

0090

Association of olfactory dysfunction with plasma lipids and blood pressure in a high cardiovascular risk population: sex-specific analysis

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Abstract

Background: Impaired sense of smell is a predictor of morbidity and mortality, including cardiovascular diseases. Likewise, several studies have reported sex-specific associations between olfactory function and cardiometabolic measures including plasma lipids and blood pressure. Thus, in a representative sample of US adults from the National Health and Nutrition Examination Survey (NHANES) study, olfactory dysfunction was associated with significantly higher total cholesterol (TC) and LDL-C among older men, but significantly lower TC among older women. However, considering that more studies in diverse population are needed, our aim was to analyze the association between the olfactory dysfunction and plasma lipids and blood pressure in older European subjects at high cardiovascular risk.

Methods: We measured olfactory function in 300 high-cardiovascular risk participants (older subjects with metabolic syndrome, aged 65+/-5y, 54.7% women) using the validated Sniffin' Sticks Extended test. We calculated the "TDI-score", whose value is the sum of the results obtained for individual tests on threshold detection, discrimination, and identification of 16 odors. The higher the score, the greater olfactory function. Hyposmia was defined as TDI-score<30. Multivariate regression models adjusted for confounders: age, sex, body mass index, diabetes, medications, and smoking were fitted to test the association between hyposmia and the cardiometabolic parameters.

Results: Hyposmia prevalence was 70%, being higher in males (P=0.040). In the whole population, hyposmia was associated with lower diastolic blood pressure (P=0.044). However, for lipids, we found associations varying by sex. Thus, fasting triglycerides were higher in males with hyposmia, but lower among females with hyposmia (P-for-sex-hyposmia-interaction=0.037).

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