BACKGROUND

• ACC/AHA guidelines (GLs) recommend Ex treadmill test (ETT) without imaging as the initial test to evaluate patients with chest pain who have normal baseline ECG and adequate exercise capability.1,3
• Stress imaging (SSE or ex-MPI) preferred by clinicians because of superior sensitivity and specificity to standard treadmill test.4
• Studies show ETT performs adequately vs. stress imaging for Dx and therapy.5

OBJECTIVES

• We identified consecutive patients from January to July 2019 who were referred for Ex Echo (ESE) who had normal baseline ECGs.
• ESE includes simultaneous ETT component.
• Of pts who had ESE, we determined % with adequate exercise capacity, thereby implying a diagnostic ETT as initial test would have been appropriate.
• We also determined proportion of pts who reached ≥85% max predicted HR which also required Dx ETT.
• We compared the foregoing variables (bullets 3 and 4 above) in men and women.

METHODS

• Retrospective review of 283 (women = 142, men = 141) consecutive patients referred for ESEs from January to July 2019 using the UCDMC Muske database.
• Patients stratified into normal and abnormal baseline ECGs. Abnormal baseline ECGs also included patients with history of CAD, valvular and other types of heart diseases.
• Inclusion criteria: majority of patients referred for chest pain, others for variety of indications, age ≥25 and greater, no history of CAD or other CVD, no prior ESE or ETT.
• Amongst patients with normal baseline ECG, the patient’s functional capacity (max HRs and METs reached) were recorded to determine if s/he could have had an adequate DxE TT as the initial test.

RESULTS

Table 1a: Ni and abn baseline ECGs

<table>
<thead>
<tr>
<th>Normal Baseline ECGs</th>
<th>Female</th>
<th>Male</th>
<th>Total</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal ECG</td>
<td>69</td>
<td>64</td>
<td>133</td>
<td>0.37</td>
</tr>
<tr>
<td>Atrial enlargement</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>0.86</td>
</tr>
<tr>
<td>Low voltage QRS</td>
<td>5</td>
<td>10</td>
<td>15</td>
<td>0.86</td>
</tr>
<tr>
<td>Prolonged QT</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>0.55</td>
</tr>
<tr>
<td>Early R wave transition</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>0.55</td>
</tr>
<tr>
<td>Prior R wave progression</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>0.36</td>
</tr>
<tr>
<td>HVT / RBBB / LBBB</td>
<td>10</td>
<td>15</td>
<td>25</td>
<td>0.15</td>
</tr>
<tr>
<td>Total</td>
<td>117</td>
<td>166</td>
<td>283</td>
<td>0.15</td>
</tr>
</tbody>
</table>

Table 1b: Categorized ECGs into normal and abnormal according to baseline ECGs and history of heart disease.

<table>
<thead>
<tr>
<th>Abnormal Baseline ECGs</th>
<th>History of Heart Disease</th>
<th>Total</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥85%</td>
<td>7.0 (&gt;85%)</td>
<td>134</td>
<td>0.01</td>
</tr>
<tr>
<td>≤85%</td>
<td>7.0 (&lt;70%)</td>
<td>9</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Table 1c: Majority of women and men had abn baseline ECG and were excluded from the study

<table>
<thead>
<tr>
<th>Total</th>
<th>% of Patients Reaching ≥85% max HR</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

Chart 1: No difference in %men/women reaching ≥85% target heart rate (+90%)

Chart 2: No difference in %men/women who completed METs ≥7.0 (>85%). No difference between men and women.

Chart 3: Majority of patients with positive ETT for ischemia completed METs ≥7.0 (>85%). No difference between men and women.

Chart 4: Majority of patients with normal baseline ECG had adequate functional capacity, defined as reaching max HR ≥85 and completing METs ≥7.0 (women ≥84%, men ≥93%).

REFERENCES


CONCLUSIONS

• ETT can be an equally diagnostic but inexpensive test for ischemia, given patient has adequate functional capacity.
• Almost 1 in every 2 cases, patients with normal baseline ECG and adequate functional capacity are referred for ESE instead of METs. These data suggest that many are referred for stress imaging studies that don’t require them who can have adequate and diagnostic non-imaging stress tests.

SUMMARY

• No difference between men and women who were referred for stress imaging.
• Men were as likely as women to be referred for ESE despite a normal baseline ECG.
• Both men and women were able to achieve target HR (max HR ≥85%) and had adequate workload (METs ≥7).
• These data suggest that many are referred for stress imaging studies that don’t require them who can have adequate and diagnostic non-imaging stress tests.

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