노인재활

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OP1-3-6

Association between Osteoporosis and Grip Strength and Balance in Elderly Population

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Objective

Korea is rapidly moving into an aged society. The aging process is accompanied by the progressive decline in bone mineral density (BMD), muscle mass, and muscle strength. These factors influence each other, therefore, researching the correlation between aging and muscle-bone relationship is meaningful to study. This study aimed to evaluate BMD is associated with decreased hand grip strength, and whether the BMD is associated with the balance function in elderly population.

Method

This cross-sectional study analyzed pre-existing data from the Korean Frailty and Aging Cohort Study. The bone mineral density (BMD) was measured in 281 community-dwelling elderly subjects using dual-energy X-ray absorptionmetry (DXA) and categorized 3 group based on their T-score as normal, osteopenia and osteoporosis. The hand grip strength was measured in dominant hands using a hand-held dynamometer. The clinical balance tests were carried out using the timed up and go test (TUG), short physical performance battery (SPPB). One-way ANOVA and Spearman's correlation test were used to analyze the relationship between hand grip strength, balance tests and BMD.

Results

There were significant difference in grip strength with osteoporosis as compared to normal bone density and osteopenia ($p=0.014$). The three group was positive correlation with chair stand test component of the SPPB test ($r=0.124$, $p=0.038$) and negative correlation with hand grip strength ($r=-0.177$, $p<0.01$). However, no significant differences were observed between the three groups for the BMD and clinical balance tests ($p=0.56$).

Conclusion

Low hand grip strength is positively associated with low BMD. There was no relationship between BMD and outcomes of the balance test. This study suggests that osteoporosis

patients may have low grip strength and low chair stand test score and may be related to sarcopenia. In the elderly population, should be encouraged to increase muscle strength for the risk management of osteoporosis.