

Abstract

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Blood omega-3 and trans fatty acids in middle-aged acute coronary syndrome patients.

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OBJECTIVE: We tested the hypothesis that lower blood omega-3 (omega-3) fatty acids (FAs) and/or higher trans FAs are associated with the risk of an acute coronary syndrome (ACS). Higher levels of omega-3 FA have been associated with decreased risk of sudden cardiac death. However, their association with ACS risk is unclear. Although higher self-reported intakes of trans FAs have been linked to increased coronary risk, the association between blood levels of trans FA and ACS risk is also unknown.

METHODS: We analyzed the FA composition of whole blood from 94 subjects with ACS and 94 age-gender-, and race-matched controls. Omega-3 and trans FA associations with ACS were assessed using multivariable models after adjusting for smoking status, alcohol use, diabetes, body mass index, serum lipids, and history of myocardial infarction or revascularization.

RESULTS: Subjects' mean age was 47 years, 54% were men, and 80% were Caucasian. Whole blood long-chain omega-3 FA (eicosapentaenoic acid [EPA] plus docosahexaenoic acid [DHA]) content was 29% lower in patients than in controls (1.7 +/- 0.9% vs 2.4 +/- 1.4%, $p < 0.001$), whereas trans FA content was not different (2.1 +/- 0.7% vs 2.0 +/- 0.9%, $p = \text{NS}$). The multivariable-adjusted odds for case status was 0.67 (95% confidence interval 0.46 to 0.98) for a 1 SD increase in blood EPA + DHA. The inclusion of trans FAs in the EPA + DHA model did not alter this association.

CONCLUSIONS: In conclusion, low blood EPA + DHA content is an independent predictor of increased risk for ACS, but higher blood trans FA content is not. Blood EPA + DHA may serve as a new, modifiable risk factor for ACS.

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