

Long-term Serologic Follow-up of HIV-infected Women with Isolated Hepatitis B Core Antibody: Predictors of Acquisition of Hepatitis B Surface Antibody

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1 Abstract (modified)

Background: Anti-HBc in the absence of hepatitis B surface antigen (HBsAg) and hepatitis B surface antibody (anti-HBs) is common among HIV-infected persons but the clinical significance and outcome are unclear. In order to determine the long-term serologic outcome of isolated anti-HBc in HIV infection, we studied women participating in the Women's Interagency HIV Study (WIHS); 15% of WIHS women had isolated anti-HBc at baseline and only 2% of these were explained by occult hepatitis B (HBV) viremia.

Methods: WIHS is a multisite prospective observational study in which semiannual interview and laboratory data are collected. We studied 285 HIV-infected women with isolated anti-HBc at study entry. Follow-up hepatitis B serologies were measured on banked serum at a single time point from baseline. Univariate and multivariate logistic regression analyses were performed to find predictors of conversion to positive anti-HBs.

Results: Mean follow-up time was 7.5 years (range, 2.5–10.4). At follow-up, 58/285 patients (20.4%) were positive for anti-HBs and anti-HBc, 197 patients (69.1%) remained positive for anti-HBc only, 7 (2.5%) had acquired detectable HBsAg, 4 (1.4%) had isolated anti-HBs alone, and 16 (5.6%) had no positive HBV serology. Predictors of conversion to anti-HBs in univariate analysis were antiretroviral therapy (odds ratio (OR) 2.05, (95% confidence interval 1.13–3.70)) and increase in CD4 count between baseline and follow-up [OR 1.11, (1.003–1.23)], while older age, injection drug use, hepatitis C (HCV) RNA positivity and CD4 < 200 cells/cm³ at follow-up were negatively associated (all *P*<0.10). 47 women reported incident HBV vaccination (of whom 13 converted to anti-HBs), which was not significantly associated with conversion. Also not associated with conversion were duration of follow-up, race, sexual risk, HIV viral load and use of ART against HBV. In multivariate analysis, receipt of antiretroviral therapy [OR 1.96, (1.05–3.66)] was a positive predictor of conversion to anti-HBs and active HCV [OR 0.23, (0.12–0.44)] was negatively associated. Re-analysis excluding women reporting incident HBV vaccination produced similar results.

Conclusions: In a cohort of HIV-infected women with isolated anti-HBc followed for a mean of 7.5 years, the majority remained isolated anti-HBc positive. Conversion to anti-HBs was associated positively with antiretroviral therapy and negatively with active HCV. Whether these factors are more important than HBV vaccination in predicting conversion to anti-HBs needs further study.

2 Introduction

- Anti-HBc in the absence of HBsAg and anti-HBs (isolated anti-HBc) is common among HIV+ persons, but the clinical significance and outcome are unclear.

3 Objectives

- To determine the long-term serologic outcome of isolated anti-HBc in HIV+ women.
- To determine clinical predictors of acquiring anti-HBs at follow-up.

4 Methods

- Study population (WIHS): multi-site prospective observational study in which semiannual interview and lab data are collected.
- Inclusion: HIV+ women with isolated anti-HBc at first study visit.
- Follow-up Hep B serologies measured on banked serum at single time point.
- Bivariable comparisons: Chi-square and t-test.
- Multivariable modeling: logistic regression.

5 Results

Fig. 1: Long-term serologic outcomes. HIV+ women with isolated anti-HBc at baseline were selected.

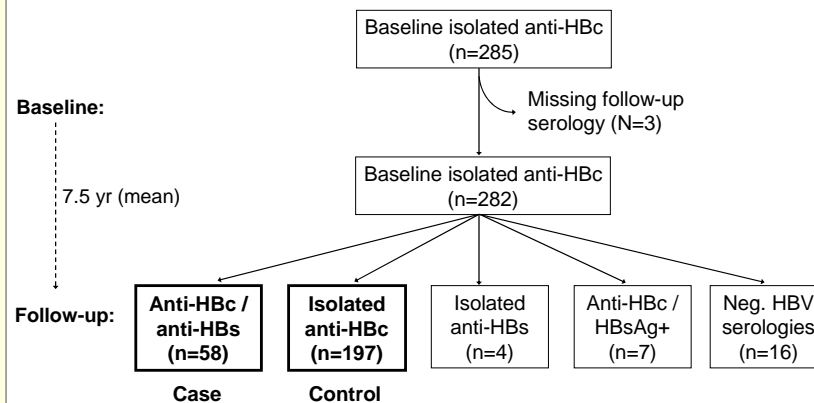


Table 1: Univariate analysis. Unadjusted predictors of conversion to anti-HBs /anti HBc

Descriptive statistics	Case (n=58)	Control (n=197)	OR	95%CI	P-value
Age at baseline (years)	36.5	38.9	0.95	(0.91-0.99)	0.02
Duration of follow-up (years)	7.9	7.5	1.06	(0.95-1.18)	0.34
Non-white race (%)	90	87	1.32	(0.51-3.37)	0.56
Incident injection drug use (%)	19	32	0.50	(0.24-1.02)	0.06
Multiple sexual partners (%)	47	44	0.73	(0.40-1.32)	0.30
HAART (>50% of visits) (%)	55	38	2.05	(1.13-3.70)	0.02
ART active for Hep B (>50% visits) (%)	50	45	1.21	(0.68-2.18)	0.52
CD4 <200 cells/cm ³ at baseline (%)	12	13	0.94	(0.39-2.31)	0.90
CD4 <200 cells/cm ³ at last visit (%)	12	23	0.45	(0.19-1.06)	0.06
Absolute change in CD4 (cells/cm ³)	41	-45	1.11	(1.003-1.23)	0.04
HIV RNA > 1000 copies/cm ³ at baseline (%)	83	83	1.00	(0.46-2.17)	1.00
HIV RNA > 1000 copies/cm ³ at last visit (%)	38	46	0.71	(0.39-1.30)	0.27
Hep B vaccine, incident (%)	21	24	0.86	(0.39-1.86)	0.69
Hepatitis C RNA + (%)	31	65	0.24	(0.13-0.45)	<0.0001

Table 2: Multivariable analysis. Independent predictors of conversion to anti-HBs

	OR	95%CI	P-value
Duration of follow-up	1.06	(0.95, 1.20)	0.29
HAART (>50% of visits)	1.96	(1.05, 3.66)	0.03
Active Hepatitis C	0.23	(0.12, 0.44)	<0.0001

6 Conclusions

- While 30% of women with isolated anti-HBc changed Hep B serostatus after a mean of 7.5 years, the majority remained isolated anti-HBc.
- Receipt of antiretroviral therapy during follow-up predicted conversion to anti-HBs.
- Active Hepatitis C co-infection was a strong independent predictor of persistent isolated anti-HBc serostatus.
- The relative importance of HBV vaccination requires further study.

7 Limitations

- Study population limited to HIV-infected women.
- Incident HBV vaccination status obtained by self-report, subject to misclassification.
- Hepatitis serology assays differed at baseline and follow-up for some women.

8 Acknowledgments

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