INFLAMMATION AND VASCULAR COMPLIANCE MEASUREMENTS: A PARADOX? THE BOGALUSA HEART STUDY

Poster Contributions
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Background: Systemic inflammation - as measured by high-sensitivity C-reactive protein (hs-CRP) - is adversely associated with arterial compliance. However, information is scant on whether this association is consistent throughout the different non-invasive measurements of arterial compliance. The purpose of this study is to assess racial (black-white) divergences in the association between hs-CRP and measurements of arterial compliance in relatively young and healthy adults.

Methods: Measurements of hsCRP and non-invasive arterial compliance—large-artery elasticity index (C1), small-artery elasticity index (C2), brachial-ankle pulse-wave velocity (ba-PWV) and augmentation index (AI@75)—were assessed in 702 participants of the Bogalusa Heart Study, with a mean age of 43.5 years (29.4-51.1 years); 70.8% whites and 43.7% males. Race-specific independent associations between hs-CRP and arterial compliance measurements were tested through multivariable-adjusted linear regression analyses.

Results: Black vs white participants had higher hs-CRP, baPWV and AI@75 (p<0.01); whereas C1 and C2 were higher in whites (p<0.01). In multivariable-adjusted linear regression analyses, controlling for: age, sex, high-density lipoprotein cholesterol, low-density lipoprotein cholesterol, body mass index, smoking status and other traditional cardiovascular risk factors, hs-CRP was significantly and independently associated with AI@75 (B=0.11, p<0.01) and C1 (B=-0.08, p=0.05), in whites only. In contrast, black participants did not show any significant associations among these parameters in the statistical models. C2 and baPWV did not exhibit association with either race group.

Conclusion: These findings help enhance the concept that the association of inflammation and arterial compliance is dependent on the measurement used to assess the latter, and that its impact varies by race (black-white). Further, these observations may aid in revising existing methodologies used in the diagnosis of inflammation-mediated structural and functional damage, in addition to enhance race-specific approaches for screening and prevention of cardio-metabolic risk factors.