Cardiac Reverse Remodelling of the Left Heart During Vericiguat Therapy for High-Risk HFrEF

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Purpose / Methods

Purpose

To characterise LV and LA reverse remodelling during 8 months of vericiguat therapy in adults with high-risk HFrEF after recent worsening HF.

Study design and eligibility

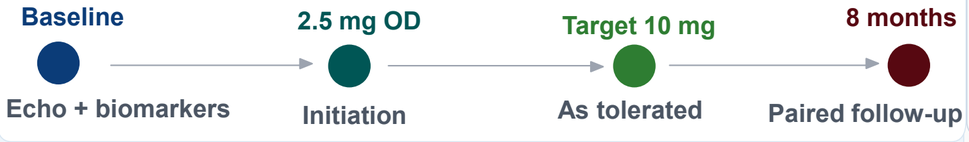
Prospective | Single-centre | Single-arm

Key eligibility criteria

- Chronic HF; NYHA class II-III and LVEF ≤40% within the recent 12 months
- Recent worsening HF: HF hospitalisation within 6 months or outpatient intravenous diuretic use within 3 months
- Elevated NT-proBNP within 30 days: 1000–6000 pg/mL, or 1600–6000 pg/mL if atrial fibrillation
- Stable GDMT: no initiation, discontinuation, or dose change within the prior 4 weeks

Vericiguat titration and assessments

Participants received vericiguat, initiated at 2.5 mg once daily and uptitrated to 10 mg as tolerated.



Echocardiographic and clinical assessment

3D volumetry
LVEDVI, LVESVI, LVEF, LVMI, LA volume and LAEF

Speckle-tracking
LVGLS and LA reservoir, conduit and contractile strain

Biomarkers and KCCQ-12 were assessed at baseline and 8 months.

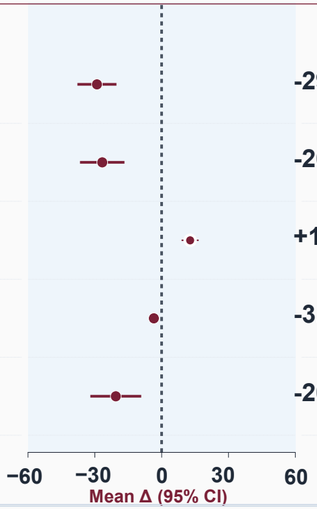
41	36	30/36
enrolled	paired echo	target dose

Results

LV reverse remodelling

At 8 months, LV reverse remodelling was characterised by smaller LV volumes, higher LVEF, improved LVGLS and reduced LV mass index.

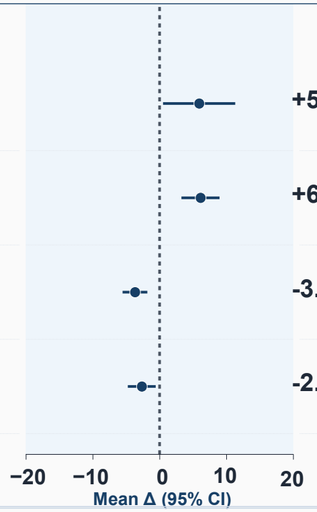
Parameter	Mean Δ (95% CI)	P
LVESVI	-29.0 (-37.8, -20.3)	<0.001
LVEDVI	-26.7 (-36.6, -16.7)	<0.001
LVEF	+12.8 (9.0, 16.6)	<0.001
LVGLS	-3.5 (-4.7, -2.3)	<0.001
LVMI	-20.6 (-32.0, -9.2)	<0.001



LA functional response

LA functional improvement was observed, with increased LAEF and LASr and more negative LAScd/LASc, consistent with improved LA phasic function.

Parameter	Mean Δ (95% CI)	P
LAEF	+5.9 (0.5, 11.3)	0.033
LASr	+6.1 (3.3, 9.0)	<0.001
LAScd	-3.7 (-5.5, -1.8)	<0.001
LASc	-2.7 (-4.8, -0.6)	0.014



Biomarkers and health status: At 8 months, NT-proBNP and hs-cTnT were lower, while KCCQ-12 was higher.

NT-proBNP
GMR 0.32
95% CI 0.21-0.50 P<0.001
Lower HF biomarker burden

hs-cTnT
GMR 0.83
95% CI 0.71-0.96 P=0.017
Lower myocardial injury signal

KCCQ-12
+10.2 points
95% CI 2.2-18.2 P=0.014
Improved health status

Conclusions

In adults with high-risk HFrEF after recent worsening HF, 8 months of vericiguat therapy was associated with LV reverse remodelling, improved LV deformation, and enhanced LA phasic function. These echocardiographic changes were accompanied by reductions in NT-proBNP and hs-cTnT and improvement in patient-reported health status.