Abstract

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Vitamin K1 and 25(OH)D are independently and synergistically associated with a risk for hip fracture in an elderly population: A case control study.

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BACKGROUND & AIMS: The incidence of hip fractures in Oslo is among the highest in the world. Vitamin D, as well as vitamin K, may play an important role in bone metabolism. We examined if vitamin K1 and 25(OH)D were associated with an increased risk of hip fracture, and whether the possible synergistic effect of these two micronutrients is mediated through bone turnover markers.

METHODS: Blood was drawn for vitamin K1, 25(OH)D, and the bone turnover marker osteocalcin upon admission for hip fracture and in healthy controls.

RESULTS: Vitamin K1 and 25(OH)D were independently associated with a risk of hip fracture. The adjusted odds ratio (95% CI) per ng/ml increase in vitamin K1 was 0.07 (0.02-0.32), and that per nmol/L increase in 25(OH)D was 0.96 (0.95-0.98). There was a significant interaction between 25(OH)D and vitamin K1 (p < 0.001), and a significant correlation between total osteocalcin and vitamin K1 and 25(OH)D (rho = 0.18, p = 0.01; rho = 0.20, p = 0.01, respectively).

CONCLUSIONS: Vitamin K1 and 25(OH)D are lower in hip fracture patients compared with controls. Vitamin K1 and 25(OH)D are independently and synergistically associated with the risk of hip fracture when adjusting for confounders. Intervention studies should include both vitamins.

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