

Abstract

BMC Cardiovasc Disord. 2007 Jul 13;7:20

Usual choline and betaine dietary intake and incident coronary heart disease: the Atherosclerosis Risk in Communities (ARIC) Study.

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BACKGROUND: Low dietary intake of the essential nutrient choline and its metabolite betaine may increase atherogenesis both through effects on homocysteine methylation pathways as well as through choline's antioxidants properties. Nutrient values for many common foods for choline and betaine have recently become available in the U.S. nutrient composition database. Our objective was to assess the association of dietary intake of choline and betaine with incident coronary heart disease (CHD), adjusting for dietary intake measurement error.

METHODS: We conducted a prospective investigation of the relation between usual intake of choline and betaine with the risk of CHD in 14,430 middle-aged men and women of the biethnic Atherosclerosis Risk in Communities study. A semi-quantitative food frequency questionnaire was used to assess nutrient intake. Proportional hazard regression models were used to calculate the risk of incident CHD. A regression calibration method was used to adjust for measurement error.

RESULTS: During an average 14 years of follow-up (1987-2002), 1,072 incident CHD events were documented. Compared with the lowest quartile of intake, incident CHD risk was slightly and non-significantly higher in the highest quartile of choline and choline plus betaine, HR = 1.22 (0.91, 1.64) and HR = 1.14 (0.85, 1.53), controlling for age, sex, education, total energy intake, dietary intakes of folate, methionine and vitamin B6. No association was found between dietary choline intake and incident CHD when correcting for measurement error.

CONCLUSIONS: Higher intakes of choline and betaine were not protective for incident CHD. Similar investigations in other populations are of interest.

PMID: 17629908

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