Postprandial Endothelial Dysfunction Is Not Apparent in Young Healthy Subjects

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Deposition: The intake of a fatty meal acutely impairs endothelial function and this mechanism may partially explain the atherogenic role of postprandial lipemia (PL). Since age is another important determinant of endothelial function, we assessed postprandial endothelial dysfunction in healthy age groups of four young adults.

Methods: We measured serum lipoproteins and brachial artery flow-mediated dilation (FMD) (an index of endothelial dysfunction) in 2 groups of healthy individuals before and 2 and 4 hours after one 50 gr saturated fat meal. Group A consisted of 14 middle-aged volunteers (45.4±21 years old, 11 men and 3 women) and group B consisted of 14 young persons (27.5±15.4 years old, 11 men and 3 women). Brachial artery FMD was assessed with the use of a 7.5MHz vascular ultrasound transducer. Statistical analysis was done with Friedman two-way analysis of variance.

Results: Lipid profile, baseline brachial artery diameter and baseline FMD were similar in both groups. In both groups, the fatty meal increased triglycerides [(119.2±63.9 to 160.5±40.2 to 179.0±106.5 mg/dL, p=0.0004 for group A and 82.9±27 to 110±16.6 to 136±66.5 mg/dL, p=0.001) in group B]. LDL-cholesterol was significantly decreased only in group A (15.8±4.6 to 12.5±4.4 to 12.0±3.7 mg/dL, p=0.003 in group B vs 13.4±3.63 to 125.7±35 to 123.4±3.67 mg/dL, p=0.02 in group A). The rest of the lipoproteins did not change postprandially in either group. Brachial artery FMD was significantly reduced only in group A individuals (15.8±11.7% to 10.3±0.2% , p=0.012) while in group B it remained relatively stable (15.4±7.9% vs 16.1±7.7%)

Conclusions: Our findings further support the hypothesis that a meal with high content in saturated fat acutely impairs endothelial function of peripheral fat vessels in healthy subjects. However, this effect is not apparent in young persons. Other regulatory mechanisms, possibly associated with a more favorable postprandial lipid profile in the young persons, may account for this phenomenon.

Are Endothelial Dysfunction and Inflammation Independently Related to Sleep Apnea Severity?

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Background Obstructive sleep apnea (OSA) is associated with cardiovascular disease (CVD), but the nature of this association is incompletely understood. Endothelial dysfunction and inflammation are recently recognized risk factors for the development of CVD. We tested the hypothesis that indices of endothelial dysfunction (flow mediated vasodilation, peak hyperemic flow) and systemic inflammation (high-sensitivity C-reactive protein, hs-CRP) are increased in proportion to OSA severity.

Methods 130 subjects from the Cleveland Family Study (OSA patients and family members with no preexisting cardiovascular disease) were enrolled. Brachial artery ultrasonography (10 MHz, Acuson Aspen™), and hs-CRP were measured from the same blood draw.

Results The study population was diverse (51% African American, 51% female, young (48±18 yrs), and obese (body mass index 34±11 kg/m²)). Univariate analyses showed that increased AH1 was associated with lower levels of hsCRP (r=0.46 and 0.37, p<0.001). The relationship between AH1 and hs-CRP, while significant after adjustment for age, race, and sex (pc0.05), was attenuated after adjustment for obesity (p>0.3). Fasting subjects taking medications from the analysis, which may include statins or antihypertensive medications.

Conclusions The intake of a fatty meal acutely impairs endothelial function and this mechanism may partially explain the atherogenic role of postprandial lipemia (PL). Since age is another important determinant of endothelial function, we assessed postprandial endothelial dysfunction in healthy age groups of four young adults.

Methods: We measured serum lipoproteins and brachial artery flow-mediated dilation (FMD) (an index of endothelial dysfunction) in 2 groups of healthy individuals before and 2 and 4 hours after one 50 gr saturated fat meal. Group A consisted of 14 middle-aged volunteers (45.4±21 years old, 11 men and 3 women) and group B consisted of 14 young persons (27.5±15.4 years old, 11 men and 3 women). Brachial artery FMD was assessed with the use of a 7.5MHz vascular ultrasound transducer. Statistical analysis was done with Friedman two-way analysis of variance.

Results: Lipid profile, baseline brachial artery diameter and baseline FMD were similar in both groups. In both groups, the fatty meal increased triglycerides [(119.2±63.9 to 160.5±40.2 to 179.0±106.5 mg/dL, p=0.0004 for group A and 82.9±27 to 110±16.6 to 136±66.5 mg/dL, p=0.001) in group B]. LDL-cholesterol was significantly decreased only in group A (15.8±4.6 to 12.5±4.4 to 12.0±3.7 mg/dL, p=0.003 in group B vs 13.4±3.63 to 125.7±35 to 123.4±3.67 mg/dL, p=0.02 in group A). The rest of the lipoproteins did not change postprandially in either group. Brachial artery FMD was significantly reduced only in group A individuals (15.8±11.7% to 10.3±0.2% , p=0.012) while in group B it remained relatively stable (15.4±7.9% vs 16.1±7.7%)

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