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Prevalence and seasonal variation of hypovitaminosis D and its relationship to bone metabolism in healthy Hungarian men over 50 years of age: the HunMen Study

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Abstract

This study reports a high prevalence of hypovitaminosis D and low bone mineral density (BMD) in a healthy Hungarian male cohort over 50 years of age. Men with 25-hydroxyvitamin D levels of <75 nmol/L had a significantly higher 10-year hip and major osteoporotic fracture probability using the country-specific fracture risk assessment (FRAX) algorithm.

Introduction: The aim of this study is to characterize the prevalence and seasonal variation of hypovitaminosis D and its relationship to bone metabolism in healthy Hungarian men over 50 years of age.

Methods: We determined levels of 25-hydroxyvitamin D (25-OH-D), PTH, osteocalcin (OC), C-terminal telopeptides of type-I collagen (CTX-I), procollagen type 1 amino-terminal propeptide (PINP), BMD at L1-L4 (LS) and femur neck (FN), daily dietary calcium intake, and the 10-year probability of hip fracture and a major osteoporotic fracture using the country-specific FRAX algorithm in 206 randomly selected ambulatory men.

Results: The mean (range) age of the volunteers was 60 (51-81) years. The prevalence of hypovitaminosis D (25-OH-D, <75 nmol/L) was 52.9%. The prevalence of low (T-score < -1.0) BMD at the FN and LS was 45% and 35.4%, respectively. The mean (range) FRAX hip fracture and FRAX major osteoporotic fracture was 0.8% (0-9.4%) and 3.8% (1.7-16%), respectively. On comparing the vitamin D sufficient to the insufficient group, there was a statistically significant difference between the FRAX hip fracture and FRAX major osteoporotic fracture indexes. There was significant seasonal variation in the vitamin D levels; the lowest levels were measured in winter and the highest in summer.

Conclusions: A high prevalence of hypovitaminosis D and low BMD were observed in the studied Hungarian male population. This is the first study reporting higher 10-year hip and major osteoporotic fracture probability using the country-specific FRAX algorithm in individuals with hypovitaminosis D.

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