Statin Therapy Decreases Myocardial Function as Evaluated via Strain Imaging

J. Rubinstein et al.: *Clin Cardiol* 2010;33:179–179

Letter to Editor:

We reviewed with interest the study by Rubinstein et al.¹ and have 4 important concerns. First, this article could be misinterpreted by “statin naysayers.” Studies have previously introduced a concern for statins causing heart failure.² However, other studies have found that statins improve myocardial function,³ including an article using strain imaging (SI).⁴ An article studying elderly patients found a decrease in hospitalization for heart failure with statins.⁵

Second, as stated in the study, there was a statistical difference in the levels of plasma triglycerides, with the study group having hypertriglyceridemia, which has been found to be an independent factor causing decreased myocardial function.^{6,7} Obesity alone or in combination with hypertriglyceridemia affects myocardial function. The treated subjects in the study were noted to be obese, with 75% female. Echocardiographic studies have found systolic and diastolic dysfunction in healthy young obese females.⁸

Third, prior left ventricular dysfunction from long-standing hypercholesterolemia not reversed by statin therapy after 6 months could also explain the difference in myocardial function by SI between healthy control subjects and hypercholesterolemic patients on the statin.

Fourth, this study would be more meaningful if more patients were enrolled, and if each case served as its own control.

In conclusion, assessment of myocardial function by sensitive modalities such as Doppler and SI reveal an ever-increasing list of clinical and pharmacological factors that affect the myocardium. The effect of statins on myocardial function remains unclear.

Roberto C. Montoya, MD; Anthony F. LaSala, MD, FACC

Division of Cardiology–Department of Medicine
rmontoyabarraza@resident.uchc.edu, inventtony@aol.com

References

1. Rubinstein J, Alokas F, Abela GS. Statin therapy decreases myocardial function as evaluated via strain imaging. *Clin Cardiol*. 2009;32:684–689.
2. Krum H, McMurray JJ. Statins and chronic heart failure: do we need a large-scale outcome trial? *J Am Coll Cardiol*. 2002;39:1567–1573.
3. Bountiokos M, Rizzello V, Krenning BJ, et al. Effect of atorvastatin on myocardial contractile reserve assessed by tissue Doppler imaging in moderately hypercholesterolemic patients without heart disease. *Am J Cardiol*. 2003;92:613–616.
4. Mizuguchi Y, Oishi Y, Bianchi C, et al. Impact of statin therapy on left ventricular function and carotid arterial stiffness in patients with hypercholesterolemia. *Circ J*. 2008;72:538–544.
5. Kjekshus J, Apetrei E, Barrios V, et al; for CORONA Group Investigators. Rosuvastatin in older patients with systolic heart failure. *N Eng J Med*. 2007;357:2248–2261.
6. De las Fuentes L, Waggoner AD, Brown AL, et al. Plasma triglyceride level is an independent predictor of altered left ventricular relaxation. *J Am Soc Echocardiogr*. 2005;18:1285–1291.

7. Szczepaniak LS, Dobbins RL, Metzger GJ, et al. Myocardial triglycerides and systolic function in humans: in vivo evaluation by localized proton spectroscopy and cardiac imaging. *Magn Reson Med*. 2003;49:417–423.
8. Peterson LR, Waggoner AD, Schechtman KB, et al. Alterations in left ventricular structure and function in young healthy obese women: assessment by echocardiography and tissue Doppler imaging. *J Am Coll Cardiol*. 2004;43:1399–1404.

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Reply to Statin Therapy Decreases Myocardial Function as Evaluated via Strain Imaging

We appreciate the insightful comments of Drs. Montoya and Lasala regarding our recent article.¹ Regarding the first concern about our results being misinterpreted by “statin naysayers” we can confirm that we have been contacted by a number of physicians and scientists that were intrigued by this finding and we have referred them to the discussion section of the article that clearly states, “The observed decrease in the intensity of the myocardial function can potentially account for the myocardial protection that has been proven with statin therapy.” To clarify, we are making a factual observation that statin group had a decrease in myocardial function and we are suggesting that it may potentially account for the myocardial protection observed in patients on statins in numerous other studies.

Regarding the potential difference that triglycerides may have played in this study along with the fact that long standing hypercholesterolemia may have also played a role we kindly refer the authors to our discussion section that states “it has been shown that hypercholesterolemia is capable of causing myocardial dysfunction.” Hence, we agree that triglycerides and other factors associated with high cholesterol may have played an undetermined role in the study, but separating the lipid lowering from other potential actions of statins is technically very difficult and may explain why this effect had not been previously noted. Lastly, regarding the suggestion that “each case serve as his/her own control.” This is unlikely to elucidate the underlying mechanism that statins play in myocardial function as lower levels of cholesterol and statins (that lower cholesterol) may have contrary effects on the myocardium that will balance each other out.

In summary, we agree with the authors that the statin and cholesterol effect on myocardial function remains unclear; but we remain unwavering in our methodology (which to our knowledge had not been previously attempted) and our results that statins may in fact decrease myocardial function (which may partially explain its cardioprotective effects in ischemic events).

Jack Rubinstein, MD;
Feras Aloka, MD;
George S. Abela, MD, FACC

Reference

1. Rubinstein J, Alokas F, Abela GS. Statin therapy decreases myocardial function as evaluated via strain imaging. *Clin Cardiol*. 2009;Dec;(12): 684–89.