FAVORABLE EFFECT OF OMEGA-3 FATTY ACIDS ADMINISTRATION ON ARTERIAL FUNCTION IN HEALTHY SMOKERS

ACC Oral Contributions
Ernest N. Morial Convention Center, Room 244
Tuesday, April 05, 2011, 3:00 p.m.-3:15 p.m.

Session Title: Vascular Disease Prevention and Epidemiology
Abstract Category: 11. Peripheral Arterial/Carotid Disease/Aortic Disease
Presentation Number: 928-7

Authors: Marina Zaromitidou, Gerasimos Siasos, Dimitris Tousoulis, Aleksis Verveniotis, Evangelos Oikonomou, Elias Gialafos, Theodoros Ntoskas, Aris Plastiras, Konstantinos Manialis, Thodoris Paraskevopoulos, Sevasti Manousakidi, Athanasios G. Papavassiliou, Christodoulos Stefanadis, Athens University Medical School, 1st Cardiology Dept, Hippokration Hospital, Athens, Greece, Athens, Greece

Background: Smoking is associated with endothelial dysfunction and impaired fibrinolytic status. Omega-3 fatty acids can modify cardiovascular risk factors. In the present study we assessed the hypothesis that omega-3 fatty acids can improve endothelial function, arterial stiffness and fibrinolytic profile in healthy smokers.

Methods: We studied the effect of a 12 weeks oral treatment with 2gr/day of omega-3 fatty acids in 16 healthy smokers (aged 27.8±2.94y) on two occasions (day 0: baseline and day 84). The study was carried out on two separate arms, one with omega-3 fatty acids (2 gr/day) and one with placebo, according to a randomized, placebo-controlled, double-blind, cross-over design. Measurements were carried out before (pSm) and immediately after (Sm0) cigarette smoking. Endothelial function was evaluated by flow-mediated dilation (FMD) of the brachial artery. Carotid-femoral pulse wave velocity (PWV) was measured as an index of aortic stiffness and augmentation index (AIx) as a measure of arterial wave reflections. Circulating levels of plasminogen activator inhibitor type 1 (PAI-1) were measured by ELISA.

Results: At baseline measurements, compared to pSm, cigarette smoking decreased FMD values (7.26±2.47 % vs 5.53±2.56 %, p<0.005) and moreover caused an increase in AIx (0.81±12.58 % vs 5.54±9.84 %, p<0.005) and PWV (5.90±0.62 m/sec vs 6.28±0.73 m/sec, p<0.001). Treatment with omega-3 fatty acids improved pSm values of: FMD (7.22±2.54 % vs 10.67±6.32 %, p<0.05), PWV (5.90±0.62 m/sec vs 5.36±0.83 m/sec, p<0.05) and AIx (0.81±12.58 % vs -3.58±13.22 %, p<0.001), while there was no significant difference with placebo administration. In addition, compared with placebo, treatment with omega-3 fatty acids, blunted the acute smoking-induced increase in PWV (0.408±0.42 m/sec vs 0.103±0.49 m/sec, p<0.05). Finally, pSm levels of PAI-1 were increased after omega-3 fatty acids treatment compared to baseline measurements (23.37±16.39 ng/ml vs 9.82±7.245 ng/ml, p<0.01).

Conclusions: Short-term treatment with omega-3 fatty acids improves arterial function and fibrinolytic process in healthy smokers.