BRACHIAL ARTERY ENDOTHELIAL FUNCTION AND COAGULATION FACTORS IN THE MULTI-ETHNIC STUDY OF ATHEROSCLEROSIS (MESA)

ACC Oral Contributions
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Authors: Shepard D. Weiner, Zhezhen Jin, Mary Cushman, Jennifer Clark Nelson, Mohammed F. Saad, Marco R. Di Tullio, Shunichi Homma, Columbia University Medical Center, New York, NY

Background. Plasma levels of coagulation factors influence the risk of thrombosis and have been shown to be predictive of cardiovascular disease. More limited data are available on the association, if any, between coagulation factors and subclinical atherosclerosis, particularly in a multi-ethnic population. Hypothesis. We investigated the hypothesis that altered levels of coagulation factors are associated with an impairment of endothelial function.

Methods. We assessed brachial artery flow-mediated dilation (FMD) in 3,486 participants in the Multi-Ethnic Study of Atherosclerosis (mean age 61 years, 50.2% women) and measured plasma levels of fibrinogen antigen (FA), d-dimer (DD), plasmin-antiplasmin complex (PAP), factor VIII (FVIII), and von Willenbrand Factor (vWF; N=707). Impaired FMD was defined by gender-specific 75th percentile cutoffs. Logistic regression was used to evaluate the association of each coagulation factor with impaired FMD.

Results. The mean (± S.D.) baseline brachial artery diameter was 3.8mm (+/-0.6) for women and 4.8 (+/-0.7) for men. The mean FMD for women was 0.18mm (+/-0.1) or 4.8% and 0.19mm (+/-0.1) or 3.9% for men. There was a significant relationship between FA and impaired FMD (OR=1.22, 95% CI 1.12-1.32 per each SD; p<0.0001), DD and impaired FMD (OR=1.35, 95% CI 1.13-1.61 per each SD; p=0.0008), and PAP and impaired FMD (OR=1.30, 95% CI 1.17-1.43 per each SD; p<0.0001) on univariate analysis. There was no significant relationship between FVIII and impaired FMD and vWF and impaired FMD on univariate analysis. Only FA was associated with the presence of impaired FMD (OR=1.12, 95% CI 1.01-1.24 per each SD; p=0.037) in a multivariate model adjusting for age, gender, race/ethnicity, socio-economic status, diabetes, LDL-C, triglycerides, SBP, waist circumference, smoking status, estrogen use, and baseline brachial diameter.

Conclusions. In this large multi-ethnic community-based sample, increased levels of the procoagulant fibrinogen were associated with impaired endothelial function on multivariate analysis. Elevated fibrinogen levels may contribute to the development of subclinical atherosclerosis.