Hypertrophic Cardiomyopathy is Associated with Dilated Sinus of Valsalva: A Case-Control study

Afshan Husain MD, Mirza Mujadil Ahmad MD, Lily Watson MD, Muhammad Nabeel Syed MD, Mirza Nubair Ahmad MD, Bijoy K. Khandheria MD, A. Jamil. Tajik MD, Khawaja Afzal Ammar MD
Aurora Cardiovascular Services, Aurora Sinai/St. Luke’s Med Centers, University Wisconsin School Medicine and Public Health, Milwaukee, WI, USA

BACKGROUND

- Prior studies have suggested an association between Hypertrophic Cardiomyopathy and dilated aorta.
- However, this association has not been formally tested in a case control study.

HYPOPYTHESIS

- We designed this study to compare patients with Hypertrophic Cardiomyopathy against age and sex matched controls in a retrospective design tertiary care center.

METHODS

- We had 68,000 echocardiographic studies done at our tertiary care center.
- We found 176 cases of hypertrophic cardiomyopathy, as defined by American Heart Association criteria, after detailed evaluation by AJT.
- We identified 3,202 controls who were classified as normal clinically and echocardiographically.
- Controls were defined as normal patients referred to the echocardiography laboratory with no known risk factors for dilated aorta (e.g., aortic stenosis, hypertension, aortic regurgitation).
- Clinical chart review showed none of the risk factors for dilated aorta, and echocardiography did not reveal any abnormalities. 27 known risk factors for DA were excluded.

RESULTS

- Of these 3,202 patients, 153 controls were matched to cases by age and gender by propensity score.

Figure. Dilated Aorta in a Case with Hypertrophic Cardiomyopathy

- The prevalence of a dilated sinus of Valsalva was 5 times higher in HCM patients (11.1%) than controls (2.4%).
- The 5-times higher prevalence in HCM patients persisted after adjusting for height (OR: 4.65, 95% CI 1.25-30.12, P=0.019), as well as weight.

CONCLUSION

In this study, after matching for age and sex, HCM appears to be associated with a dilated sinus of Valsalva, even after adjusting for height.

REFERENCES


The Odds of Dilated Sinus of Valsalva in Hypertrophic Cardiomyopathy

<table>
<thead>
<tr>
<th>Condition associated with Increased Wall Stress</th>
<th>Odds ratio</th>
<th>95% CI</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hypertension</td>
<td>0.44</td>
<td>2.61-0.19</td>
<td>0.993</td>
</tr>
<tr>
<td>Aortic regurgitation</td>
<td>0.40</td>
<td>2.45-0.10</td>
<td>0.801</td>
</tr>
<tr>
<td>Hypertension</td>
<td>0.36</td>
<td>2.29-0.09</td>
<td>0.993</td>
</tr>
<tr>
<td>Aortic valve pathology</td>
<td>0.06</td>
<td>2.09-0.01</td>
<td>0.993</td>
</tr>
</tbody>
</table>

The Odds of Dilated Mid Ascending Aorta in Hypertrophic Cardiomyopathy

<table>
<thead>
<tr>
<th>Condition associated with Increased Wall Stress</th>
<th>Odds ratio</th>
<th>95% CI</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes Mellitus</td>
<td>2.38</td>
<td>2.38-0.43</td>
<td>0.005</td>
</tr>
</tbody>
</table>