

Low-Grade Systemic Inflammation and the Development of Type 2 Diabetes Mellitus [ndash] The ARIC Study

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Results:

A low grade, systemic inflammation precedes and predicts type 2 diabetes. The purpose of this study is to examine this association according to various markers of inflammation as well as to characterize its heterogeneity across specific subgroups. We designed in a case-cohort study representing the approximately 9 year experience of 10275 eligible Atherosclerosis Risk in Communities Study participants. Analytes were measured on stored plasma on 581 incident cases of diabetes and 572 non-cases. We constructed an overall inflammation score, ranging from 0 to 6, based on the presence of above-median values for interleukin-6, C-reactive protein, orosomucoid, sialic acid, white cell count and fibrinogen. Score values were higher in smokers and in the overweight. We estimated the score's association with incident diabetes utilizing proportional hazards models adjusted for age, parental history of diabetes, hypertension, body mass index (BMI), waist-hip ratio, and fasting glucose and insulin. Higher score values predicted diabetes among whites but not among African-Americans (interaction $P < 0.001$), and among non-smokers but not among smokers (interaction $P = 0.03$). For white non-smokers, hazard ratios were 1.0, 1.7, 2.4, 3.9, 2.1 and 3.9 for those with 1, 2, 3, 4, 5 and 6 inflammation markers above the median, respectively, in comparison to those with no markers with above-median values ($P = 0.03$ for linear trend). The hazard ratio for each unit increment in the inflammation score was 1.0 (0.74 [ndash] 1.4) for those with $BMI < 25 \text{ kg/m}^2$, 1.3 (1.1 [ndash] 1.6) for those with BMI between 25 and 30 kg/m^2 , and 1.5 (0.98 [ndash] 2.4) for those with $BMI \geq 30 \text{ kg/m}^2$ (inflammation score [ndash] BMI interaction $P = 0.03$). In conclusion, a low-grade inflammation precedes and predicts the development of type 2 diabetes. The association is not present in smokers, African-Americans and lean individuals.

Category:

Epidemiology