

Vitamin D and Racial Disparities for Pancreatic Cancer - Letter

The recent article on racial disparities in pancreatic cancer incidence found that black Americans had an unexplained 42% increased risk of pancreatic cancer mortality rates than white Americans, and neither differences in smoking or obesity rates explained this disparity (1). Overlooked in this article was any discussion of the role that vitamin D could play in reducing the risk of pancreatic cancer. Several ecological studies have found that indices of solar UVB doses as proxies for vitamin D production are inversely correlated with pancreatic cancer mortality rates even after accounting for smoking (2). A cohort study also found that pancreatic cancer incidence was significantly inversely correlated with vitamin D intake: compared with participants in the lowest category of total vitamin D intake (<150 IU/d), pooled multivariate relative risks for pancreatic cancer were 0.78 (95% confidence interval, 0.59-1.01) for 150 to 299 IU/d and 0.59 (95% confidence interval, 0.40-0.88) for ≥ 600 IU/d ($P_{\text{trend}} = 0.01$; ref. 3). However, a prospective study of male Finnish smokers found a 3-fold increased risk for pancreatic cancer (highest versus lowest quintile, >65.5 versus <32.0 nmol/L; odds ratio, 2.92; 95% confidence interval, 1.56-5.48; $P_{\text{trend}} = 0.001$; ref. 4). The difference between these two studies may well be that one was based on smokers, the other primarily on nonsmokers, and that vitamin D has different effects on pancreatic cancer risk depending on smoking status.

There is also the possibility that some of the difference between the studies is how vitamin D intake or status is determined. Ecological studies such as those in the studies by Grant et al. (2, 5) use summertime solar UVB determined from satellite measurements. Casual solar UVB irradiance in summertime can produce 1,000 to 1,500 IU/d, which is sufficient to increase serum 25 (OH)D levels by 25 to 37 nmol/L. This amount is higher than the oral intakes in the study by Skinner et al. (3) but similar to the differences noted by Stolzenberg-Solomon et al. (4). Ecological studies have larger populations than observational studies and include both smokers and nonsmokers; the effect of smoking on risk is included through use of an index for smoking such as lung cancer mortality rates.

Black Americans have serum 25-hydroxyvitamin D levels ~ 10 ng/mL lower than white Americans due

to darker skin pigmentation (5). Despite lower vitamin D production from solar UVB for black Americans, solar UVB doses in July have been found inversely correlated with several types of cancer with higher mortality rates for black Americans (breast, colon, rectal, and all cancer; ref. 5). The 10-ng/mL racial difference in serum 25-hydroxyvitamin D levels would explain some of the racial disparity in pancreatic cancer mortality rates, although other factors such as disparities in socioeconomic status, smoking status, and medical treatment may also play a role. Further studies are required to properly apportion the attribution to each factor.

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