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ORIGINAL RESEARCH COMMUNICATION

An association of serum vitamin D concentrations < 40 nmol/L with acute respiratory tract infection in young Finnish men^{1,2,3}

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Background: The effects of vitamin D in regulating bone mineralization are well documented. The action of vitamin D as a key link between Toll-like receptor activation and antibacterial responses in innate immunity has recently been shown. The data suggest that differences in the ability of human populations to produce vitamin D may contribute to susceptibility to microbial infection.

Objective: We aimed to explore whether an association exists between vitamin D insufficiency and acute respiratory tract infection in young Finnish men.

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Design: Young Finnish men (n = 800) serving on a military base in Finland were enrolled for this study. Their serum 25-hydroxyvitamin [25(OH)D] concentrations were measured in July 2002. They were followed for 6 mo, and the number of days of absence from duty due to respiratory infection were counted.

Results: The mean (\pm SD) serum 25(OH)D concentrations were 80.2 \pm 29.3 nmol/L (n = 756). Subjects with serum 25(OH)D concentrations < 40 nmol/L (n = 24) had significantly (P = 0.004) more days of absence from duty due to respiratory infection (median: 4; quartile 1— quartile 3: 2—6) than did control subjects (2; 0—4; n = 628; incidence rate ratio 1.63; 95% CI: 1.15, 2.24). We found a significant (P = 0.004) association between serum 25(OH)D concentrations and the amount of physical exercise before induction into military service. We also found significantly (P < 0.001) lower serum 25(OH)D concentrations in subjects who smoked (72.8 \pm 26.6 nmol/L; n = 192) than in control subjects (82.9 \pm 29.7 nmol/L; n = 537).

Conclusion: Clinical trials of vitamin D supplementation are needed to investigate whether it enhances immunity to microbial infections.

Key Words: Vitamin D • respiratory infection • insufficiency • men • public health • 25-hydroxyvitamin D

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