

Fish Oil and Prostatic Cancer

A total of 1,596,670 new cancer cases and 571,950 deaths from cancer occurred in the U.S. in 2011. Between 1990 and 2007, the most recent year for which data is available, overall death rates decreased however by about 22% in men and 14% in women.

In spite of this positive trend, these numbers are of a magnitude that stresses the essentiality of continuously trying to minimize the cancer incidence.

Due to the widespread use of fish oil supplements, it was consequently of concern, that a paper on July 11, 2013 was published by Brasky et al. in the J Natl Cancer Inst entitled, "Plasma Phospholipid Fatty Acids and Prostate Cancer Risk in the SELECT Trial", stating that "Recommendations to increase LC ω -3PUFA intake should consider its potential risks". The authors found that higher plasma omega-3 fatty acid levels were associated with increased risk for developing prostate cancer. In this study, plasma phospholipid omega-3 levels were measured in 834 men who eventually developed prostate cancer, and 1393 men who did not. The authors found, that men in the highest quartile of omega-3 had a 43% to 71% increased risk for prostate cancer. This is the same conclusion that the same group reached in 2011 in a study in another cohort entitled, "Serum Phospholipid Fatty Acids and Prostate Cancer Risk: Results from the Prostate Cancer Prevention Trial" (1).

There are however several issues in the paper that raise questions to the authors results and their interpretation. First of all the reported EPA+DHA level in the plasma phospholipids in the study was 3.62% in the no-cancer control group, 3.66% in the total cancer group, 3.67% in the low grade cancer group, and 3.74% in the high-grade cancer group. These differences between cases and controls are very small, being within the normal variation. The lowest quartile would correspond to an omega-3 Index of <3.2 % and the highest to an Index of >4.8 %. These values are obviously low. So to conclude that regular consumption of 2 oily fish meals a week or taking fish oil supplements, both of which would result in an Omega-3 Index above the observed range, would increase risk for prostate cancer is extrapolating beyond the data.

Further, the study did not test the question of whether giving fish oil supplements or eating more oily fish increased prostate cancer risk; it looked only a blood levels of omega-3 which are determined by intake, other dietary factors, metabolism and genetics.

The authors also fail to deal in details with the results from the literature. The same team reported in 2010 that the use of fish oil supplements was not associated with any increased risk for prostate cancer (2). A 2010 meta-analysis of fish consumption and prostate cancer reported a reduction in late stage or fatal cancer among cohort studies, but no overall relationship between prostate cancer and fish intake (3). Terry et al. in 2001 (4) reported higher fish intake was associated with lower risk for prostate cancer incidence and death, and Leitzmann et al. in 2004 (5) reported that EPA and DHA intakes may reduce the risk of total and advanced prostate cancer in a cohort of 47,866 US men aged 40-75 years with no cancer history and followed for 14 y. In contrast to increased dietary intakes of ALA that may that increase the risk of advanced prostate cancer (5). The same group studying the same cohort had in 2003 found that each additional daily intake of 0.5 g of marine fatty acid from food was associated with a 24% decreased risk of metastatic cancer (6). Higher intakes of canned, preserved fish were reported to be associated with reduced risk for prostate cancer (7). Epstein et al. found that a higher omega-3 fatty acid intake predicted better survival for men who already had prostate cancer (8), and increased fish intake was associated with a 63% reduction in risk for aggressive prostate cancer in a case-control study by Fradet et al (9). So there is actually considerable evidence favoring an increase in fish intake for prostate cancer risk reduction!

Another issue not dealt with in the paper is comparing prostate cancer rates in countries with high and low fish intake and consequently high and low intake of marine omega-3 fatty acids, e.g. Japan versus the US. If the findings were true, then prostate cancer would be rampant in any country with high seafood consumption (Japan, Greenland etc.) and conversely, low level consumption should be protective. Clearly this is not the case.

The World Foundation of Urology states: “Prostate cancer incidence is really high in North America and Northern Europe (e.g., 63 X 100,000 white men and 102 X 100,000 Afro-Americans in the United States), but very low in Asia (e.g., 10 X 100,000 men in Japan)” (10).

The Japanese typically eat about 8 times more omega-3 fatty acids than Americans do and their blood omega-3 fatty acid levels are twice as high, their prostate cancer risk would be much higher if the papers risk calculations were true, but the opposite is obviously the case.

In a paper entitled “Inuit are protected against prostate cancer” (11), the authors concluded from autopsy findings in Greenland Inuits that “Our results suggest that in situ carcinoma is rare among Inuit and that their traditional diet, which is rich in omega-3 polyunsaturated fatty acids and selenium, may be an important protective factor.”

The meta-analysis of earlier studies carried out at the end of the paper actually only includes three previous studies, one of which is by the lead author (Brasky, 2011). Another by Park et al. (2009) used the same nested case control design, while the remaining study by Chavarro et al (2007) showed a strong benefit for marine omega 3 fatty acids reducing the risk of prostate cancer.

In summary, the work of Brasky et al. does add to the evidence for the relation between omega-3 fatty acids and prostate cancer, which taken as a whole - including animal studies which are typically positive - support a neutral, if not beneficial effect of fish oil in prostate cancer risk. In this respect it should be remembered that high omega-3 levels are associated with lower rates of death from any cause (12,13).

The risk benefit for fish oils clearly remains favorable.

References

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