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Les meilleurs soins pour la vie
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Bone mineral density losses are related to cancer stages

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Introduction

- The loss of bone mineral density (BMD) has been associated with aging, low appendicular muscle mass, and the onset of menopause[1,2].
- Moreover, cancer patients have been shown to exhibit significant reductions in BMD[3,4].
- Little has been done to quantify the degree of bone mineral loss associated with cancer stages.

Aims

- We assessed femoral neck (FN) and total hip (TH) BMD measurements in cancer patients enrolled into a rehabilitation program.
- It is hypothesized that femoral neck and total hip BMD measures from dual-energy X-ray absorptiometry (DXA) scans will negatively correlate with cancer stages and appendicular muscle mass.

Methods

- Mean t-scores from right and left TH and FN were obtained from DXA scans from 118 cancer patients (49 females; 69 males; age, 65.3 ±12.5 yrs; weight, 70.2 ± 16.4 kg) with different types of cancers.
- Study patients were categorized into one of three cancer rehabilitation stages: 1) Supportive (if they were receiving cancer treatments), 2) Cachexia (if they had advanced diseases with important weight loss) and 3) Restorative (if they were cancer free and not receiving cancer treatments).
- T-score values were grouped according to the World Health Organization categories of BMD loss [normal (≥-1.0), osteopenia (<-1.0 to >-2.5), osteoporosis (≤-2.5)] using DXA software.
- Appendicular skeletal muscle mass indices (ASMI) were calculated as arm and leg lean mass measured by whole body DXA scans divided by height squared.

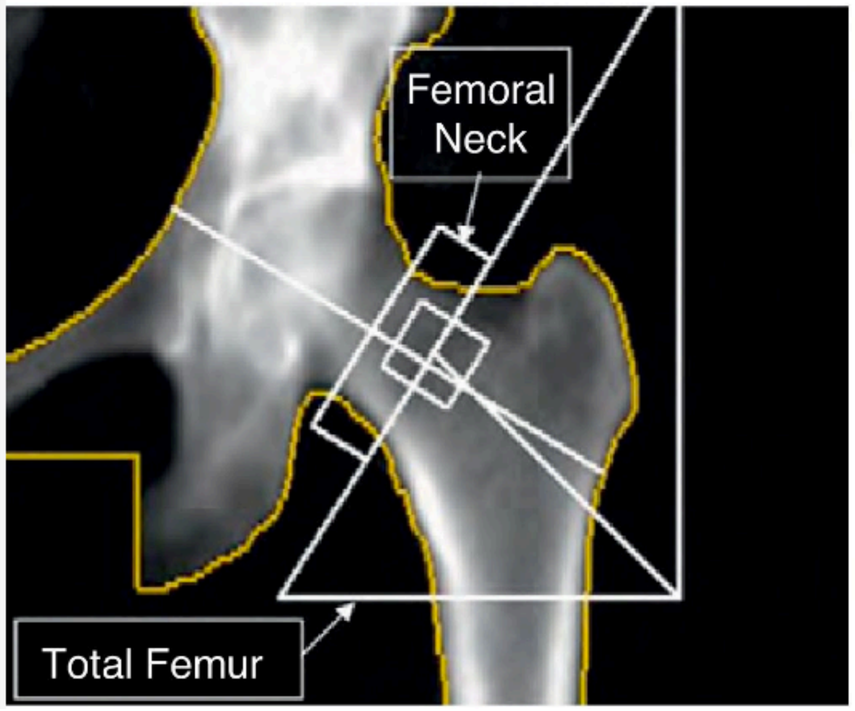

Figure 1. A hip DXA scan from Ramos et al. (2012).

Results

Figure 2. Incidence of osteopenia and osteoporosis

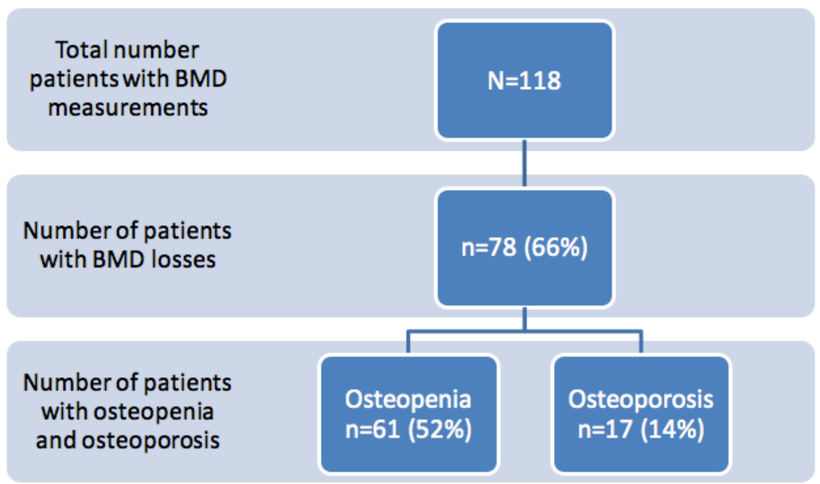

Table 1. Tukey-Kramer Multiple-Comparison Test

Categories	FN T-score (mean±SD)	TH T-score (mean±SD)
Restorative (n=26)	-1.50±0.81	-1.16±0.91
Supportive (n=61)	-1.19±0.97	-0.53±1.27
Cachectic (n=31)	-1.70±0.99* (p=0.02 vs Supportive)	-1.25±1.11** (p=0.009 vs Supportive)

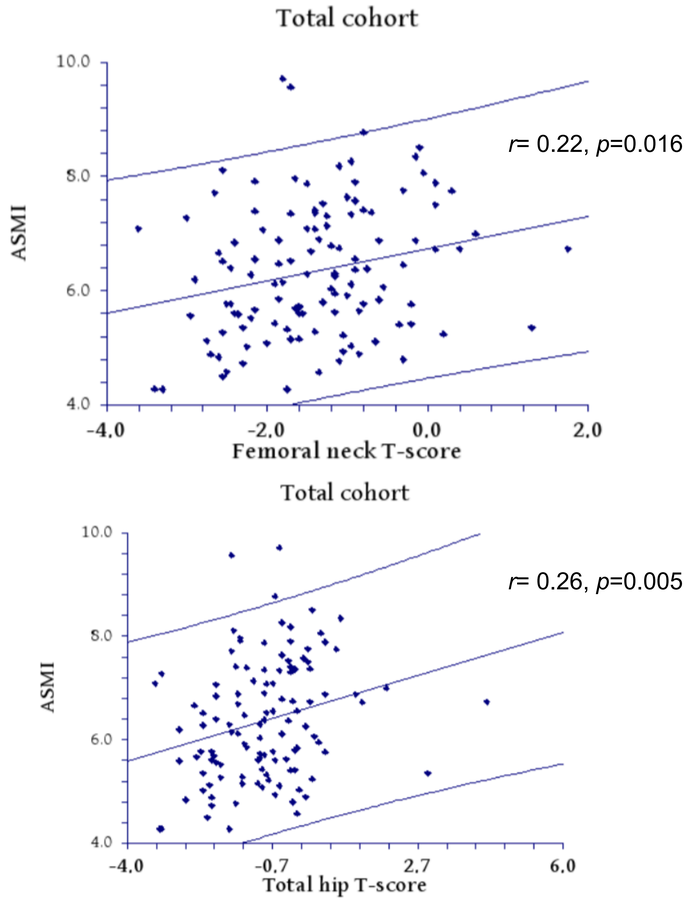

Figure 3. Scatter plots depicting the line of regression and limits of prediction for appendicular skeletal mass index (ASMI) vs FN t-score and ASMI vs TH t-score

Discussion

- Patient age or sex is not significantly correlated with FN or TH BMD losses (data not shown).
- BMD losses are particularly evident in cachectic cancer patients
- There is overall a weak association between BMD and appendicular skeletal muscle mass in cancer patients
- Future studies should look into other factors related to cachexia which may negatively affect BMD in cancer patients.

Acknowledgements

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References

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