Title

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Abstract 906: Running on Exhaustion: Pathogen Burden, Immune Dysregulation, and Endothelial Activation After Coronary Artery Bypass Graft Surgery

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Abstract

Background: Vital exhaustion (VE), a state characterized by fatigue, irritability, demoralization and maladaptation to prolonged stress, is a predictor of new cardiac events. In patients recovering from coronary artery bypass (CABG), little is known about the relationship of VE to

1. immune-mediated inflammation and resultant endothelial activation and
2. cumulative exposure to infectious pathogens (pathogen burden [PB]).

In a prospective cross-sectional design, we investigated the relationship of VE to PB, inflammatory markers (interleukin [IL]-6, IL-10) and a marker of endothelial activation (soluble intercellular adhesion molecule-1 [sICAM-1]).

Methods: One to two months post-CABG, 42 individuals (90.5 % male, age 67.5±12.6 years, 66.7 % Caucasian, 3.12±1.3 grafts) who met inclusion criteria (non-smokers, no clinical depression by Patient Health Questionaire-2, and no malignancy, autoimmune disease, or current infection) were studied. Subjects were categorized by Maastricht Interview for Vital Exhaustion scores as exhausted (≥7) or non-exhausted (<7). Serum IgG antibodies

to Herpes Simplex Virus (HSV)-1, HSV-2, Cytomegalovirus, Epstein Barr Virus, and inflammatory and endothelial activation markers were measured by ELISA. PB was defined as the total number of seropositive exposures: low (0 –1), moderate (2–3), and high (4). Data were analyzed with logistic and linear regression for VE status and scores, respectively.

Results: Prevalence of exhaustion was 40.5 % (n=17). Increases in sICAM-1 (OR=111.99, 95% CI 1.26 –9926.59, p=0.04) and presence of moderate PB (OR=54.35, 95% CI 2.31–1277.95, p=0.01) were significant independent correlates of exhaustion status. Taken together, sICAM-1, moderate PB, female gender, premature family history of coronary artery disease, and IL-6 predicted exhaustion status (Pseudo R^2=0.513, p=0.003). Soluble ICAM-1 significantly predicted higher exhaustion scores (*B*=4.079, 95% CI 0.448 –7.711, p=0.029).

Conclusions: This is the first evidence that sICAM-1 and PB are associated with VE in CABG patients. Increased levels of sICAM-1 and resultant increases in endothelial activation may explain the association of VE to new cardiac events. Further study is needed to elucidate the role of PB in VE.