Association of lean mass with bone mineral density in young, recently diagnosed, HIV-infected patients

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**BACKGROUND**

Low peak bone mass (PBM), the amount of bone at the end of skeletal maturation, is of paramount importance for a worse bone health in the future. However, the causes of a low PBM could be different in HIV-infected patients, by considering time of HIV infection or use of combination antiretroviral therapy (cART). Our objective was to evaluate the role of lean mass in young, otherwise healthy HIV-infected patients who started cART early after the diagnosis.

**RESULTS**

Mean age (years, range) 35.3 (18-40)
Younger than 30 yrs (%) 20%
Sex male, n (%) 129 (85%)
Risk practices for HIV infection, n (%) IDUs 13 (9%), MSM 103 (88%)
HCV co-infection, n (%) 9 (6%)
Mean BMI (kg/m2) 24.2 (17.7-31.8)
Nadir CD4+ count (cells/mL) 337 (196-430)
HIV RNA level pre-cART (log copies/ml) 4.78 (4.3-5.3)
Time of HIV diagnosis (months, IQR) 41.3 (11-97)
Time on cART at DXA (months, IQR) 9 (0-52)
No TAR at DXA 52 (34%)
cART TDF+PI 13%
TDF+Non Nucleoside 58%
No TDF 29%
Mean eGFR (ml/min/1.73 m2) 102.2 (57-155)
Mean 25-hydroxyvitamin D (ng/ml) 27 (6.4-67.2)
Mean PTH (pg/ml) 48.9 (15.2-130)
Total Fat (Kgs) 18.37 (13.1-22.2)
Total lean mass (kgs) 46.36 (42-51.7)
DXA BMD femoral neck (gr/cm2) 0.847 (0.53-1.16)
BMD lumbar spine L1-L4 0.969 (0.26-1.32)
Femoral neck Osteopenia 38%
Osteoporosis 1%
Z score < -2 2%
Spine Osteopenia 39%
Osteoporosis 9%
Z score < -2 16%

BMD at hip was significantly correlated with age (r=-0.21), BMI (r=0.25), nadir CD4+ (r=0.22) and with lean mass in all the body areas (lean mass to height squared ratio; r=0.32; p<0.01) but not with fat mass, whereas BMD in spine was correlated only with lean mass (r=0.22), and not with age (p=0.059), CD4+ nadir, BMI (p=0.16), or rest of variables.

Of note, in patients with a recent diagnosis who had not initiated cART, the strongest correlation was observed between BMD at hip and lean mass (r=0.41; p<0.01), with a trend for CD4+ count nadir (r=0.28; p=0.06). Moreover, the importance of lean mass was different in patients with a CD4 count nadir above or below 200 cells/mL.

**CONCLUSIONS**

In young, recently diagnosed HIV-infected patients, lean mass is one of the most important factors determining the peak bone mass, more important than time of HIV infection or nadir CD4+ count.