Journal of Cardiovascular Magnetic Resonance

Oral presentation

Open Access

# Lipid modifying therapy and aortic wall thickness regression by Magnetic Resonance Imaging (MRI): the plaque follow up study by the National Institute of Aging (NIA)

Gustavo K Godoy*[1], Harjit Chahal[1], Veronica R Fernandes[1], Christopher Sibley[1], Elzbieta Chamera[1], David Bluemke[2] and Joao AC Lima[1]

Address: [1]Johns Hopkins University, Baltimore, MD, USA and [2]National Institutes of Health, Bethesda, MD, USA
* Corresponding author

*from* 13th Annual SCMR Scientific Sessions
Phoenix, AZ, USA. 21-24 January 2010

Published: 21 January 2010

*Journal of Cardiovascular Magnetic Resonance* 2010, **12**(Suppl 1):O68 doi:10.1186/1532-429X-12-S1-O68

This abstract is available from: http://jcmr-online.com/content/12/S1/O68



## Introduction

Aortic atherosclerotic plaque is associated with increased risk of future cardiovascular events. Magnetic resonance imaging (MRI) is a precise non-invasive tool for accurate measurements of aortic wall thickness in patients with advanced atherosclerosis and allows for monitoring plaque regression.

## Purpose

The purpose of this study was to assess the relationship between changes in aortic wall thickness measured by MRI in response to lipid modifying therapy.

## Methods

114 participants age >65 years were enrolled in a double blinded randomized trial as part of the NIA Plaque study. Participants were randomly assigned to two treatment groups; one receiving simvastatin and niacin and other receiving simvastatin and placebo. Baseline MRI was performed on all participants using a 1.5-Tesla scanner. Follow-up MRI exams were done every 6 months for 18 months. Axial images of 3 segments of the thoracic aorta (ascending, arch and descending) were obtained using a double inversion recovery black blood fast spin-echo sequence with ECG-gating. 0.1 mmol/kg of gadodiamide contrast was given intravenously. Post contrast T1-weighted images were used to evaluate the changes in vessel wall thickness and lumen diameter over the course of lipid therapy. Paired t test and multivariable regression were used for data analyses.

## Results

The mean age of the participants was 71 years and 83% were men. Participants receiving simvastatin and niacin had higher HDL (62 vs. 53 mg/dl, p = 0.0018), lower LDL (70 vs. 78 mg/dl, p = 0.04) and triglycerides (90 vs. 111 mg/dl, p = 0.009) as compared to those receiving simvastatin and placebo at the end of the 18 months. Wall thickness was decreased by 6.6% (p = 0.02) and 8.2% (p = 0.01) at 12 and 18 months follow up respectively in the ascending aorta and 10.2% (p = 0.003) at 18 months follow up in the aortic arch. Plaque regression was directly proportional to the increase in HDL cholesterol (p = 0.02) and decrease in the LDL cholesterol Figure 1.

(p = 0.01). However, no difference in the plaque regression was noticed between the two treatment groups in the study.

## Conclusion

Our study demonstrates that thoracic aorta plaque regression can be detected accurately by MRI after 12 months of lipid lowering therapy and was associated with the increase in HDL and decrease in LDL levels. The addition of Niacin to simvastatin compared to simvastatin alone did not show any added benefit to the thoracic aorta plaque regression.

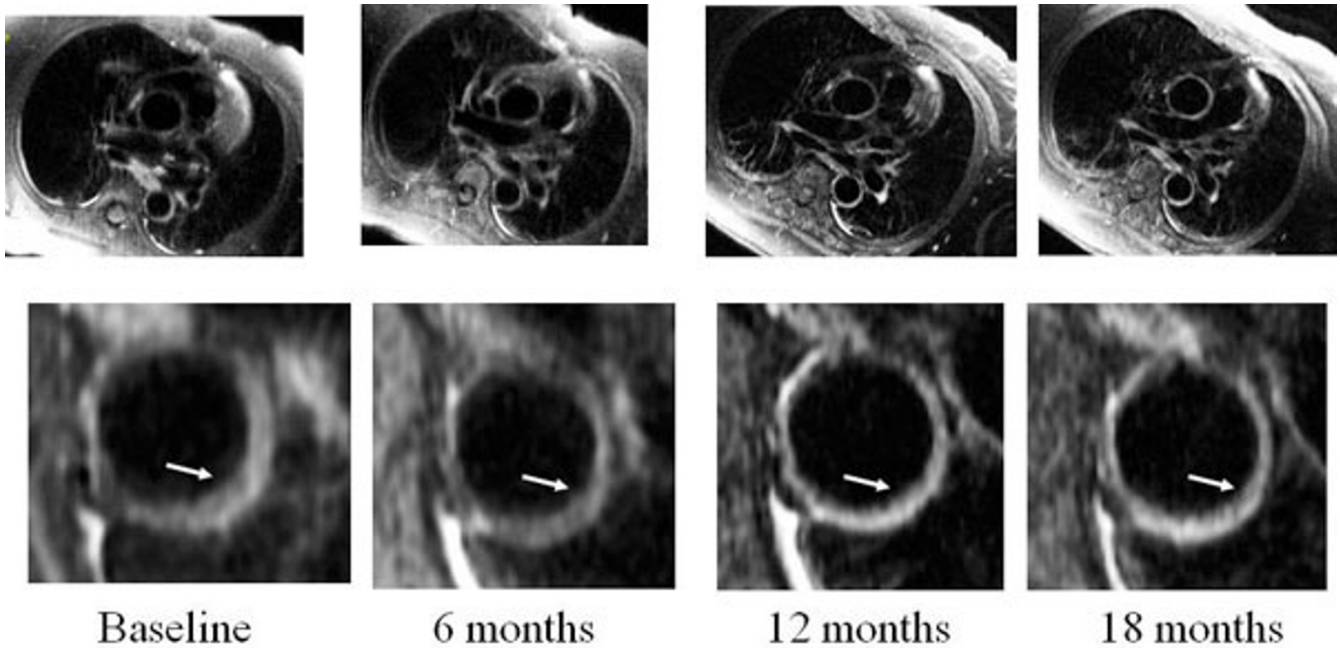


**Figure 1**
**Serial T1-weighted post-gadolinium axial images of the descending thoracic aorta from the same patient showing the thoracic aorta wall thickness regression (Arrow).**