

Vitamin D Linked to Reduced Pancreatic Cancer Risk

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CHICAGO, Sept. 13 -- The risk of pancreatic cancer, already low, may be cut by as much as 41% by consuming the U.S. recommended daily allowance of vitamin D (400 IU), according to an epidemiologic cohort study of more than 100,000 people.

The protective effect held whether individuals got their vitamin D from dietary sources (such as skim milk and fatty fish), vitamin supplements, or a combination of both, found Halcyon G. Skinner, Ph.D., of Northwestern University here, and colleagues.

"To our knowledge, this is the first epidemiologic report of an association between vitamin D intake and the risk for pancreatic cancer," Dr. Skinner and colleagues wrote in the September issue of *Cancer Epidemiology Biomarkers & Prevention*.

Previous studies that found reduced risk for colon, breast, and prostate cancer in people living in sunny climates suggested there might be a link between vitamin D and pancreatic cancer as well, the investigators said. Pancreatic cancer is the fourth leading cause of cancer deaths (about 32,000) in the United States.

The current study analyzed data from more than 46,000 men (ages 40 to 75) who took part in the Health Professionals Follow-up Study (HPFS). The analysis also included data from more than 75,000 women (ages 38 to 65) involved in the Nurse's Health Study. Both the men and the women took a food frequency questionnaire in the mid 1980s. Average follow-up was 16 years.

After adjusting for vitamin use, smoking, diabetes, and other risk factors, those whose vitamin D intake was greater than 150 IU/day had reduced pancreatic cancer risk compared with those whose intake was less:

150-299 IU: relative risk=0.78 (95% confidence interval=0.53 to 1.14)

300 to 449 IU: RR=0.57 (95% CI=0.40 to 0.83)

450 to 599 IU: RR=0.56; (95% CI=0.36 to 0.87)

600 IU or more: RR=0.59 (95% CI=0.40 to 0.88)

The results were weaker when multivitamin supplement users were excluded. In this analysis, those who consumed 300 IU/day or greater from diet alone had a nonsignificant 33% reduced risk compared

with those whose intake was less (RR=0.67; 95% CI=0.41 to 1.09; $P=0.09$).

However, the extremely small sample of non-vitamin supplement users ($n=199$) renders these results less than reliable, the investigators said.

After adjusting for vitamin D intake, the study found no protective effect for calcium ($P=0.29$) or retinol ($P=0.43$).

However, intake of two foods that are a rich source of vitamin D, skim milk and fatty fish (such as salmon, mackerel, or sardines), were independently though non-significantly associated with reduced risk.

Compared with those who never drank skim milk, the relative risk for those who drank more than one 8-ounce serving per day was 0.83 (95% CI=0.63 to 1.10). Similarly, the relative risk for those who ate more than one three- to five-ounce serving of fatty fish per week was 0.78 (95% CI=0.55 to 1.11).

Laboratory studies have suggested that vitamin D might reduce pancreatic cancer risk by regulating cellular proliferation and differentiation. Normal and malignant pancreatic tissue expresses high levels of an enzyme that converts 25-hydroxyvitamin D to active 1,25-dihydroxyvitamin D, which has an antiproliferative effect on pancreatic cancer cell lines, the researchers noted.

A main limitation of the study is that it did not account for the cutaneous production of vitamin D, the authors said.

"In concert with laboratory demonstrations of antitumor effects of vitamin D, our results point to a potential role for the vitamin D pathway in the prevention and pathogenesis of pancreatic cancer," the authors said.

"Considering the paucity of epidemiologic data on this malignancy, additional study of vitamin D and pancreatic cancer is warranted," they concluded.

Action Points

Explain to patients that the results of this epidemiologic study held whether vitamin D came from dietary sources, vitamin supplements, or both. Explain that these data need to be replicated by a randomized prospective trial to show causality.

Advise patients that good sources of vitamin D include fortified dairy products; fatty fish such as salmon, mackerel, or sardines; eggs; liver; and fortified breakfast cereals.

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Halcyon Skinner et al. "Vitamin D intake and the risk for pancreatic cancer in two cohort studies." *Cancer Epidemiology Biomarkers & Prevention* 2006; 15:1688-1695.