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Abstract (poster session)

Association between Vitamin D and viral load (HIVRNA) among HIV-infected patients

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Objectives: 1) Quantify the prevalence of low 25-OH vitamin D (vitD) levels among HIV patients, 2) Identify the vitD breakpoint associated with an increased risk of HIVRNA > 400 copies/mL, 3) Determine if vitD is independently associated with HIVRNA. Methods: A cross-sectional study was performed among patients at the Albany Medical Center between Jan 2007 and Jul 2011. Inclusion criteria were: i) age >= 18 years, ii) HIV-infection, iii) availability of >= 1 vitD level in the medical chart and iv) >= 1 HIVRNA laboratory result within the study period. The following data were extracted from the patients' medical records: demographics, co-morbid conditions, serum creatinine, CD4 count, HIVRNA, and medication histories. The Institute of Medicine classification system was used to characterize low vitD and was defined as < 20 ng/mL. Classification & Regression Tree (CART) software was used to identify the breakpoint in vitD associated with HIVRNA > 400 copies/mL. Linear regression was used to determine the independent predictor variables of log-HIVRNA. Results: There were 475 patients that met inclusion criteria. The median (IQR) age of the patients at the time vitD was obtained was 49 (43 – 56) years. The median (IQR) vitD level was 26.3 (16.5 – 34.9). The period prevalence of low vitD (< 20 ng/mL) was 34.3%. Variables associated with low vitD are displayed in Table 1. CART was used to identify the breakpoint in vitD associated with HIVRNA > 400 copies/mL. The CART-derived breakpoint was 25 ng/mL and significantly differed by HIVRNA status. There were 192 (45.8%) with vitD levels < 25 ng/mL among the 419 patients with HIVRNA < 400 copies/mL. Among the 56 patients with HIVRNA >= 400 copies/mL, there were 37 (66.1%) patients with vitD levels < 25 ng/mL. In the bivariate analyses, the clinical covariates associated with HIVRNA < 400 copies/mL were age, dyslipidemia, osteoporosis, and antiretroviral therapy. The specific antiretrovirals associated with HIVRNA < 400 copies/mL were abacavir, emtricitabine, lamivudine, tenofovir, efavirenz, lopinavir, enfuvirtide and maraviroc. In the linear regression analyses, the use of antiretroviral therapy and vitD < 25 ng/mL were significant predictors of log-HIVRNA and the resulting linear regression equation was: log-HIVRNA = 3.06 + 0.16*(vitD<25ng/mL) – 1.32*(antiretrovirals). Conclusion: The prevalence of low vitD is high among HIV patients and levels < 25 ng/mL are independently associated with log-HIVRNA.

Table 1: Clinical Covariates Associated with Low Vitamin D among HIV-infected Patients

Covariate	High Vitamin D (n = 312)	Low Vitamin D (n = 163)	P-value
Mean (SD) age	49.9 (9.4)	48.1 (9.9)	0.05
Mean (SD) weight (kg)	78.0 (17.4)	82.3 (19.7)	0.02
Osteopenia	36 (11.5)	9 (5.5)	0.03
Arthritis	45 (14.4)	13 (8.0)	0.04
Obesity	17 (5.4)	18 (11.0)	0.03
Dialysis	1 (0.3)	5 (3.1)	0.02
Any Antiretrovirals	296 (95.2)	148 (90.8)	0.06
• Efavirenz	73 (23.5)	53 (32.5)	0.03
• Lopinavir	37 (11.9)	9 (5.5)	0.03
Multivitamin	159 (51.1)	48 (29.4)	<0.001
Mean (SD) CD4 count	639 (346)	555 (286)	0.005
Mean (SD) log-HIVRNA	1.83 (0.62)	2.04 (1.01)	0.02

All data presented as n (%), unless otherwise noted