Dietary n-3 Polyunsaturated Fatty Acids and Smoking-Related Chronic Obstructive Pulmonary Disease

Eyal Shahar, Aaron R. Folsom, Sandra L. Melnick, Melvyn S. Tockman, George W. Comstock, Valerio Gennaro, Millicent W. Higgins, Paul D. Sorlie, Wen-Jene Ko, Moyses Szklo, for The Atherosclerosis Risk in Communities Study Investigators

ABSTRACT

Background: Fish contain n-3 polyunsaturated fatty acids, principally eicosapentaenoic acid and docosahexaenoic acid, which are known to interfere with the body's inflammatory response and may be of benefit in chronic inflammatory conditions.

Methods: We studied the relation between the dietary intake of n-3 fatty acids and chronic obstructive pulmonary disease (COPD) in 8960 current or former smokers participating in a population-based study of atherosclerosis. Intake of fatty acids was estimated with a dietary questionnaire. The presence of COPD was assessed by a questionnaire on respiratory symptoms and by spirometry. Three case definitions of COPD were used: symptoms of chronic bronchitis (667 subjects), physician-diagnosed emphysema reported by the subject (185 subjects), and spirometrically detected COPD (197 subjects).

Results: After control for pack-years of smoking, age, sex, race, height, weight, energy intake, and educational level, the combined intake of eicosapentaenoic acid and docosahexaenoic acid was inversely related to the risk of COPD in a quantity-dependent fashion. The adjusted odds ratio for the highest quartile of intake as compared with the lowest quartile was 0.66 for chronic bronchitis (95 percent confidence interval, 0.52 to 0.85; $P<0.001$ for linear trend across the range of intake values), 0.31 for physician-diagnosed emphysema (95 percent confidence interval, 0.18 to 0.52; P for linear trend, 0.003), and 0.50 for spirometrically detected COPD (95 percent confidence interval, 0.32 to 0.79; P for linear trend, 0.007).

Conclusions: A high dietary intake of n-3 fatty acids may protect cigarette smokers against COPD.

Abstract Related to MS #156A