

Lecture 5: Correlation between Sarcopenia and osteoporosis in patients with PPS

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Dr Lissens highlighted previous research where he found those who used walking aids had lower bone mineral density (BMD) than those who did not use walking aids.

In this research, he also confirmed those who had greater muscle mass, and were physically active, had the highest BMD.

Recent Study Findings

30 patients (mean age 56.3 years; 18 women, 8 of whom were post-menopausal; 12 men) were measured with Dual X-ray absorptiometry.

Low femoral neck BMD was found in 80% of the patients (mean was -22.76%).

Low lumbar bone mass was seen in 63% (mean was -13.21%).

70% of all people in the study fit the criteria for Osteoporosis.

Significant differences were found between men and women femoral BMD, with men having greater loss than women (-27.2% for males and -19.46% for females). There was more significant BMD loss in cortical bone (shaft of bone) than trabecular bone (toward the top of the bone) in the femur.

There were only small gender differences observed in lumbar (trabecular) measurements.

Lissens also found some of the study participants did not have the expected inverse relationship between BMD and muscle mass. There were males in the study who had more muscle mass than others, and were doing more physical activity, yet had lower BMD.

Conclusions

Lissens concluded there were neurogenic factors behind bone loss, related to muscle atrophy (i.e. base line levels were different for males) and disturbed regulation of bone by the central nervous system.

Discussion

This was a cross-sectional study so it is difficult to explain the reasons he found the above results. What was the type of activity (and amount) the males in this study were doing? What duration had they been active, or remained active, and what extent polio had affected the body?

The above questions are important to consider as increasing bone mineral density is not easy to do in an adult population. Studies that have demonstrated it is possible often involve significant loading, or impact, to achieve adaptation, and the time to achieve this also is much longer than what is seen to elicit muscle adaptation.

Lissens discussed surprise when looking at the “normal” limb from the research undertaken. As with previous studies with EMG between polio “affected” and “unaffected” limbs, which have shown altered readings on both limbs, Lissens found similar issues with Dual X-Ray absorptiometry. The muscle tissue on both limbs (even without polio being “identified” on both sides of lower limbs) had altered muscle and fat composition. Hence, the danger in describing the “good leg” or relying on this leg particularly as a person ages.

Lissens also discussed difficulty in taking measurements at other sites. For example, he was interested in looking at the knee for changes related to osteoarthritis or arthroses but the knee was too difficult to conclude any results due to chronic deformity/altered biomechanics over a prolonged period.