



AIDS PREVENTION INITIATIVE NIGERIA



Prevalence of Hepatitis Coinfection among HIV-Infected Nigerian Children in the Harvard PEPFAR ART Program

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Abstract

Background: Little data are available on prevalence rates for hepatitis B (HBV) or hepatitis C virus (HCV) coinfection among HIV-infected children in resource-limited settings. Studies show that HIV infection leads to a more aggressive course of HBV or HCV infection and a higher risk of liver damage. Coinfection may also complicate antiretroviral treatment (ART), with higher rates of ART-induced hepatotoxicity among patients with chronic hepatitis. This study aims to evaluate rates of HBV and HCV coinfection among a cohort of HIV-infected Nigerian children in a large ARV treatment program. Such information has the potential to impact decisions regarding ART in coinfecting children.

Methods: The APIN Plus/Harvard PEPFAR Program has provided HIV care to over 100,000 people including 4366 children in Nigeria since 2004. At enrollment, all pediatric patients undergo screening for HBV and HCV in addition to evaluation of HIV disease markers. Baseline patient characteristics including median age at enrollment, CD4+ cell count, WHO clinical stage, and transaminase level were compared between hepatitis coinfecting and HIV monoinfected patients.

Results: Prevalence of HBV and HCV was 8.3% (54 of 648) and 2.7% (17 of 637) among HIV-coinfecting children, respectively. Only one child was identified with both HBV and HCV infection. Baseline characteristics including median age (3.6 years for HBV+, 3.0 yrs HCV+, 3.5 years for HIV monoinfected), CD4+ cell count, and WHO clinical stage were not significantly different between HBV or HCV coinfecting, and HIV-monoinfected children. Significant ALT elevation to >5 times the ULN was present in a small proportion of patients overall (1.4%) and was not significantly different between hepatitis coinfecting and HIV monoinfected children. More HCV coinfecting patients were male (76%) than HIV monoinfected children (54%), but this difference was not statistically significant (p=0.083).

Conclusions: This is the first cohort study to assess the prevalence of hepatitis coinfection in a cohort of HIV-infected pediatric patients in Nigeria. Overall, HBV or HCV infection was identified in 11.5% of children for whom both test results were available. Further evaluation of outcomes will provide insight as to the impact of HBV or HCV coinfection on pediatric HIV treatment outcomes. Such information should encourage research into expanding treatment options for children with hepatitis and HIV coinfection.

Methods

- The Harvard PEPFAR Pediatric HIV care and treatment program provides care to HIV-infected children 0-14 years of age at 11 tertiary care centers throughout Nigeria
- ART eligibility is consistent with the Nigerian National & WHO treatment guidelines:

Table 1: Age-Specific Recommendations for ART Eligibility

Immunologic Marker	Age-Specific Recommendations to Initiate ART			
	≤11 months	12-35 months	36-59 months	≥5 years
CD4+ percentage	Start All	<20%	<15%	<15%
Absolute CD4+ cell count	Start All	<750 cells/mm ³	<350 cells/mm ³	<350 cells/mm ³

Clinical Care

- Pediatric patients undergo initial clinical evaluation followed by monthly visits after ART initiation, then every 3 months once stable
- Screening for TB occurs at baseline, or with symptoms, using clinical questions, exam, CXR, Mantoux, and sputum samples when available

Laboratory Testing

- CD4+ cell count, CD4%, plasma HIV-1 RNA PCR, ALT, creatinine, and hemoglobin are measured at baseline and every 3 months thereafter for toxicity and outcomes monitoring
- HBsAg and HCV antibody are obtained at baseline

Results

- Baseline characteristics including median age, CD4+ cell count, and WHO clinical stage did not significantly differ between HBV or HCV coinfecting, and HIV-monoinfected children
 - More HCV coinfecting patients were male (76%) than HIV monoinfected children (54%), but this difference did not reach statistical significance (p=0.083)
- Significant ALT elevation to >5 times the ULN was present in a small proportion of patients overall (1.4%; 6 of 434 patients with baseline ALT value) and was not significantly different between hepatitis coinfecting and HIV monoinfected children

Table 2: Baseline Characteristics for Children with HIV monoinfection and Hepatitis B virus (HBV) or Hepatitis C virus (HCV) coinfection

Characteristic	HIV-monoinfected (n = 564)	HBV-HIV Coinfected (n = 54)	HCV-HIV Coinfected (n = 17)
% Hepatitis Positive (No. tested)	-- (630)	8.3% (648)	2.7% (637)
Gender, No. (%)			
Female	261 (46.3%)	24 (44.4%)	4 (23.5%)
Male	303 (53.7%)	30 (55.6%)	13 (76.5%)
Age, median (range)	3.5 years (0.1-15.4 yrs)	3.6 years (0.4-15.6 yrs)	3.0 years (0.5-12.0 yrs)
CD4+, median (cells/mm ³)	456	464	587
ALT, No. (%)			
<40 IU/L	328 (58.2%)	27 (50%)	9 (52.9%)
40-200 IU/L	56 (9.9%)	7 (13.0%)	1 (5.9%)
>200 IU/L	3 (0.5%)	3 (5.6%)	0
unknown	177 (31.4%)	17 (31.5%)	7 (41.2%)
WHO Stage, No. (%)			
Stage 1	132 (23.4%)	14 (25.9%)	7 (41.2%)
Stage 2	82 (14.5%)	10 (18.5%)	0
Stage 3	195 (34.6%)	14 (25.9%)	4 (23.5%)
Stage 4	47 (8.3%)	7 (13.0%)	4 (23.5%)

Background

- The Harvard PEPFAR/APIN Plus program currently provides HIV care and treatment services at 36 sites throughout Nigeria
 - Pediatric ART care is provided at 11 tertiary care centers
- Since initiation of the program in 2004, over 100,000 individuals have received HIV care services
 - Approximately 4% of individuals receiving care within the program are children

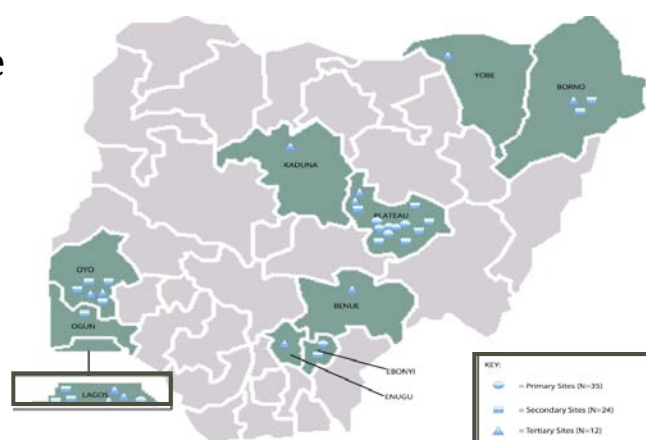


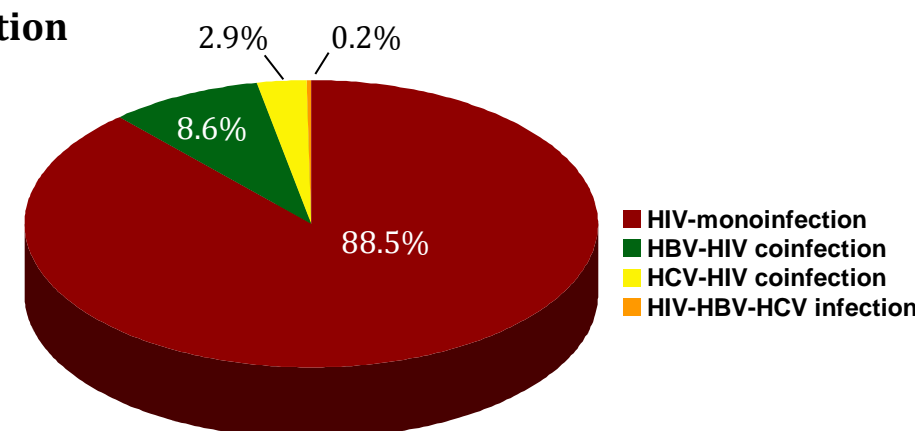
Figure 1. Distribution of Harvard PEPFAR / APIN+ ARV Treatment Sites

- Hepatitis B coinfection has been associated with a more aggressive course in the setting of HIV coinfection¹: higher HBV carrier rates and viremia, more frequent reactivation, more rapid progression cirrhosis, and more frequent development of hepatocellular carcinoma
- HCV-HIV coinfection is associated with faster progression to cirrhosis²
- This study aimed to evaluate the extent of hepatitis coinfection among HIV-infected pediatric patients in Nigeria

Results

- Since 2004, 4366 children have been enrolled in the Harvard PEPFAR/APIN Plus Pediatric HIV care and treatment program
 - Pediatric patients account for approximately 4% of all individuals receiving HIV care in the program
 - 2469 children have been initiated on ART
- The prevalence of HBV was 8.3% (54 of 648 tested) and HCV was 2.7% (17 of 637 tested)
 - One HIV+ child was identified with both HBV and HCV infection

Figure 2: Proportion of Children with Hepatitis Coinfection versus HIV monoinfection



Conclusions

- This is the first cohort study to assess the prevalence of hepatitis coinfection in a cohort of HIV-infected pediatric patients in Nigeria
- 11.5% of HIV-infected children were identified with HBV or HCV coinfection for whom both test results were available
- Further evaluation of outcomes will provide insight as to the impact of HBV or HCV coinfection on pediatric HIV treatment outcomes
- Research aimed at expanding treatment options for children with hepatitis and HIV coinfection should be encouraged

References

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