Abstract

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Relationship between serum parathyroid hormone, vitamin D sufficiency, age, and calcium intake.

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BACKGROUND: Vitamin D deficiency is extremely common among elderly subjects and it has been associated with poor bone health, and to a number of other conditions. The ideal 25-hydroxy-vitamin D [25(OH)D] concentration, reflecting the size of vitamin D deposits, are generally retained those not associated with any marginal increase in serum parathyroid hormone (PTH). These threshold values vary considerably and this may be due to the interaction of other factors.

OBJECTIVE: The aim of the study is to assess whether age and calcium intake interact with the relationship between 25(OH)D and PTH.

METHODS: Data from a survey on the prevalence of hypovitaminosis D in elderly women in Italy were analysed in order to verify whether age and calcium intake were interfering on the 25(OH)D/PTH relationship. A total of 697 women were available for analysis.

RESULTS: Serum PTH levels were significantly correlated with age, 25(OH)D and calcium intake ($p<0.001$) and in a multivariate model they all significantly contributed to explain PTH variance ($R(2)=24.4\%$). In 39 elderly osteoporotic women on a low calcium intake and given vitamin D supplements (2000-3000 IU daily for >8 months) able to increase 25(OH)D levels above 110 nMol/l, PTH levels were maintained below 35 pg/mL.

CONCLUSION: The minimum 25(OH)D levels to be recommended depends largely on the age and the calcium intake. In elderly individuals not taking calcium supplements in order to keep serum PTH levels strictly within the normal range 25(OH)D serum levels should be maintained above ca. 120 nMol/L.

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