BONE MINERAL DENSITY (BMD), BONE LOSS AND CORONARY CALCIFICATION IN OLDER MEN

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Cardiovascular disease (CVD) and osteoporosis are important public health burdens in older men. Recent epidemiologic studies suggest that osteoporosis and atherosclerosis may be linked. The goals of this study were to determine whether measures of bone strength were related to coronary artery calcification (CAC). To further test the underlying etiologic pathways, we explored 1) the relationship of estrogen and C-reactive protein (CRP) and 2) the genetic contribution of osteoprotegerin (OPG) polymorphisms. A total of 138 Caucasian men aged 51 to 78 years were participated in present study. Hip BMD, CRP and sex steroid hormones were measured, and annualized percent change in BMD was calculated. CAC score was measured by electron beam tomography. Men were genotyped for T-950C and G-1181C polymorphisms in OPG gene. Correlation analysis, analysis of variance (ANOVA), and regression analysis were employed to evaluate the study aims.

The prevalence of CAC increased with age, ranging from median value of 152 at less than 65 years to 788 at 80 years and older. Hip BMD or bone loss at the hip was not correlated with CAC. Neither serum estrogen nor CRP was related to bone loss or coronary calcification. There were no significant differences in BMD across OPG T-

950C or G-1181C genotypes. However, men with T-950C C/C genotype were more likely to lose BMD at the intertrochanter compared with men with T/T or T/C genotypes ($p = 0.03$). Calcaneal BUA significantly differed across G-1181C genotypes; men with C/C genotypes had 25% higher BUA values than men with G/G genotypes. Interestingly, men with C/C genotypes had 0.5SD higher coronary calcification than men with G/G genotypes, which persisted after adjusting for age ($p=0.03$). There was a significant dose dependent effect across genotypes ($p=0.01$).

In conclusion, we could not find any relationship between measures of bone strength and coronary calcification in older men. However, our findings suggest that genetic variations in OPG may be of importance to examine its effect on the development of coronary calcification in older men.

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