Article:
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visiting the research center between 2006-2008. Plasma levels of 92 proteins were measured using the Olink inflammatory panel. ASMI was calculated from DXA lean mass of the limbs divided by height^2 and hand grip strength using a hydraulic dynamometer. To study ASMI and HGS as linear outcomes, we used linear regression. Sarcopenia was defined according to the cut-off values recommended for the European Working Group of Sarcopenia in Older people 2 (EWGSOP2) and studied using logistic regression. Both linear and logistic regression models were adjusted for age, sex, blood cell counts, body fat percentage (BF%), eGFR mL/min/1.73m^2 and smoking pack-years. Significance was defined after correction for multiple testing (83 proteins remained after quality control procedures, $p < 6.02 \times 10^{-4}$).

Results: Higher levels of **interleukine-13** [$\beta = -0.078$, $p = 1.02 \times 10^{-5}$] and **Caspase-8** [$\beta = -0.070$, $p = 8.68 \times 10^{-5}$] were significantly associated with lower ASMI. Conversely, higher levels of **STAM-binding protein** [$\beta = 0.075$, $p = 1.85 \times 10^{-5}$] and **interleukine-22** [$\beta = 0.071$, $p = 9.37 \times 10^{-5}$] were associated with greater ASMI. A borderline significance showed that higher plasma concentration of **tumor necrosis factor** was associated with lower muscle strength [$\beta = -0.538$, $p = 0.00015$]. No significant associations were observed for sarcopenia as a binary outcome.

Conclusion: Four circulating proteins involved in different biological inflammation pathways were associated with muscle mass (ASMI) in aging individuals. Replication and further functional scrutiny are currently underway, seeking to characterize these associations.

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COP03

The association in men and women between Growth Differentiation Factor 15, bone density and bone turnover

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Introduction: Growth differentiation factor 15 (GDF15) is a stress-responsive hormone and one of the key senescence-associated secretory phenotype (SASP) proteins. Levels increase with age and it correlates with frailty index and higher levels are detected in several diseases, such as cachexia, cancer, cardiovascular and kidney disease.

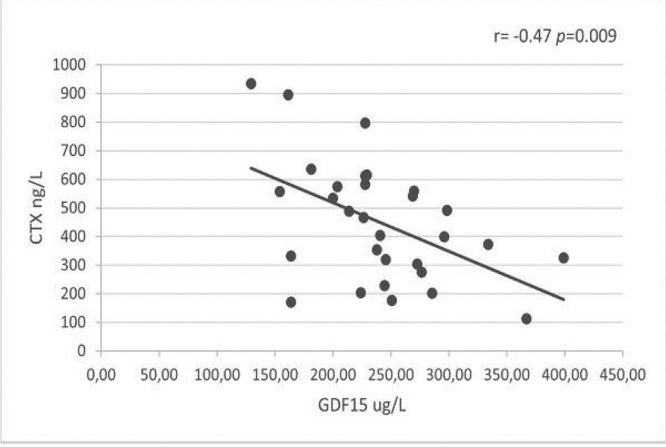
Purpose: Our aim was to determine the effect of age and gender on GDF15 levels and any association with bone mineral density (BMD) and bone turnover.

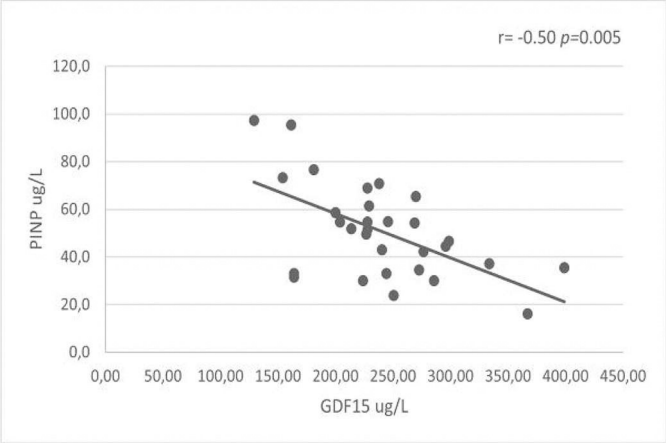
Methods: We measured serum levels of GDF15 in 180 healthy women and men from the "XtremeCT study" (age groups 16-18, 30-32, over 70 years), using an ELISA from R&D Systems; CTX, PINP and some hormones were measured using the Cobas automated analyser (Roche Diagnostics). Clinical data, bone density (spine and hip by DXA) and high resolution peripheral quantitative computed tomography (HRpQCT) (radius and tibia) were measured. Univariate analysis of variance with the post-hoc Tukey test and multiple linear regression have been used to assess the effect of age and gender. Spearman's rank correlation was used to evaluate the associations between GDF15 and the other variables.

Results: GDF-15 levels were associated with age (p=0.000) and gender (p=0.003), with a significant gender*age interaction (p=0.002). In particular, there was a significant difference (p=0.000) between the younger groups (aged 16-18 and 30-32) with the older one. A negative correlation was found between GDF15 and CTX (r=-0.47, p=0.009) and PINP (r=-0.50, p=0.005) in women aged over 70 (Figures). No other significant correlations have been found with hormones, BMD and HRpQCT parameters.

Conclusions: Age and gender are determinants of GDF15 and much higher levels are found in older people. In older women, higher GDF15 are associated with lower BTM levels. The next steps are to examine whether GDF15 is related to rate of bone loss and fracture risk.

Keywords: GDF15; SASP protein; Bone turnover markers; Bone density





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COP04

Bone complications in type 2 diabetes are mediated through differential genetic risks for insulin resistance or obesity

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Introduction: Individuals with type 2 diabetes mellitus (T2DM) have increased fracture risk, despite higher to normal mean BMD.