Management of Atrial Arrhythmia Detected in Heart Failure Patients with Cardiovascular Implantable Electronic Devices (HF-CIED)

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Disclosures

None
Global Prevalence of AF

- 33.5 million, 0.5% of world pop. affected
- Likely an underestimate
- Surveillance mostly in developed world (70%)
AF Burden (DALYs)

Significant Increase

Year

1990

1995

2000

2005

2010

DALYs per 100,000

54.3

56.5

59.1

61.7

64.5

(UI 39.2-72.7)

(UI 41.3-75.5)

(UI 43.5-79.2)

(UI 45.0-81.4)

(UI 46.8-84.2)

Chugh SS…Kim YH… et al. Circulation Feb 2014
AF and Stroke

- Risk of stroke 5 times greater in patients with AF than those without
- When AF occurs in association with stroke
  - Higher mortality
  - Greater disability
  - Lower discharge rate home
  - 15% risk of stroke recurrence within 1 year, if untreated

Mechanisms of Stroke in Atrial Fibrillation
Silent Atrial Fibrillation

- At least one-third of all AF patients
- Asymptomatic, diagnosed incidentally during routine physicals, pre-ops etc
- Ablation/drug suppression may convert symptomatic AF to asymptomatic AF
- Asymptomatic episodes of AF exceed symptomatic paroxysms by >12-fold

Savelieva and Camm. JICE 2000
Crystal AF: Cryptogenic Stroke & Detection of AF

- N=441, randomized to Implantable loop recorder vs. conventional
- By 6 months 8.9% AF in ILR vs. 1.4%; by 1 yr 12.4 vs. 2%
- ECG monitoring with ILR superior to conventional follow-up for detecting AF after cryptogenic stroke

Sanna T, et al. NEJM 2014
Detection of Atrial Fibrillation by CIED & Potential Risk For Stroke

• Typically report “atrial high-rate events” (AHRE)
• AF, AFL or AT, not necessarily discernible
• High-rate episodes 10% to 28% of patients with no prior history of AF

Chen-Scarabelli, C, et al. JACC 2015
M.O.S.T. Sub-study: Documented AF Higher with AHRE (39% vs. 2%)


AHRE predicts AF, H.R. = 6
MOST: Risk of Stroke/Death Higher with AHRE

AHRE predicts Stroke HR 2.5
Death HR 2.8

ASSERT: Prospective, Patients Without Known AF
AHRE (>190/min, >6 min) ↑ Risk of Clinical AT

Subclinical AT 8-fold vs. clinical AF
(developed in 15.7% with subclinical AT)
ASSERT: ↑ Risk of Ischemic Stroke/Syst. Embolism

Subclinical AT 2.5-fold ↑ stroke risk (independent of AF/other risk factors)

Healey et al. NEJM 2012
AHRE in CHF: High risk of Thromboembolic Events

- Home monitoring in 560 pts
- HF-CRT (2 trials, 67y, median EF 27%)
- AHRE = (>180 bpm and 1% /day) or 14 min
- 1 yr f/u AHRE 40%; total 2% TE, 4.3% death
- AHRE >3.8 hr 9-fold ↑ risk of TE (vs. no AHRE)
- Risk of TE event same for AHRE and AF

“Additional studies are needed to further clarify the relationship between stroke risk and AHRE detected by implanted devices and to define key characteristics of atrial high-rate episodes in patients who warrant further investigation or potentially therapy.”

January CT, et al. JACC 2014
Effective Anticoagulation Decreases Stroke Severity and Prolongs Survival (N=1938, 17% AF)

Anticoagulation impacts CVA prevention + severity

Schwammenthal Y, et al. A J Cardiol 2010
Current practice for diagnosis and management of silent atrial fibrillation: results of the European Heart Rhythm Association survey

- No Consensus regarding screening or Rx
- However majority (78%) would anticoagulate

# CHA₂DS₂-VASc Score

<table>
<thead>
<tr>
<th>Risk Factor</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Congestive heart failure/LV dysfunction</td>
<td>1</td>
</tr>
<tr>
<td>Hypertension</td>
<td>1</td>
</tr>
<tr>
<td>Age ≥75 yr</td>
<td>2</td>
</tr>
<tr>
<td>Diabetes mellitus</td>
<td>1</td>
</tr>
<tr>
<td>Stroke/TIA/thromboembolism</td>
<td>2</td>
</tr>
<tr>
<td>Vascular disease*</td>
<td>1</td>
</tr>
<tr>
<td>Age 65-74 yr</td>
<td>1</td>
</tr>
<tr>
<td>Sex category (i.e., female sex)</td>
<td>1</td>
</tr>
</tbody>
</table>

**Maximum Score** 9

*Prior MI, PAD, aortic plaque. Actual rates of stroke in contemporary cohorts may vary from these estimates.

Adjusted Stroke Rate According to CHA$_2$DS$_2$-VASc Score

Atrial Arrhythmia in CHF Detected by CIED

Conclusions

• May not be justifiable to hold anticoagulation in future randomized trials
• Ethical issue- no “clinical equipoise”
• Device diagnostics provide novel, early Dx
• Once AF detected, regardless of the mode, anticoagulation should be initiated if indicated by the CHA2DS2-VASc score
QUESTIONS?
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