



Heart Failure

EXPRESSION OF CARDIOLIPIN BIOSYNTHESIS AND REMODELING ENZYMES IN ADULT HEART FAILURE

Poster Contributions

Poster Sessions, Expo North

Sunday, March 10, 2013, 9:45 a.m.-10:30 a.m.

Session Title: New Insights into Heart Failure Pathophysiology

Abstract Category: 16. Heart Failure: Basic

Presentation Number: 1222-299

Authors: *Jonathan E. Grudis, Kathryn C. Chatfield, Jamie Hijmans, Genevieve C. Sparagna, Rebecca D. Sobus, Shelley Miyamoto, Brian Stauffer, University of Colorado School of Medicine, Aurora, CO, USA, Children's Hospital Colorado, Aurora, CO, USA*

Background: Cardiolipin (CL) is a unique phospholipid that is an essential component of the inner-mitochondrial membrane critical for normal energy metabolism. Biosynthesis of CL occurs via an enzymatic pathway or through remodeling of existing CLs. The content of total CL and (18:2) 4CL (tetralinoleic form, normally predominant in the heart) are lower in ventricular tissue from adults with heart failure secondary to idiopathic dilated cardiomyopathy (IDC).

Purpose: The aim of this study was to determine the expression levels of CL biosynthetic and remodeling enzymes associated with CL content changes in IDC.

Methods: mRNA was isolated from the left ventricle (LV) of adult IDC patients at transplant (n= 27; mean age = 51+14) and non-failing control LV from donor hearts (n= 15, mean age = 43+8). RT-PCR was used to measure expression of CL biosynthesis and remodeling enzymes.

Results: Expression of biosynthetic enzymes, CDP diacylglycerol synthase 2 and phosphatidylglycerolphosphate synthase, were both 33% lower in IDC LV (p<0.05). Remodeling enzymes, monolyso-CL acyltransferase and tafazzin, were also down-regulated (66% and 43% respectively, p<0.01) in IDC LV compared to controls.

Conclusions: These results demonstrate that biosynthetic and remodeling CL abnormalities are present in failing IDC hearts and may contribute to mitochondrial CL abnormalities in heart failure. Supported by NIH/NCATS Colorado CTSI Grant Number UL1 TR000154.