(*Circulation.* 2009;120:S1010.)

Endothelium and Atherosclerosis

Abstract 4872: Beta Blockers and Acute Release of ET-1 in Response to Anger Recall Stress in Patients With CAD

Hitender Jain ; Matthew M Burg ; Antonio B Fernandez ; Margueritte White ; Dorothea Collins ; Robert Soufer

Yale Univ Sch of Med/VACT, West Haven, CT

Acute anger is associated with triggered AMI and transient myocardial ischemia. Anger provoked ischemia differs from demand related ischemia with regard to differential epicardial vs. microvascular processes. Use of beta-blockers is standard of care for patients with CAD. Endothelin-1 plays a central role in vascular regulation and homeostasis, particularly in diseased coronary segments, and has been linked to endothelial dysfunction during laboratory emotional stress. Beta-blockade has been reported to reduce plasma levels of ET-1 in patients with marked LV dysfunction/CHF and to inhibit the synthesis and release of ET-1 in cellular preparations. We studied the relationship of beta-blockade use on laboratory anger stress-provoked levels of ET-1 in patients with CAD without marked LV dysfunction/CHF.

Methods and results: 104 patients with history of stable CAD underwent sequential 10-min resting baseline (BL) and 6 minute anger-recall stress (AR). Blood samples drawn at the end of rest and stress were assayed for ET-1 by ELISA (fmo/mL) and change from BL to AR calculated. As expected, the hemodynamic response to anger stress was significantly lower (p=0.015) among patients taking beta-blockers (n=81) than those not taking these agents (n=23). These two groups did not differ in ET-1 at BL (2.27±3.77 vs. 1.24±1.89, p = 0.98). Those not taking beta-blockers however, showed a significantly greater % increase in ET-1 from BL to AR (16.12%±29.09% vs. 2.14%±23.85%, p <0.036); this relationship persisted after adjusting for rate pressure product, age, diabetes, HTN, and statin use (p=0.03).

Comments: Beta-blocker use was associated with a significantly less anger-stress provoked increase in ET-1. This may be one of the mechanisms behind beneficial effects longitudinally of beta-blocker use on incident coronary events in patients with CAD.