardous	64	(7)	Ref	7	(1)	Ref
	Hazardous or binge	72	(9)	1.3 (0.9,1.8)	14	(3)	2.0 (0.8,5.0)
	Alcohol diagnosis	74	(19)	2.1 (1.4,3.0)	40	(9)	4.0 (1.7,9.4)
Age (years)	< 50	90	(8)		13	(2)	
	≥ 50	120	(13)		48	(6)	
Sex	Men	207	(10)	Ref	59	(4)	Ref
	Women	3	(6)	0.6 (0.2,2.0)	2	(3)	0.9 (0.2,3.9)
Race/ethnicity	White	31	(7)	Ref	8	(3)	Ref
	Black	148	(11)	0.9 (0.6,1.4)	39	(4)	1.1 (0.5,2.4)
	Hispanic	25	(13)	1.5 (0.8,2.7)	11	(6)	2.1 (0.8,5.5)
	Other	6	(8)	0.7 (0.3,1.9)	3	(6)	2.1 (0.5,9.0)
Diabetes	No	182	(10)	Ref	52	(4)	Ref
	Yes	28	(13)	1.4 (0.9,2.2)	9	(4)	1.0 (0.4,2.1)
BMI(kg/m^2)	<30	187	(10)	Ref	48	(5)	Ref
	≥30	23	(8)	0.9 (0.6,1.4)	13	(2)	0.7 (0.4,1.3)
HBV infection	No	193	(10)	Ref	54	(4)	Ref
	Yes	17	(19)	1.7 (0.9,3.1)	7	(27)	4.1 (1.5,11.2)
HCV infection	No	80	(5)	Ref	26	(2)	Ref
	Yes	146	(21)	5.0 (3.6,7.0)	36	(12)	4.4 (2.5,7.6)
CD4 count	≥200	121	(7)	Ref			
cells/mm^3	<200	89	(18)	2.5 (1.8,3.4)			
HIV RNA	<400	77	(8)	Ref			
copies/mL	≥400	133	(12)	1.4 (1.0,1.9)			

- The prevalence of advanced hepatic fibrosis increased with higher alcohol use among HIV/HCV-coinfected, HIV-monoinfected, HCV-monoinfected, and HIV/HCV-uninfected patients.
- For each alcohol use category, the prevalence of advanced hepatic fibrosis was highest among HIV/HCV-coinfected patients.
- The strongest associations with advanced hepatic fibrosis were observed among HIV/HCV-coinfected patients.

Limitations

- Cross-sectional design
- Unable to account for life-time drinking history
- Did not consider hepatoxic medications
- Sample predominantly black males, findings may not generalize to others.

Conclusions

There may be no “safe” level of alcohol consumption among HIV+ and HCV+

Clinical Implications

- Patients with HIV or HCV should be advised to reduce or discontinue alcohol use.
- Any patient with FIB-4 > 3.25 should be counseled about alcohol use

References

1. Sterling RK, Lissen E, Clumeck N, et al: Development of a simple noninvasive index to predict significant fibrosis in patients with HIV/HCV coinfection. Hepatology 2006, 43(6):1317-1325

Funding

National Institutes of Health: NIAAA (U10-AA13566, U24-AA020794, U01-AA020790)

Just Published!

Lim JK, Tate JP, Fultz SL, et al **Relationship Between Alcohol Use Categories and Noninvasive Markers of Advanced Hepatic Fibrosis in HIV-Infected, Chronic Hepatitis C Virus-Infected, and Uninfected Patients.** *Clin Infect Dis. 2014 Feb 25. [Epub ahead of print]*