

Abstract

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Interactions between age and apoE genotype on fasting and postprandial triglycerides levels.

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OBJECTIVE: The influences of genetic determinants on the magnitude of postprandial lipaemia are presently unclear. Here the impact of the common apolipoprotein (apo)E epsilon mutation on the postprandial triglyceride (TG) response is determined, along with an assessment of genotype penetrance according to age, body mass index and gender.

METHODS AND RESULTS: Healthy adults (n=251) underwent a postprandial investigation, in which blood samples were taken at regular intervals after a test breakfast (0 min, 49 g fat) and lunch (330 min, 29 g fat) until 480 min after the test breakfast. There was a significant impact of apoE genotype on fasting total cholesterol (TC), (P=0.027), LDL-cholesterol (LDL-C), (P=0.008), and %LDL(3) (P=0.001), with higher and lower levels in the E4 and E2 carriers respectively relative to the E3/E3 genotype. Reflective of a higher fasting TG (P=0.001), a significantly higher area under the curve for the postprandial TG response (TG AUC) was evident in the E4 carriers relative to the E3/E3 group (P=0.038). In the group as a whole, a significant age×genotype interaction was observed for fasting TC (P=0.021). In the participants>50 years there was a significant impact of genotype on TC (P=0.005), LDL-C (P=0.001) and TAG AUC (P=0.028).

CONCLUSIONS: It is possible that an exaggerated postprandial lipaemia contributes to the increased coronary heart disease risk associated with carriers of the E4 allele; an effect which is more evident in older adults.

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