ASSOCIATION OF OBESITY WITH DIASTOLIC DYSFUNCTION IN EARLY ADULTHOOD: THE CARDIA STUDY

Poster Contributions
Poster Sessions, Expo North
Saturday, March 09, 2013, 10:00 a.m.-10:45 a.m.

Session Title: Imaging: LV Diastolic Function
Abstract Category: 18. Imaging: Echo
Presentation Number: 1143-355

Authors: Satoru Kishi, Anderson Armstrong, Bharath Ambale Venkatesh, Samuel Gidding, John Carr, David Jacobs, Kiang Liu, David Goff, Joao Lima, Johns Hopkins University, Baltimore, MD, USA

Background: The association of obesity with subclinical cardiac dysfunction is unclear. Strain rate from speckle tracking echocardiography (STE) has been validated for measurement of diastolic dysfunction. We investigate how body mass index (BMI) and its 25-year change relate to left ventricular (LV) diastolic strain rate.

Methods: CARDIA is a prospective study that enrolled African-American and White adults from 4 US centers in 1985-1986 (baseline). We included participants with data at both baseline and the Year-25 (Y25) exam, excluding those with pregnancy and previous heart disease. Longitudinal early diastolic strain rate (ESR) at the Y25 exam was assessed by STE in 2 and 4 chambered images. Linear regression models were used to investigate the association of BMI with strain rate, adjusting for baseline traditional risk factors and their 25-year changes.

Results: A total of 1561 participants (45% males; 46% African-American) were included. The mean±standard deviation values for BMI were 24±4kg/m2 at baseline and the average change in 25 years was BMI 5±5kg/m2. The mean 2-Ch and 4-Ch longitudinal ESR were 0.78±0.25 and 0.83±0.29sec-1. In multivariable models, higher BMI was associated with worse strain rate 25 years later and increased BMI over a 25-year follow-up period was associated with worse strain rate.

Conclusions: Our findings suggest that obesity in early adulthood is related to subclinical diastolic dysfunction assessed by early diastolic longitudinal strain rate from STE at age 43 to 55 years.

<table>
<thead>
<tr>
<th>Diastolic function</th>
<th>4Ch Longitudinal ESR (sec⁻¹)</th>
<th>2Ch Longitudinal ESR (sec⁻¹)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unadjusted</td>
<td>Model 1</td>
</tr>
<tr>
<td>Baseline BMI (kg/m²)</td>
<td>-0.01 †</td>
<td>-0.01 †</td>
</tr>
<tr>
<td>BMI 25-year change (kg/m²)</td>
<td>-0.01 †</td>
<td>-0.01 †</td>
</tr>
</tbody>
</table>

Legend: † p<0.001, ‡ p<0.01, § p<0.05. n=1179; BMI = body mass index; ESR = early diastolic strain rate. Longitudinal is negative values. Model 1: adjusted for baseline TRF: age, sex, race, diabetes, SBP, HR, LDL-cholesterol, HDL-cholesterol, alcohol, activity, using anti-hypertensive medication, and number of cigarettes. Model 1*: adjusted for 25-year change in TRF.