

Title: Prevalence of concomitant bone and muscle wasting in patients from the SarcoPhAge study

Background: With the aging process, muscle and bone wasting generate an increased risk of morbid outcomes. The awareness of clinical significance of osteoporosis and sarcopenia is constantly increasing. They both represent a serious public health burden and extensive social costs. Our objective is to assess the prevalence of osteoporosis (OP) in a population of individuals diagnosed with sarcopenia (Sp).

Material & Methods: We investigated women, aged 65 years old and above, for whom bone mineral density (BMD) was available at the time of inclusion in the SarcoPhAge (*Sarcopenia and Physical Impairments with advancing Age*) study. SarcoPhAge is a prospective study following community-dwelling elders to assess health consequences of Sp. Muscle strength was assessed using a hand-dynamometer, appendicular lean mass and BMD by Dual-Energy X-Ray Absorptiometry (DEXA) and physical performance by the Short Physical Performance Battery test. Sp was diagnosed according to the European Working Group on Sarcopenia in Older People, i.e. a low muscle mass plus either low muscle strength or low physical performance. A BMD T-score equal to or below -2.5SD was used to define osteoporosis (World Health Organization definition).

Results: 106 women aged 73.81 ± 6.32 years were included. Among them, 22 were diagnosed with Sp (20.75%) and 19 (17.92%) with OP. After adjustment, a significant lower appendicular lean mass was observed in OP women compared to women without OP ($p=0.018$). We also observed, in OP subjects, a lower muscle strength ($p=0.021$) and a lower physical performance ($p=0.014$). There were more OP women among Sp subjects (36.4%) than among non-Sp subjects (13.1%) ($p=0.011$). Numerical values of BMD were lower in the Sp versus non-Sp populations but the differences did not reach the level of statistical significance. Eventually, appendicular lean mass was positively correlated with the 3 sites BMD values (all p -values < 0.05).

Conclusion: Muscle mass, muscle strength and physical performance are lower in patients presenting Op. With the increasing number of elderly patients presenting both conditions, there is a need for a better understanding of concomitant bone and muscle wasting in order to better target public health interventions to establish.