THE EXPRESSION OF BRAIN NATRIURETIC PEPTIDE MRNA IS UP-REGULATED IN ISCHEMIC HEART TISSUE IN VIVO AND IN VITRO

ACC Moderated Poster Contributions
McCormick Place South, Hall A
Monday, March 26, 2012, 9:30 a.m.-10:30 a.m.

Session Title: Gene and Drug Impacts on CAD
Abstract Category: 1. Chronic CAD/Stable Ischemic Heart Disease: Basic
Presentation Number: 1196-232

Authors: Weiping Ye, Daniel Lee, Aluganti N. Chandrakala, Sampath Parthasarathy, Jay Zweier, Juan Crestanello, The Ohio State University, Columbus, OH, USA

Background: Brain natriuretic peptide (BNP) is increased after myocardial infarction and has prognostic implications. BNP may originate in the infarcted myocardium or in the non-infarcted myocardium secondary to changes in wall stress and loading conditions. We studied BNP expression in infarcted and non-infarcted myocardium in vivo and in vitro.

Methods: Rat hearts (n=3/group) were subjected in vivo to either a) SHAM: 24 hr of perfusion or b) 1 hr of myocardial infarction by left anterior descending coronary artery ligation followed by 24 hr of reperfusion. Isolated rat hearts (n=3/group) were subjected to a) Control (CT): 4 hr of perfusion, b) Ischemia reperfusion: 30 min Equilibration, 60 min Ischemia, and 150 min Reperfusion. Tissues were obtained from infarcted and non-infarcted regions for total RNA isolation. BNP expression was analyzed using Real Time PCR.

Results: In vivo, BNP expression increased significantly in the infarcted myocardium compared to either the non-infarcted or SHAM control (3.48 ± 0.34 vs 2.2 ± 0.69 vs 1.00 ± 0.07, p<0.05; Fig. A). In vitro, BNP expressions significantly increased in the infarcted region. The mRNA expression in non-infarcted region also increased, but not significant compared to the CT (1.85 ± 0.08 and 1.26 ± 0.04 vs. 1.00 ± 0.12 in CT; Fig. B).

Conclusion: BNP expression is increased in infarcted and non-infarcted myocardium both in vivo and in vitro. We hypothesize that wall stress and loading conditions potentiate BNP expression induced by ischemia reperfusion.