HIGH MEAN SERUM 25-HYDROXYVITAMIN D CONCENTRATION (≥49 NG/ML) OF SAN DIEGO CA LIFEGUARDS

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Background

Research on the inverse association between serum 25-hydroxyvitamin D (25(OH)D) and risk of cancer has revealed that concentrations > 50 ng/ml would be needed to prevent occurrence of a substantial proportion of postmenopausal breast and colon cancer and invasive cancer overall.

Objective

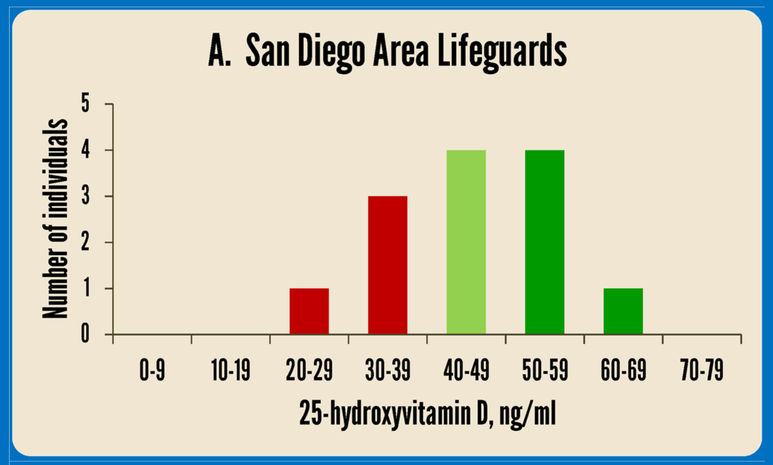
We sought to determine if 25(OH)D levels of 50 ng/ml would be found in individuals who receive a substantial amount of sun exposure and do not take vitamin D supplements.

Methods

To determine 25(OH)D levels of a healthy population with substantial solar exposure, we obtained blood spot specimens from 13 San Diego beach lifeguards and analyzed the samples using liquid chromatography/ tandem mass spectrometry (LC-MS/MS) (ZRT Laboratories, Beaverton OR). There were 9 men and 4 women in the study.

Results

The serum 25(OH)D concentrations were 27, 34, 34, 36, 40, 40, 45, 48, 50, 52, 54, 59 and 61 ng/ml. The mean was 45 and the standard deviation was 10.5 ng/ml (Fig. 1A). The median was 45 and the interquartile range was 34-53 ng/ml. Their median age was 25 years. None reported taking vitamin D or calcium supplements. Data for NHANES (Fig. 1B) is shown for comparison.



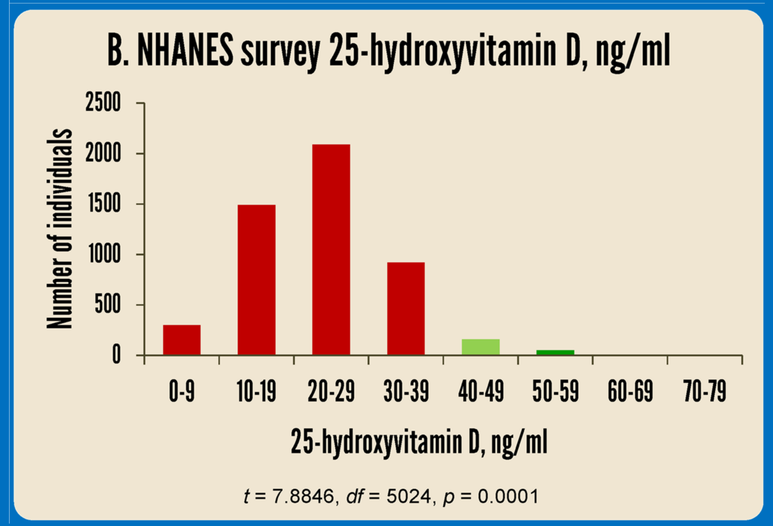


Fig. 1 A. Serum 25(OH)D concentrations in the San Diego, CA beach lifeguard study, and B. National Health and Nutrition Study of a sample of the U.S. population (Sources: Present study, McDonnell et al., 2016)

Discussion

The 25(OH)D concentrations of the lifeguards were similar to those of the traditionally living Maasai in Tanzania Africa, whose mean serum 25(OH)D was 48 ng/ml.

This study adds confidence to the likelihood that 25(OH)D concentrations in the range of 45-50 ng/ml are safe and consistent with robust good health.

References

Garland CF, Gorham ED, Cuomo RE, et al. Serum 25-hydroxyvitamin D and risk of postmenopausal breast cancer: systematic review. Abstract. Vitamin D Workshop, Boston, 2016.

Luxwolda MF, Kuipers RS, Kema IP et al. Traditionally living populations in East Africa have a mean serum 25-hydroxyvitamin D concentration of 115 nmol/L. *Br J Nutr*. 2012; 108(9):1557-61.

McDonnell SL, Baggerly C, French C et al. Serum 25-Hydroxyvitamin D concentrations ≥40 ng/ml are associated with >65% lower cancer risk: pooled analysis of randomized rrial and prospective cohort study. *PLoS One*. 2016; 11(4):e0152441.

Schleicher RL, Sternberg MR, Lacher DA, et al. The vitamin D status of the US population from 1988 to 2010 using standardized serum concentrations of 25-hydroxyvitamin D shows recent modest increases. *Am J Clin Nutr*. 2016 ;104(2):454-61.