ISHLT JOURNAL WATCH
March 2022 | Cardiology PC

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Biventricular Pacing Versus Right Ventricular Pacing in Patients Supported With LVAD

B Chung et al. J Am Coll Cardiol EP, August 2021

STUDY HIGHLIGHTS

Objective: To evaluate the effects of right ventricular (RV) vs. biventricular (BiV) pacing in patients supported with LVAD.

Methods: Prospective randomized crossover study, 30 ambulatory LVAD patients with previous CRT devices were alternated between RV and BiV pacing for planned 7 to 14-day periods.

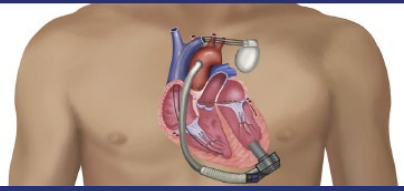
Outcomes: Daily step count, 6MWT distance, Kansas City Cardiomyopathy Questionnaire (KCCQ-12), ventricular arrhythmia burden and echo findings.

Results: RV-only pacing resulted in 29% higher mean daily step count, 11% higher 6MWT distance and 7% better KCCQ-12 scores compared to BiV pacing.

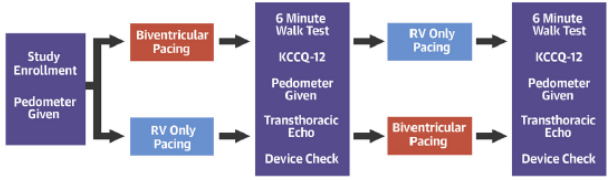
LV end-diastolic volumes and ventricular arrhythmia burden also improved with RV-only pacing.

CENTRAL FIGURE

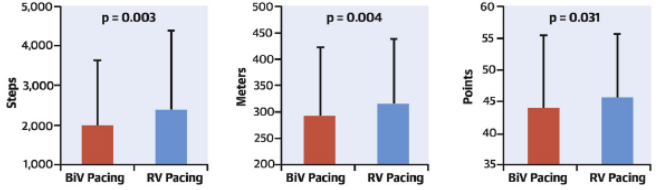
Patient with LVAD and Biventricular ICD



Study Schema



Daily Step Count | 6MWT Distance | KCCQ-12 Score



REVIEWER'S COMMENTS

First prospective randomized blinded study to examine this

The underlying mechanism of the effect is unclear – increased risk of suction events or inducible arrhythmias by LV pacing and/or improved reverse remodeling with RV-only pacing have been suggested

LIMITATIONS

- Medium-size cohort, single center
- 50% had HeartMate II devices, now not commonly implanted
- Potential selection bias of CRT "non-responders"
- No comparison with all pacing turned off
- Additional echo, CPEX or electrophysiological data could be included

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Milrinone as Compared with Dobutamine in the Treatment of Cardiogenic Shock

R Matthew et al. NEJM, August 2021

STUDY HIGHLIGHTS

Background: There is limited evidence to guide the selection of inotropic agents for cardiogenic shock (CS) in clinical practice

Method:

- Prospective randomized double-blind clinical trial
- patients were assigned 1:1 to milrinone versus dobutamine for management of CS

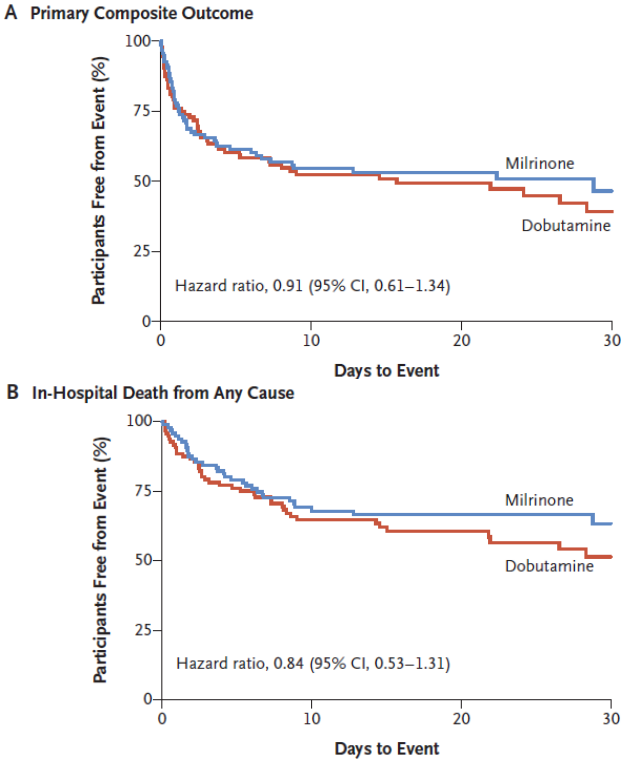
Primary outcome: composite of in-hospital death, resuscitated cardiac arrest, heart transplant or MCS, non-fatal MI, TIA or stroke and initiation of renal replacement therapy

Results:

192 patients enrolled. Primary outcome occurred in 47 (49%) of the milrinone group and 52 (54%) of the dobutamine group (p = 0.47).

There were no differences regarding in-hospital death or any of the other outcomes when evaluated separately.

CENTRAL FIGURE



REVIEWER'S COMMENTS

Few patients (only 12%) had invasive haemodynamic monitoring with the use of pulmonary-artery catheters

Most patients included were in established CS SCAI stages C-D

Future studies focusing on earlier intervention, patients with "beginning" CS or SCAI stage B, may be useful in identifying therapies to alter the natural history of cardiogenic shock

LIMITATIONS

- Single centre recruitment
- Only in-hospital events were evaluated
- Dose adjustments were based on clinician assessment rather than standardized protocol

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Evolution of Late Right Heart Failure With Left Ventricular Assist Devices and Association With Outcomes

Rame JE et al. J Am Coll Cardiol. 2021 Dec 7;78(23):2294-2308.

STUDY HIGHLIGHTS

Objective: To determine prevalence and severity of right heart failure (RHF) over time, and association of RHF status at 3 months with 12-month outcomes after cfLVAD

Methods: 6118 patients from STS Intermacs registry, supported for at least 3 months with cfLVAD (without simultaneous RVAD).

RHF = elevated CVP (>16mmHg) and clinical manifestations of systemic congestion.

Results:

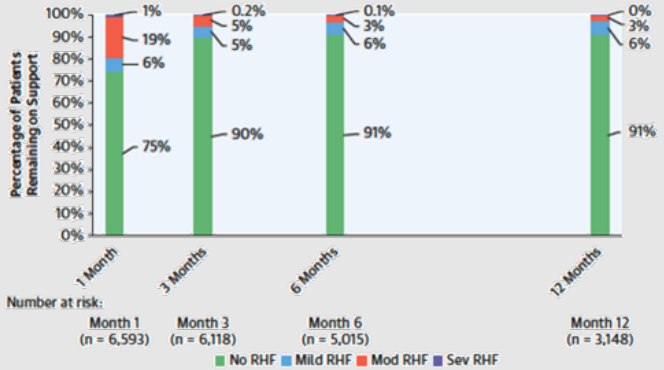
Incidence of RHF at 3 / 6 / 12 months:

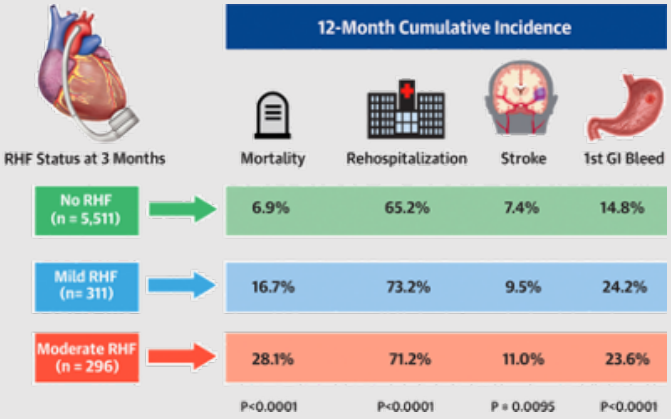
- Mild = 5% / 6% / 6%
- Moderate = 5% / 3% / 3%

For patients with no RHF at 3 months:

- ➢ Low incidence of RHF at 6 and 12 months
- ➢ Lower 12-month incidence (vs mild & moderate RHF) of mortality (6.9% vs 16.7% vs 28.1%; P<0.0001)

CENTRAL FIGURES





REVIEWERS COMMENTS

- ➢ RHF after 3 months (affecting ~10% patients over first year) was associated with ↑ mortality, ↑ adverse events (rehospitalization, stroke, GI bleeding), and ↓ quality of life
- ➢ New diagnosis of RHF was rare after the first 3 months on support

LIMITATIONS

Patients with early severe RHF were excluded; definitions of RHF may not capture all cases or correctly classify severity

QUESTIONS RAISED

Better tools and strategies to understand RV response to LVAD support and to predict and prevent RHF are needed

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Mechanical Ventilation at the time of Heart Transplantation and Associations with Clinical Outcomes

Miller PE, et al. EHJ: ACVC. 2021;10,843-851

STUDY HIGHLIGHTS

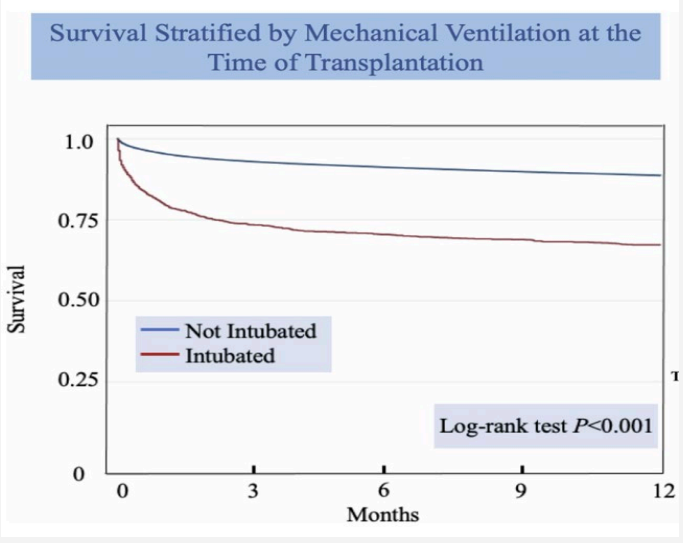
What is the association between mechanical ventilation (MV) at time of heart transplantation (HT) and short term (90-day) and long term (1-year) mortality?

Retrospective analysis of UNOS database adult single-organ HT from 1990-2019

1431 patients in the cohort required MV at the time of HT

- Younger, female, ischemic > nonischemic, status 1A or 1
- Shorter wait time on HT list
- Higher rates of inotrope use and temp MCS, but lower rates of durable MCS

CENTRAL FIGURE



Independent variables associated with ⇧ 1-year mortality: age ≥ 60, BMI > 35, Serum Cr > 2.0 mg/dL, total bili > 2.0 mg/dL, ECMO, RVAD +/- LVAD or unspecified MCS, dialysis, > 30 days on the waitlist

REVIEWER'S COMMENTS

- Strong association exists between MV at time of HT and increased short-term and long-term mortality
- Despite lower incidences of MV, adjusted OR for mortality is highest in the contemporary cohort, reflecting a sicker population and removal of MV in UNOS allocation system
- MV at time of HT is a marker of severity of illness, but is associated with increased mortality; there is a need to better identify patients requiring MV who have an acceptable outcome