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LECTURE ESSENTIALS

Lecture Notes

American College of Cardiology 60th Annual Scientific Session & i2 Summit

Targeted Left Ventricular Lead Placement to Guide Cardiac Resynchronization Therapy in Patients with HF: A Randomized Prospective Study (Target Study)

Sponsor: Papworth Hospital NHS Foundation Trust (UK)

Clinical Trial #: ISRCTN19717943

Background

Cardiac resynchronization therapy (CRT) is part of the standard treatment for patients with advanced heart failure (HF) symptoms, impaired left ventricular (LV) systolic function, and intraventricular conduction delay. Lead placement is a key determinant of response. The objective of the Target Study was to assess the feasibility and impact of a targeted approach to LV lead placement on CRT outcomes.

Study Design

- Single-blind
- Prospective
- Randomized
- Controlled

Primary Endpoint

- >15% reduction in left ventricular end systolic volume (LVESV) at 6 months

Secondary Endpoints

- ≥1-step improvement in NYHA Class, all-cause mortality, and a combination of mortality and HF hospitalization

Subject Characteristics

- n=207
- Mean age, 70 years
- Approximately 86% men
- About 94% of subjects were NYHA Class III/IV
- 56% of subjects had underlying cardiomyopathy

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Methods

Subjects were randomly assigned to receive targeted LV lead placement using speckle tracking echocardiography to identify the optimal site for LV lead placement (n=110) or standard (unguided) lead placement (n=110).

Outcomes

- Reduction in LVESV at 6 months was significantly higher in those who received targeted lead placement compared with controls (70% vs 55%; p=0.031)
- Echo guidance optimized lead placement significantly more often in those who had received it than in those who did not (p=0.011)
- Significant improvements in NYHF Class (p=0.002) and the 6-minute walk test (p=0.01) were observed in the targeted lead group versus the control group
- The targeted lead group had significantly improved scores on the Minnesota Living with Heart Failure Questionnaire (p=0.02) compared to the control group
- A significant (p=0.03) difference was seen in the combined secondary endpoint of death and HF hospitalization in the targeted lead group versus the control group

Conclusion

Targeted LV lead placement not only is feasible, but results in enhanced CRT response, including greater LV reverse remodeling, and reduced HF-related hospitalization and mortality. Concordant LV lead placement, baseline dyssynchrony, and pacing away from areas of the scar are strongly related to improved CRT outcomes. The speckle tracking echo technique is available for clinical use making these results applicable to a wide range of clinical centers.

Further Reading

http://www.controlled-trials.com/ISRCTN19717943