Blood Omega-3 and Trans Fatty Acids in Middle Aged-Acute Coronary Syndrome Patients

Reference:

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Summary:

Higher levels of dietary omega-3 fatty acids as DHA+ EPA from fish sources have been associated with a decreased risk of cardiovascular disease-related mortality including sudden cardiac death. Furthermore, higher levels of these fish-derived omega-3 fatty acids as measured in blood samples from various population groups have been found to be useful biomarkers of omega-3 fatty acids intakes from fish/fish oil sources. The primary purpose of the present study was to evaluate for any relationship between different levels of omega-3 fatty acids (as EPA + DHA combined) and the risk for acute coronary syndrome (ACS). For this purpose, blood levels of the long-chain omega-3 fatty acids were determined in patients with ACS and in healthy controls.

Interestingly, the blood levels of EPA/DHA summed were 31% lower in the ACS patients as compared to the healthy controls with no significant difference in total- or LDL-cholesterol levels between the two groups. The patients exhibited higher frequency of hypertension as well as lower HDL-cholesterol levels. When evaluating the subjects according to their risk for ACS in relation to their blood levels of EPA/DHA, the upper 20% (quintile) of the population with highest blood levels of the EPA/DHA exhibited 1/5th the apparent risk for ACS as compared to the quintile having the lowest blood levels of EPA/DHA (combined). The authors suggest that blood level measures of EPA/DHA may serve as a potentially new and modifiable risk factor for ACS and that average daily intakes of 500 to 1000mg/day of EPA/DHA (combined) from oily fish (such as mackerel, herring, sardines, salmon, others at 2-3 servings/week) and/or omega-3 supplementation may be sufficient to provide for a lower risk of ACS and associated higher levels of EPA/DHA in the circulating blood.
**Acute coronary syndrome (ACS)**-Acute coronary syndrome (ACS) is a term often used to describe patients who present with an attack of unstable angina (chest pain coming on while at rest and often with increasing frequency) or a heart attack. Different medical/cardiac working groups throughout the world have produced criteria based on numerous characteristics and cut-off points in defining ACS.

**Dr. Holub's Comments:**

The present study is of considerable interest in view of the study published last year from Australia by Parker et al. (*Psychiatry Res.*, 41:279-286)(2006)) who reported that ACS patients with lower levels of DHA (docosahexaenoic acid) in their blood (as measured in plasma phospholipid) showed a significantly higher frequency of depressive illness as compared to those patients who have higher levels of DHA. Evaluation of the present report by Harris et al. indicates that both the DHA and the EPA levels in the blood were significantly lower in the ACS patients as compared to the healthy controls. The subsequent quintile analyses included the summed values of EPA + DHA such that any differential effect of EPA as compared to DHA could not be evaluated with respect to potential relative efficacy in cardio-protection. Future interventional trials (randomized cross-over) in ACS patients using various levels and ratios of EPA versus DHA complementary to conventional medical management will be of considerable interest in evaluating for potential benefits of omega-3 therapeutics in such patients.