Link examined between omega-3 fatty acid levels and biological aging marker in patients with CHD

January 19 2010

Patients with coronary heart disease who had higher omega-3 fatty acid blood levels had an associated lower rate of shortening of telomere length, a chromosome marker of biological aging, raising the possibility that these fatty acids may protect against cellular aging, according to a study in the January 20 issue of *JAMA*.

Several studies have shown increased survival rates among individuals with high dietary intake of marine omega-3 fatty acids and established cardiovascular disease. The mechanisms underlying this protective effect are not well understood, according to background information in the article.

Telomeres are a structure at the end of a chromosome involved in the replication and stability of the chromosome. Genetic factors and environmental stressors can shorten the length of the telomere, with telomere length becoming an emerging marker of biological age.

Ramin Farzaneh-Far, M.D., of the University of California, San Francisco, and colleagues conducted a study to determine whether omega-3 fatty acid blood levels were associated with changes in leukocyte (a type of blood cell) telomere length in a study of 608 outpatients with stable coronary artery disease. The patients were recruited between September 2000 and December 2002 for the Heart and Soul Study, and followed up to January 2009 (median [midpoint],

6.0 years). The researchers measured leukocyte telomere length at the beginning of the study and again after 5 years of follow-up. Multivariable models were used to examine the association of baseline levels of omega-3 fatty acids (docosahexaenoic acid [DHA] and eicosapentaenoic acid [EPA]) with subsequent change in telomere length.

The researchers found that individuals in the lowest quartile of DHA+EPA experienced the most rapid rate of telomere shortening, whereas those in the highest quartile experienced the slowest rate of telomere shortening. "Levels of DHA+EPA were associated with less telomere shortening before and after sequential adjustment for established risk factors and potential confounders. Each 1-standard deviation increase in DHA+EPA levels was associated with a 32 percent reduction in the odds of telomere shortening," the authors write.

"In summary, among patients with stable coronary artery disease, there was an inverse relationship between baseline blood levels of marine omega-3 fatty acids and the rate of telomere shortening over 5 years."

"These findings raise the possibility that omega-3 fatty acids may protect against cellular aging in patients with coronary heart disease," the researchers write.

More information: JAMA. 2010;303[3]:250-257.

Provided by JAMA and Archives Journals