AHA’s Scientific Sessions

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ASSERT-II

Sub-Clinical AF (SCAF) in Older Asymptomatic Patients

Jeff S. Healey MD, MSc, FRCPC
Population Health Research Institute
McMaster University
Background

• Sub-clinical atrial fibrillation (SCAF) is detected by long-term continuous monitoring in special populations:
  - In ASSERT, 23% of pacemaker/ICD patients had SCAF > 6 minutes detected by 12 months
  - In CRYSTAL-AF, 12.4% of patients following cryptogenic stroke had SCAF > 30 seconds detected by 12 months

• Rate of detection in stable older patients without symptoms, stroke or pacemaker is unknown
Prospective Cohort Study

• Patients, without prior AF, attending cardiology/neurology outpatient clinics

• St. Jude Medical Confirm (DM2100) loop recorder implanted with at least 9 months follow up

• Primary outcome of SCAF ≥ 5 minutes in duration
Detailed Inclusion Criteria

• Age ≥ 65
  and
• One of :
  - CHA₂DS₂-VASc ≥ 2
  - Obstructive sleep apnea
  - BMI > 30
  and
• One of :
  - Left atrial volume ≥ 58ml or LA diameter ≥ 4.4cm
  - Serum NT-ProBNP ≥ 290 pg/mL
Patient Flow in Trial

273 patients enrolled

256 received ILR implant

17 no ILR implant
  11 withdrew consent
  4 no longer eligible
  1 physician decision
  1 withdrew
  (unspecified reasons)

4 patients died

252 completed follow-up

Mean FU: 16.3 ± 3.8 months
Patient Characteristics (N=256)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean±SD</td>
<td>73.85±6.24</td>
</tr>
<tr>
<td>Female, n(%)</td>
<td>88 (34.4)</td>
</tr>
<tr>
<td>Caucasian, n(%)</td>
<td>246 (96.1)</td>
</tr>
<tr>
<td>History of Hypertension, n(%)</td>
<td>188 (73.4)</td>
</tr>
<tr>
<td>Heart failure, n(%)</td>
<td>22 (8.6)</td>
</tr>
<tr>
<td>Diabetes, n(%)</td>
<td>64 (25.0)</td>
</tr>
<tr>
<td>Prior stroke, TIA or SE, n(%)</td>
<td>123 (48.0)</td>
</tr>
<tr>
<td>Sleep Apnea, n(%)</td>
<td>29 (11.3)</td>
</tr>
<tr>
<td>BMI</td>
<td>28.69±4.64</td>
</tr>
<tr>
<td>Valvular Heart Disease, n(%)</td>
<td>37 (14.5)</td>
</tr>
<tr>
<td>$CHA_2DS_2$-VASc, mean±SD</td>
<td>4.14±1.36</td>
</tr>
<tr>
<td>LA diameter (cm), mean±SD</td>
<td>4.74±0.79</td>
</tr>
<tr>
<td>LA volume (ml), mean±SD</td>
<td>76.53±20.61</td>
</tr>
</tbody>
</table>
Incidence of SCAF

Rate per year (95% CI)

- SCAF ≥ 5mins: 34.4% (27.7% – 42.3%)
- SCAF ≥ 30mins: 21.8% (16.7% – 27.8%)
- SCAF ≥ 6hours: 7.1% (4.5% – 10.6%)
- SCAF ≥ 24hours: 2.7% (1.2% – 5.0%)
Baseline Characteristics According to Presence or Absence of SCAF

<table>
<thead>
<tr>
<th></th>
<th>SCAF (N=90)</th>
<th>No SCAF (N=166)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean±SD</td>
<td>75.3±6.9</td>
<td>73.1±5.7</td>
<td>0.008</td>
</tr>
<tr>
<td>Female Sex, n(%)</td>
<td>33 (36.7)</td>
<td>55 (33.1)</td>
<td>0.570</td>
</tr>
<tr>
<td>Caucasian, n(%)</td>
<td>89 (98.9)</td>
<td>157 (94.6)</td>
<td>0.173</td>
</tr>
<tr>
<td>History of Hypertension, n(%)</td>
<td>62 (68.9)</td>
<td>126 (75.9)</td>
<td>0.225</td>
</tr>
<tr>
<td>Systolic BP (mmHg), mean±SD</td>
<td>135±19</td>
<td>140±19</td>
<td>0.043</td>
</tr>
<tr>
<td>Hx. HF, n(%)</td>
<td>3 (3.3)</td>
<td>19 (11.4)</td>
<td>0.027</td>
</tr>
<tr>
<td>Diabetes, n(%)</td>
<td>16 (17.8)</td>
<td>48 (28.9)</td>
<td>0.049</td>
</tr>
<tr>
<td>Prior stroke, TIA or SE, n(%)</td>
<td>47 (52.2)</td>
<td>76 (45.8)</td>
<td>0.325</td>
</tr>
<tr>
<td>Vascular Disease, n(%)</td>
<td>22 (24.4)</td>
<td>60 (36.1)</td>
<td>0.055</td>
</tr>
<tr>
<td>Sleep Apnea, n(%)</td>
<td>9 (10.0)</td>
<td>20 (12.0)</td>
<td>0.622</td>
</tr>
<tr>
<td>BMI</td>
<td>28.6±5.3</td>
<td>28.8±4.3</td>
<td>0.786</td>
</tr>
<tr>
<td>Valve Disease, n(%)</td>
<td>12 (13.3)</td>
<td>25 (15.1)</td>
<td>0.708</td>
</tr>
<tr>
<td>CHA$_2$DS$_2$-VASc, mean±SD</td>
<td>4.1±1.4</td>
<td>4.2±1.4</td>
<td>0.483</td>
</tr>
</tbody>
</table>
## SCAF ≥ 5 Minutes by Sub-Group

<table>
<thead>
<tr>
<th></th>
<th>n/N</th>
<th>Rate (%/yr)</th>
<th>HR</th>
<th>95% CI</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Overall</strong></td>
<td>90/256</td>
<td>34.43</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>LA volume (ml)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 73.5</td>
<td>42/89</td>
<td>51.85</td>
<td>1.85</td>
<td>1.13-3.03</td>
<td>0.015</td>
</tr>
<tr>
<td>&lt; 73.5</td>
<td>25/89</td>
<td>27.41</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Age (year)</strong></td>
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<td></td>
</tr>
<tr>
<td>≥ 73</td>
<td>55/142</td>
<td>39.76</td>
<td>1.31</td>
<td>0.85-2.00</td>
<td>0.218</td>
</tr>
<tr>
<td>&lt; 73</td>
<td>35/114</td>
<td>28.45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CHA2DS2-VASc</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>≥ 4</td>
<td>60/170</td>
<td>35.31</td>
<td>1.03</td>
<td>0.66-1.60</td>
<td>0.903</td>
</tr>
<tr>
<td>&lt; 4</td>
<td>30/86</td>
<td>32.81</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sleep apnea</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>9/29</td>
<td>26.80</td>
<td>0.78</td>
<td>0.39-1.56</td>
<td>0.489</td>
</tr>
<tr>
<td>No</td>
<td>81/227</td>
<td>35.56</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>NT-proBNP (pg/ml)</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>≥ 143</td>
<td>26/88</td>
<td>27.38</td>
<td>1.13</td>
<td>0.65-1.97</td>
<td>0.672</td>
</tr>
<tr>
<td>&lt; 143</td>
<td>24/88</td>
<td>24.13</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Prior stroke/TIA/SE</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>47/123</td>
<td>39.35</td>
<td>1.23</td>
<td>0.81-1.87</td>
<td>0.320</td>
</tr>
<tr>
<td>No</td>
<td>43/133</td>
<td>30.30</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
Subgroup Analysis by LA Diameter Quartiles

P for trend = 0.12

<table>
<thead>
<tr>
<th>Quartiles of LA diameter</th>
<th>No. of Pts</th>
<th>No. with SCAF</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 4.3 cm</td>
<td>59</td>
<td>16</td>
</tr>
<tr>
<td>4.3 - 4.5 cm</td>
<td>54</td>
<td>20</td>
</tr>
<tr>
<td>4.6 - 5.1 cm</td>
<td>69</td>
<td>24</td>
</tr>
<tr>
<td>&gt; 5.1 cm</td>
<td>63</td>
<td>27</td>
</tr>
</tbody>
</table>

Incidence rate of SCAF per 100 person-years
Conclusions

• SCAF is very common in asymptomatic elderly patients with cardiovascular risk factors
  - At least as common as in ASSERT and CRYSTAL-AF

• LA size is modestly predictive of SCAF

• Patients with prior stroke are no more likely to have SCAF than other patients
Implications

• High rate of SCAF detection in the elderly weakens the case that SCAF detection after stroke implies causality

• Therapeutic implication of finding SCAF in any patient is uncertain
  - Use of anticoagulation in SCAF not studied/proven
  - Randomized trials are on-going
• Steering Committee
  - J. Healey (PI)
  - M. Alings (co-PI)
  - S. Connolly (SC chair)
  - D. Birnie
  - F. Philippon
  - A. Verma
  - M. Hill
  - M. Carlsson
  - K. Simek, R. Napoleoni
  - J. Wang (Statistician)

• Adjudication Committee
  - A. Ha (Chair)
  - A. Verma
  - F. Philippon
  - D. Birnie
  - W. Barake
  - W. McIntyre
  - A. Carrizo
  - P. Leong-Sit
  - G. Acosta

• DSMB
  - J. Cairns

• Echo Core Lab
  - H. Dokainish, D. Leong