Higher Blood Levels of Omega-3 Associated with Reduced Mortality

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Reference:

Plasma Phospholipid Long-Chain Omega-3 Fatty Acids and Total and Cause-Specific Mortality in Older Adults

Mozaffarian, D. et al., Annals Internal Medicine, 158: 515-525, 2013

Harvard Medical School and Harvard School of Public Health, Boston, Mass. and Univ. of Washington, Seattle, Wash., USA

Summary:

Population studies have indicated that higher intakes of long-chain omega-3 fatty acids as DHA (docosahexaenoic acid) plus EPA (eicosapentaenoic acid), primarily from fish/seafood, are associated with a lowered risk of mortality from coronary heart disease. Support for a beneficial role of DHA/EPA supplementation in reducing cardiac-related mortality (particularly in those with pre-existing heart disease) has come from many randomized intervention trials although mixed results (indicating no effect of omega-3 supplementation) have also been reported. Both population and intervention trials as reported have often failed to provide direct biomarker assessments (i.e., via measurement of long-chain omega-3 fatty acid levels in the circulation) so as to better determine the actual DHA/EPA status in the subjects being followed and relating such to their risk of adverse outcomes. It is well documented that assessing omega-3 dietary intakes by food-frequency questionnaires are fraught with many shortcomings.

In the present study, Dr. Mozaffarian and colleagues followed 2692 subjects aged 65 and over (average age being 74 years) via the Cardiovascular Heart Study after measuring their omega-3 status based on the levels of the circulating long-chain omega-3 fatty acids (DHA plus EPA plus DPA, docosapentaenoic acid) and other fatty acids in the blood plasma phospholipid (blood biomarker for omega-3 status). The population as studied were considered to be generally healthy at the onset without prevalent coronary heart disease, stroke, or heart failure. The relationships of the omega-3 blood levels to total mortality and mortality from specific causes up to 16 years later were assessed.
During follow-up, 1625 deaths occurred (60 % of the initial 2692 subjects). After adjusting for multiple confounding and dietary factors, those subjects who had the highest blood levels (top 20 %) of DHA, EPA, DPA, and total omega-3 fatty acids exhibited significantly lower risks of total mortality by 17, 23, 20, and 27 %, respectively, as compared to those subjects with the lowest blood levels (bottom 20%). Those in the top category for EPA status had reduced rates of cardiovascular mortality, coronary heart disease (CHD) mortality, and arrhythmic CHD mortality of 28, 23, and 24 %, respectively. In the case of circulating DHA status, the top category had correspondingly lower rates of 34, 40, and 45 %, respectively, relative to those in the lowest category for DHA status. Higher blood levels of DHA were associated with less ischemic stroke such that the incidence was 26 % lower in the highest as compared to the lowest category. The researchers also determined that those individuals with the highest omega-3 levels in the blood lived an average of 2.2 years longer as compared to those in the lowest category. The authors concluded that higher circulating levels of the individual and combined long-chain omega-3 fatty acids in older adults are associated with lower total mortality and especially with respect to death from CHD. They also suggested that dietary or supplemental omega-3 fatty acids may be most beneficial for those with very low intakes.

Dr. Holub's Comments:

This major population-based study employed measures of long-chain omega-3 levels in the blood to better assess omega-3 status in the subjects. Estimated intakes of DHA plus EPA approaching 400 mg/day were considered to likely place most subjects into the higher category with respect to circulating blood levels of long-chain omega-3 fatty acids. Current intakes per capita in North America range from only 120-150 mg/day. It is to be expected that intakes of approximately 1000 mg/day (typical of many in the Japanese population) would generate moderately higher levels of circulating omega-3 fatty acids than found in elderly Americans as reported upon herein. It remains to be studied whether significantly higher blood levels of DHA plus EPA and possibly DPA than found in this population might be associated with even a lower prevalence of total mortality and disease-specific mortality.