What’s New in the World of Systolic Heart Failure

Debleena Pain Dutt
July 14, 2017
Objectives

• Review novel treatment approaches and strategies
• Discuss recent updates to the heart failure guidelines
• Determine when an advanced heart failure consultation is appropriate
Case

• A 59 year-old male research scientist with history of hypertension, hyperlipidemia, CAD s/p CABG, ischemic cardiomyopathy, chronic systolic heart failure (EF 15%), severe functional mitral regurgitation, and smoking, who presents to establish care with you after moving here recently.

• He admits to slowing down recently due to worsening fatigue and dyspnea with exertion. He dreams of playing basketball with his grand-daughter but is unfortunately unable to do so.

• Recent history is notable for three admissions for either HF or VT
How would you proceed next in this patient?

A. Refer to EP: he needs a VT ablation
B. Refer to CT Surgery: he needs mitral valve surgery
C. Refer to Structural Heart: he needs a MitraClip (too high risk for valve surgery)
D. Refer to Heart Failure: he needs evaluation for LVAD/Heart Transplant
E. Refer to Interventional: he needs another cath
Stage A
High risk with no symptoms

Stage B
Structural heart disease, no symptoms

Stage C
Structural disease, previous or current symptoms

Stage D
Refractory symptoms requiring special intervention

Hospice
VAD, transplantation
Inotropes

Aldosterone antagonist,
Consider multidisciplinary team
Revascularization, mitral-valve surgery
Cardiac resynchronization if bundle-branch block present
Dietary sodium restriction, diuretics (and digoxin?)
ACE inhibitors and beta-blockers in all patients

ACE inhibitors or ARBs in all patients; beta-blockers in selected patients

Treat hypertension, diabetes, dyslipidemia; ACE inhibitors or ARBs in some patients
Risk-factor reduction, patient and family education
Adaptive Servo-Ventilation for Central Sleep Apnea in Systolic Heart Failure

Martin R. Cowie, M.D., Holger Woehrle, M.D., Karl Wegscheider, Ph.D., Christiane Angermann, M.D., Marie-Pia d’Ortho, M.D., Ph.D., Erland Erdmann, M.D., Patrick Levy, M.D., Ph.D., Anita K. Simonds, M.D., Virend K. Somers, M.D., Ph.D., Faiez Zannad, M.D., Ph.D., and Helmut Teschler, M.D.
Serve-HF Clinical Trial

• Well known that sleep disordered breathing, including central sleep apnea, is very common in HF patients and associated with poor prognosis and mortality
• Does adaptive servo-ventilation have a benefit over guideline based medical therapy in heart failure patients with mainly central sleep apnea?
• Multi-center, international, randomized trial with NYHA Class 2-4 HF patients with LVEF ≤ 45%
Serve-HF Results

- No difference seen in the primary endpoint
- Observed INCREASE in both all cause and HF mortality
- At this time, adaptive servo-ventilation not recommended for heart failure patients with predominantly central sleep apnea
Sacubitril + Valsartan: a novel target

- Combination of a neprilysin inhibitor with an ARB
- Neprilysin is an endopeptidase which degrades natriuretic peptides
- PARADIGM HF: largest HF trial conducted; compared Sacubitril/Valsartan to Enalapril

AKA LCZ696
Paradigm HF trial: a landmark study

A Primary End Point

Hazard ratio, 0.80 (95% CI, 0.73–0.87)
P < 0.001

Cumulative Probability

Days since Randomization

No. at Risk

LCZ696 Enalapril
4187 3922 3663 3018 2257 1544 896 249
4212 3883 3579 2922 2123 1488 853 236

Enalapril

LCZ696

B Death from Cardiovascular Causes

Hazard ratio, 0.80 (95% CI, 0.71–0.89)
P < 0.001

Cumulative Probability

Days since Randomization

No. at Risk

LCZ696 Enalapril
4187 4056 3891 3282 2478 1716 1005 280
4212 4051 3860 3231 2410 1726 994 279

Enalapril

LCZ696

NEJM 2014 Sept 11; 371(11):995-1004
<table>
<thead>
<tr>
<th>COR</th>
<th>LOE</th>
<th>Recommendations</th>
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<tbody>
<tr>
<td>I</td>
<td>ACE-I: A</td>
<td>The clinical strategy of inhibition of the renin-angiotensin system with ACE inhibitors (<em>Level of Evidence: A</em>) (128-133), OR ARBs (<em>Level of Evidence: A</em>) (134-137), OR ARNI (<em>Level of Evidence: B-R</em>) (138) in conjunction with evidence-based beta blockers (9, 139, 140), and aldosterone antagonists in selected patients (141, 142), is recommended for patients with chronic HFrEF to reduce morbidity and mortality.</td>
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<tr>
<td>I</td>
<td>ARB: A</td>
<td></td>
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<tr>
<td>I</td>
<td>ARNI: B-R</td>
<td>In patients with chronic symptomatic HFrEF NYHA class II or III who tolerate an ACE inhibitor or ARB, replacement by an ARNI is recommended to further reduce morbidity and mortality (138).</td>
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CARDIOMEMS: 37% reduction in HF admissions
Natural history of HF & role of palliative care

<table>
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<tr>
<th>Evidence-Based Therapy</th>
<th>Relative Risk Reduction in All-Cause Mortality in Pivotal Randomized Clinical Trial(s), %</th>
<th>NNT to Prevent All-Cause Mortality Over Time</th>
<th>NNT for All-Cause Mortality(^\text{a})</th>
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<tbody>
<tr>
<td>ACEI/ARB</td>
<td>17</td>
<td>22 over 42 mo</td>
<td>77</td>
</tr>
<tr>
<td>ARNI(^b)</td>
<td>16</td>
<td>36 over 27 mo</td>
<td>80</td>
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<tr>
<td>β-Blocker</td>
<td>34</td>
<td>28 over 12 mo</td>
<td>28</td>
</tr>
<tr>
<td>Aldosterone antagonist</td>
<td>30</td>
<td>9 over 24 mo</td>
<td>18</td>
</tr>
<tr>
<td>Hydralazine/ nitrate</td>
<td>43</td>
<td>25 over 10 mo</td>
<td>21</td>
</tr>
<tr>
<td>CRT</td>
<td>36</td>
<td>12 over 24 mo</td>
<td>24</td>
</tr>
<tr>
<td>ICD</td>
<td>23</td>
<td>14 over 60 mo</td>
<td>70</td>
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# WHEN TO SEND TO ADVANCED HF CLINIC

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<tr>
<th>CLINICAL</th>
<th>MEDICATIONS</th>
<th>LABS &amp; ECHO DATA</th>
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<tr>
<td>&gt; 2 HF HOSPITALIZATIONS in 12 months</td>
<td>NEEDING HIGHER DIURETICS</td>
<td>HYPONATREMIA</td>
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<tr>
<td>REPEATED AICD SHOCKS FOR VT</td>
<td>NEUROHORMONAL MEDICATION INTOXERANCE</td>
<td>WORSENING BUN/Cr</td>
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<tr>
<td>CARDIAC CACHEXIA</td>
<td>NEED FOR INOTROPES DURING ADMISSIONS</td>
<td>ELEVATED LFTS (T Bili)</td>
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<td>NYHA CLASS 3 OR 4</td>
<td>BETA BLOCKER INTOXERANCE</td>
<td>HIGH BNP / NT-PROBNP</td>
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<td>COMPLICATED CO-MORBIDITIES (DM, CKD, COPD, OSA)</td>
<td></td>
<td>SEVERELY DILATED LV (&gt; 7.0 CM); LVEF ≤ 25%; Restrictive filling pattern</td>
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<td>COMPLEX CARDIOMYOPATHY (e.g. significant valvular disease, concerns for infiltrative disease)</td>
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Swedish Advanced Cardiac Support Program

- Three board certified HF doctors
- Three HF nurses and five APCs
- Dedicated HF dietician, pharmacist, social worker, financial counselor, and palliative care physician
- Services offered:
  - Cardiomems device implantation
  - LVAD Program
  - Same day clinic appointment / urgent ER follow-up
  - IV diuretic infusions in clinic