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

Juan Gallego Galiana; María J Vivancos; Francesca Gioia; Cristina Sobrino; María J Pérez-Elías; Ana Moreno; Santiago Moreno; Mónica Vázquez; José L Casado

Infectious Diseases and Rheumatology, *Hospital Ramón y Cajal, Madrid.*

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.

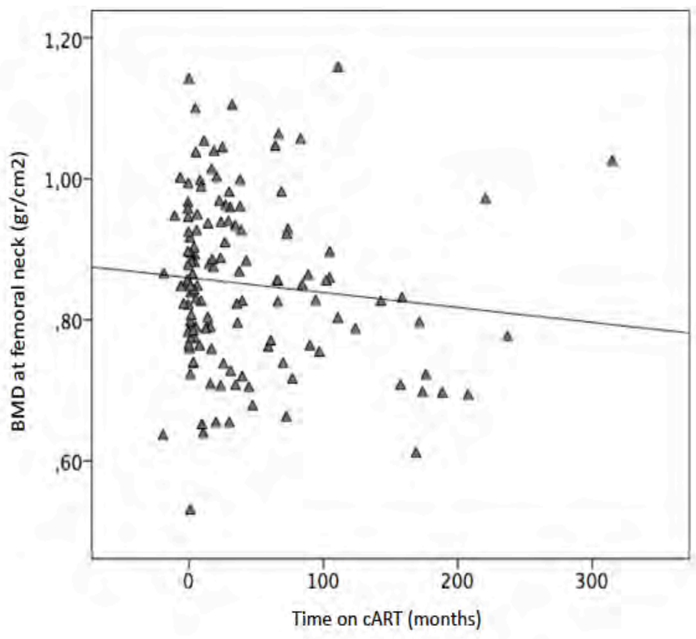
METHODS

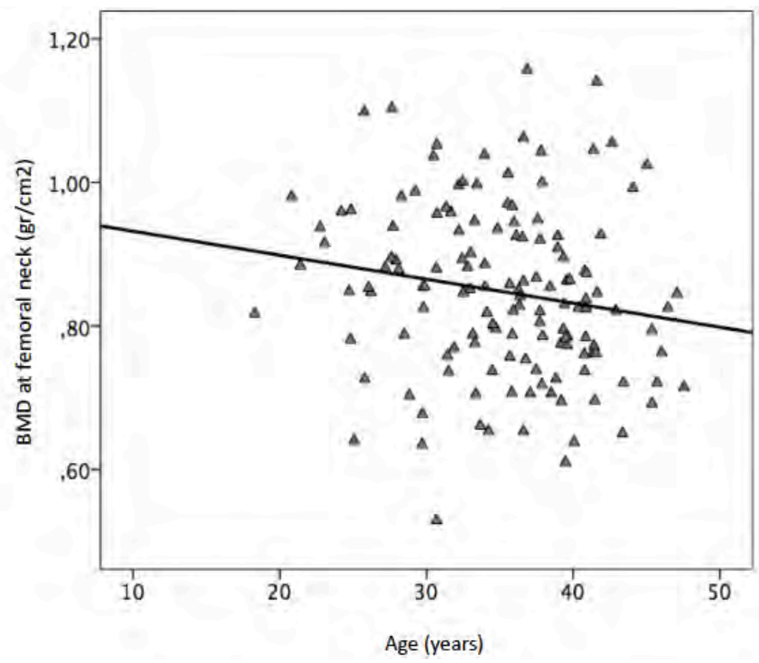
Cross-sectional study of HIV-infected patients younger than 40 years of age (EC 039/14; NCT02116751). A Dual X-ray Absorptiometry (DXA) was perfomed at diagnosis or early after cART initiation. Bone mineral density (BMD) and Z and T scores were recorded for the lumbar spine (L1–L4) and femoral neck. Demographic and HIV-related factors were correlated with fat and lean mass.

RESULTS

N= 151 patients

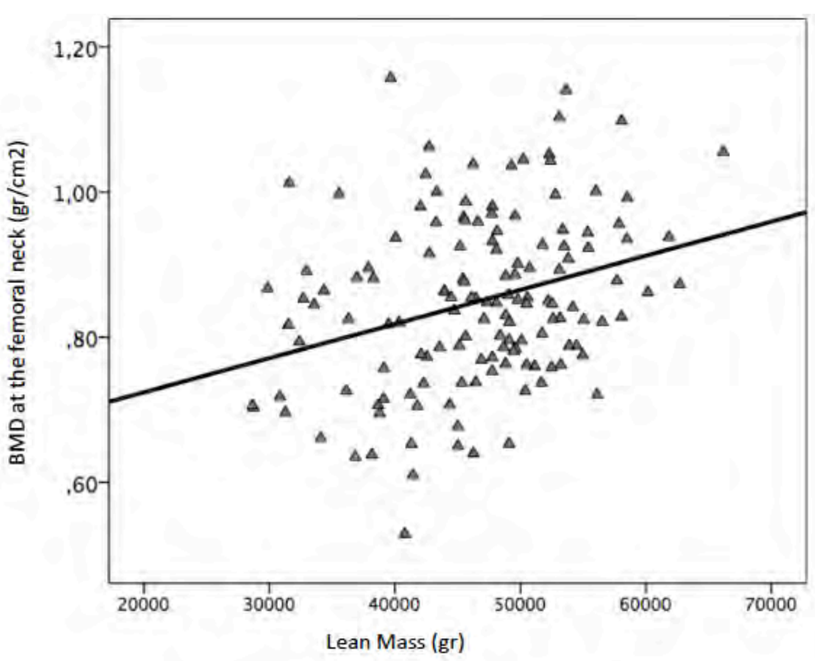
Mean age (years, range) Younger tan 30 yrs (%)	35.3 (18-40) 20%
Sex male, n (%)	129 (85%)
Risk practices for HIV infection, n (%) IDUs MSM	 13 (9%) 103 (68%)
HCV coinfection, n (%)	9 (6%)
Mean BMI (kg/m2)	24.2 (17.7-31.8)
Nadir CD4+ count (cells/mL)	337 (196-430)
HIV RNA level pre-cART (log copies/ml)	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 TDF+Non Nucleoside No TDF	 13% 58% 29%
Mean eGFR (ml/min/1.73 m2)	102,2 (57-155)
Mean 25-hidroxyvitamin 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) BMD lumbar spine L1-L4	 0.847 (0.53-1.16) 0.969 (0.26-1.32)
Femoral neck Osteopenia Osteoporosis Z score < -2	 38% 1% 2%
Spine Osteopenia Osteoporosis Z score < -2	 39% 9% 16%

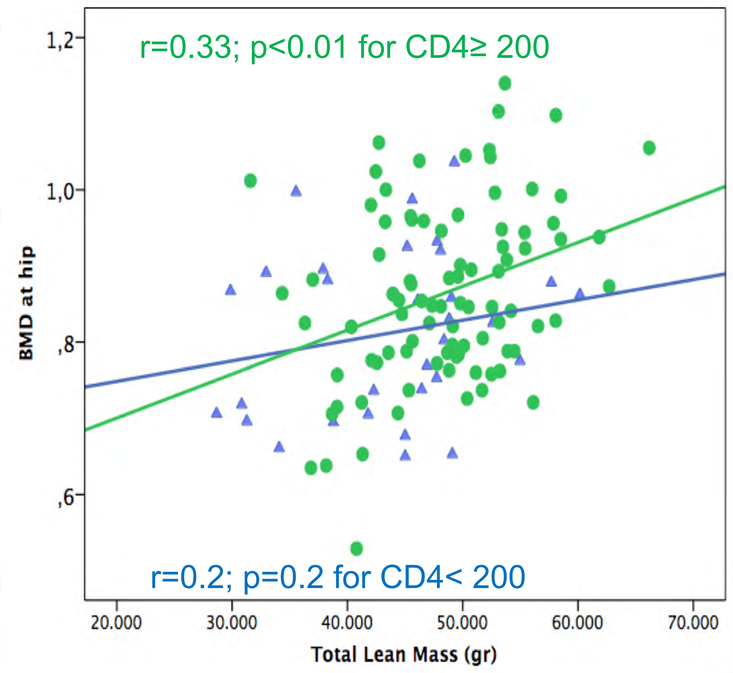


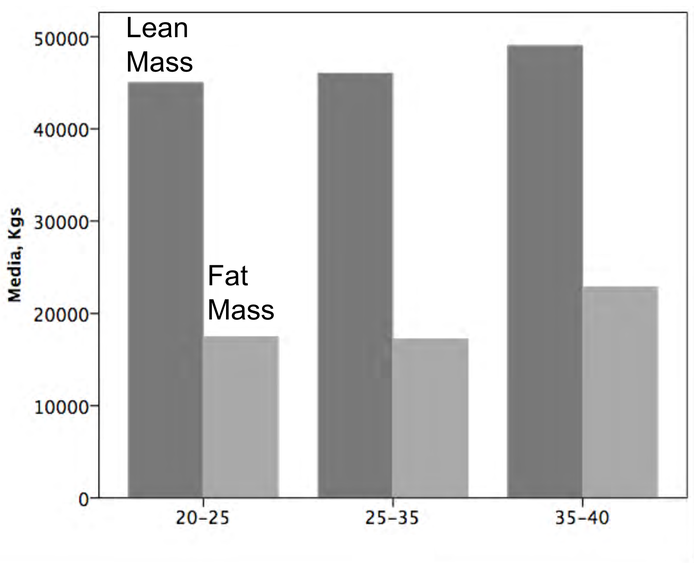


BMD at hip was significantly correlated with age (r=-0.21), BMI (r=0.25), nadir CD4+ (r=0.22) and with lean mass in all the body areas (lean mass to height squared ratio; r=0.32; p<0.01) but not with fat mass, whereas BMD in spine was correlated only with lean mass (r=0.22), and not with age (p=0.059),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