High-Sensitivity Cardiac Troponin and the Effect of Dapagliflozin in Patients with HFrEF: An Analysis of Serial Assessment in the DAPA-HF Trial


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BACKGROUND

• In patients with HF, higher cardiac troponin (cTn) levels are associated with higher risk of death and HF hospitalization
• Less is known about the prognostic significance of changes in cTn over time or the effect of SGLT2 inhibitors on circulating cTn levels

OBJECTIVES

• Assess prognostic significance of changes in hsTnT over 1 year
• Assess the effect of dapagliflozin (SGLT2 inhibitor) on hsTnT levels
METHODS

Ambulatory patients with:
- NYHA class II-IV
- LVEF ≤ 40%
- Elevated NT-proBNP
- No MI within 3 months
- Optimized GDMT

N = 4,744

Placebo

Primary composite endpoint:
- Cardiovascular death
- HF hospitalization
- Urgent HF visit

Median follow-up = 18 mo

Dapagliflozin
(10 mg daily)

n = 3,112 (66%)

n = 2,506 (53%)

n=2,400* with serial samples

*Excluding patients with MI or HF hospitalization within 30 days prior to 12-month visit

➢ Prespecified biomarker substudy
➢ hsTnT (Roche Diagnostics) measured (TIMI Clinical Trials Laboratory)
RESULTS

Distribution of Change in hsTnT Values from Baseline to 12 Months

**Absolute Change**

- **Median Change**
  - +0.31 (95% CI -2.77 to +3.61) ng/L

- **Proportion with:**
  - ≥2 ng/L change = 64.7%
  - ≥6 ng/L change = 29.3%

**Relative Change**

- **Proportion with:**
  - ≥10% change = 67.9%
  - ≥20% change = 43.5%

- **10% increase**
- **20% increase**
- **10% decrease**
- **20% decrease**
Subsequent Risk of CV Death or Worsening Heart Failure by Change in hsTnT from Baseline to 12 Months

<table>
<thead>
<tr>
<th>Relative Change in hsTnT</th>
<th>HR (95% CI)</th>
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</thead>
<tbody>
<tr>
<td>20% Increase</td>
<td>1.64 (1.25-2.24)</td>
</tr>
<tr>
<td>50% Increase</td>
<td>2.29 (1.46-3.58)</td>
</tr>
<tr>
<td>100% Increase</td>
<td>2.43 (1.57-3.78)</td>
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</tbody>
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Hazard ratios are plotted using adjusted restricted cubic spline analysis. Multivariable model includes randomized treatment, prior HF hospitalization, age, sex, eGFR, LVEF, baseline NT-proBNP (log), principal cause of HF (ischemic vs non-ischemic, baseline hsTnT (log), and are stratified by T2DM status at baseline.
RESULTS

Effect of Dapagliflozin on hsTnT Levels from Baseline to 12 Months

Average relative reduction* in hsTnT in patients randomized to dapagliflozin vs placebo:

-3% (95% CI, -6% to 0%)

p = 0.076

* The relative reduction in hsTnT from baseline to 12 months was estimated using an analysis of covariance model with treatment-group assignment as a fixed-effect factor and baseline hsTnT as a covariate
CONCLUSIONS

• Many patients in DAPA-HF had dynamic hsTnT levels over 1 year
• Even modest increases in hsTnT over 1 year provide robust prognostic information about subsequent risk of CV death or worsening heart failure
• There was a non-significant trend towards attenuation of the increase in hsTnT over 1 year in patients treated with dapagliflozin
• Serial measurement of hsTnT may provide objective assessment of clinical trajectory, which might in turn be used to inform clinical decision-making
THANK YOU