320. UK-HOPS (HIV Osteoporosis Prevention and Screening)-Gaps in the Care of HIV Patients with Bone Disease

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Background. With increasing life expectancy among people living with Human Immunodeficiency Virus (HIV), long-term complications such as osteoporosis/osteopenia and fractures are frequently seen. Although screening guidelines exist for bone disease in the HIV population, quantitative and qualitative gaps exist in screening and prevention. Bone disease in HIV is multifactorial, and FRAX may not accurately predict fracture risk. The aim of our study is to describe diagnostic features of bone disease and estimate the population at risk, and evaluate the frequency of screening, referral and treatment in patients attending an HIV Clinic.

Methods. We performed a retrospective analysis of 1220 patients with HIV infection ≥40 years of age who attended the HIV clinic under the Ryan White program, during January 2016 to December 2018, at University of Kentucky. We obtained demographic details (Table 1), comorbidities, laboratory testing, bone mineral density (BMD) testing and specialty bone clinic referral data from electronic health records, applying ICD -10 and CPT codes. We estimated the frequency of BMD measurement and prevalence of risk factors for bone disease specific to this population.

Results. BMD testing was performed in only 158 (13%) patients (CMS targets 60% for testing at-risk populations). Of these patients, 76 (48%) had osteopenia and 59 (37%) had osteoporosis; 22 (14%) received treatment (Figure 1). Seven patients with osteoporosis/osteopenia and fracture had bone biopsy, with low bone turnover in four (57%). Potential risk factors for secondary osteoporosis are presented in Table 2; at least one factor was present in 98% of patients. Fracture prevalence was likely underestimated because the ICD-10 /CPT coding was available only in 23 (2%) patients.

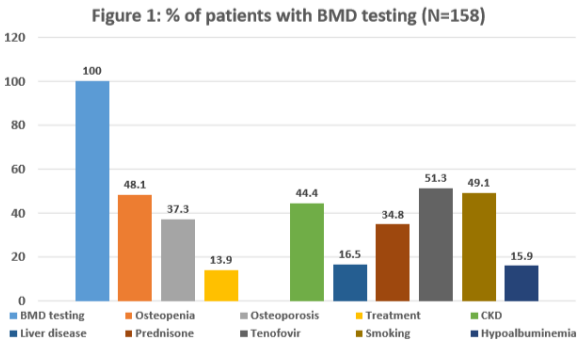
Conclusion. Bone disease is under-recognized and undertreated, and targeted screening programs are needed for earlier diagnosis and management in this population. Bisphosphonates may not be optimal first-line therapy for all HIV patients with bone loss. In addition to stress or fragility fractures and worsening osteoporosis, metabolic bone work-up should be performed in patients with secondary osteoporosis related to CKD, renal phosphate loss, prior bisphosphonate/Tenofovir/glucocorticoid treatment.

Table 1: Demographics

Variables		N (%)
Mean age in years		51.0
Mean Body mass index (BMI)		27.6
Sex		
	Female	235 (19.3)
	Male	985 (80.7)
Race		
	African American	237 (19.4)
	White	963 (78.9)
	Other	20 (1.6)
Total		1220 (100)

Table 2: Risk Factors

Variables		N (%)
Tenofovir Exposure		539 (44.2)
	TDF only	277 (22.7)
	TAF only	125 (10.2)
Population at risk		
	Age > 50 years	653 (53.5)
	CKD	379 (31.1)
	Chronic liver disease/Hep C coinfection	232 (19)
	Glucocorticoid exposure	404 (33.1)
Phosphorus		294 (24.1)
measured	Value < 2.5 mg/dl	94/294 (31.9)
Other: Smoking (49%), Alcohol (12%), Rheumatoid arthritis (1.2%), Albumin < 3 (18%)		



Disclosures. **All authors:** No reported disclosures.

321. Low Volumetric Bone Density at Proximal Femur in HIV-Infected Men and Its Risk Factors: Comparison with Community-Dwelling Non-Infected Men

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Background. Individuals with HIV infection is at increased risk of low area bone mineral density (BMD) and fracture. However, data regarding volumetric BMD (vBMD) of central bone determined by quantitative computed tomography (QCT) which can distinguish the cortical and trabecular bone component are limited.

Methods. From November 2017 to October 2018, we measured spine and hip vBMD in HIV-infected men aged 30 years or older at the tertiary center. QCT data were compared with 1:2 matched control by age- and body mass index (BMI) sampled from a community-based healthy individual cohort. HIV-specific risk factors for low total hip vBMD as a primary outcome were identified using multivariate linear regression models.

Results. A total of 83 HIV-infected men and 166 control were analyzed (mean age 47.4 vs. 47.0 year; BMI 23.3 vs. 23.7 kg/m^2; $P > 0.05$). In HIV-infected men, vBMD of trochanter, intertrochanter and total hip was significantly lower than that of non-infected men. (198 ± 31 vs. 213 ± 32; 339 ± 50 vs. 356 ± 47; 280 ± 41 vs. 296 ± 41 mg/cc; all $P < 0.05$) Association between HIV infection and lower total hip vBMD remained robust (Adjusted β -14.4; P = 0.013) after adjustment for age, diabetes, smoking, and vitamin D status. In HIV cohort, low CD4 T-cell count at initial diagnosis (< 200 vs. ≥200 cells/μL; Adjusted β = −6.7, $P = 0.015$) and use of protease inhibitor (vs. integrase inhibitor; Adjusted β = −29.9, $P = 0.029$) were negatively associated with total hip vBMD, after adjustment for age, BMI, and duration of HIV infection, whereas tenofovir disoproxil fumarate use was not. (Adjusted β −12.1, $P = 0.280$) In HIV-infected men with low tertile total hip vBMD, the levels of β-crosslaps (0.42 ± 0.23 vs. 0.30 ± 0.16 ng/mL; $P = 0.012$) and osteocalcin (22.10 ± 8.65 vs. 16.57 ± 6.04 ng/mL; $P = 0.001$) were higher than those with middle-upper tertile total hip vBMD.

Conclusion. HIV-infected men had lower hip vBMD compared with age- and BMI-matched non-infected men. Low baseline CD4 T-cell count and protease inhibitor use were independent risk factors for lower total hip vBMD. High born turnover was attributable to the negative effect on born health of HIV-infected men.

Disclosures. **All authors:** No reported disclosures.

322. Prolonged Amenorrhea Is Associated with Decreased Hip Bone Mineral Density in Women Living with HIV

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Background. Women living with HIV (WLWH) have higher rates of long-term amenorrhea (no flow for ≥12 months) than HIV-negative women. However, little is known about the consequences of amenorrhea for WLWH. Both amenorrhea and HIV are associated with lower areal bone mineral density (BMD); though the combined effect of both on BMD remains unclear. In this cross-sectional study we investigated whether prolonged amenorrhea adversely affects BMD among WLWH.

Methods. We investigated BMD (using a Hologic bone densitometer) and prolonged amenorrhea among WLWH and HIV-negative control women of similar socioeconomic backgrounds aged 19–68 in the CARMA cohort. Participants were stratified by HIV status and history of prolonged secondary amenorrhea defined as a self-reported absence of menses for at least one year in the past or present, occurring at age <45 years and not due to surgery, breastfeeding, pregnancy or hormonal contraception. Hip and spine Z-scores (age- and race- standardized BMD values) were compared between groups using linear models, followed by multivariable analysis of BMD-related factors.

Results. WLWH ($N = 129$) had significantly lower hip (mean±SD −0.4 ± 0.9 vs. 0.3 ± 1.1; $P < 0.001$) and spine (−0.5 ± 1.3 vs. 0.2 ± 1.3; $P = 0.001$) Z-scores vs. controls ($N = 129$). Multivariable linear regression found prolonged amenorrhea was independently related to lower hip ($P = 0.01$), but not spine ($P = 0.94$) BMD. Within WLWH, the effect of amenorrhea was also additive to that of HIV, with hip Z-scores of -0.8±0.9for those with amenorrhea vs. -0.3±0.8for those normally cycling ($P = 0.01$). Amongst WLWH, those with prolonged amenorrhea had higher rates of illicit substance use, smoking, chronic opioid therapy, hepatitis C viral infection, and poorer HIV viral control than those with normal menstruation.