Abstract


Erythrocyte fatty acid composition is associated with the risk of hypertension in middle-aged and older women.

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OBJECTIVE: Experimental studies have suggested different effects of various fats on blood pressure. However, epidemiologic evidence of these relations remains limited and inconsistent. We therefore assessed the association of fatty acid (FA) composition in erythrocyte membranes with the risk of hypertension.

METHODS: We selected 516 cases of incident hypertension and 516 matched controls during 12.9 y of follow-up in the Women's Health Study. Erythrocyte FA was measured in baseline bloods using GC.

RESULTS: After controlling matching factors and lifestyle factors, erythrocyte SFA showed a positive association, whereas total cis PUFA, cis (n-3) PUFA, and the ratio of PUFA:SFA (PS ratio) showed an inverse association with the risk of hypertension. The multivariable RR of hypertension across the increasing quartiles of erythrocyte FA subtypes were 1.00, 1.19, 1.44, and 1.76 for total SFA; 1.00, 0.84, 0.88, and 0.56 for total cis PUFA; 1.00, 0.87, 0.66, and 0.65 for cis (n-3) PUFA; and 1.00, 0.99, 0.70, and 0.51 for the PS ratio. After further adjusting for obesity-related metabolic factors, these associations were attenuated and remained significant only for the PS ratio. cis MUFA, cis (n-6) PUFA, and trans unsaturated FA in erythrocyte membranes were not associated with the risk of hypertension.

CONCLUSION: Our study showed that FA composition in erythrocyte membranes is associated with the risk of hypertension in middle-aged and older women. However, after controlling for obesity-related metabolic factors, the associations remained significant only for the PS ratio.

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