Utility of cardiac rehabilitation to improve gait speed and six minute walk distance in Veteran’s with normal versus low ejection fraction

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Introduction

• Past practices discouraged exercise training in the heart failure (HF) population due to concerns of hastening the disease process and promoting symptoms of decompensation.1 Evidence now supports exercise training in the HF group to promote the reversal of cardiac and skeletal muscle abnormalities, and improve functional status, quality of life, and clinical outcomes.1
• Cardiac rehabilitation (CR)/secondary prevention programs are recognized as integral to the comprehensive care of patients with chronic HF.2-4
• HF with a low ejection fraction (LEF) is now approved as an eligible diagnosis for CR.1
• Gait Speed (GS) is a significant predictor of future disability, cognitive decline, falls, hospitalization, nursing home admission and mortality in older adults.5 Reliability and validity of GS are well-established.5 It can be performed quickly and safely in a wide range of settings such as a clinic, hospital, home and the cost is minimal.4 Normal range GS is 1.2 to 1.4 m/s.5
• The 6 minute walk distance (6MWD) provides useful prognostic information for all -cause hospitalization and mortality among stable NYHA class II and III HF patients.6
• In this analysis we focused on the utility of GS and 6MWD to evaluate change over the course of CR in patients with LEF versus (vs) patients with normal ejection fraction (NEF).

Methods

Grouping determination: Based on chart review of recent echocardiogram (last 6 months) ejection fractions were evaluated independent of cardiac diagnosis. LEF (EF <50%) and NEF (EF >50%)

Physical Assessment: Completed at entry and exit of CR
• GS evaluated as the average walking speed over 3 assessments 7
• 6MWD was evaluated as total meters covered during 6 min following the American Thoracic Society Guidelines8

Completion of CR: Completion of 6 to 36 CR sessions determined that the patient was successfully exercising independently, and completion of post assessment

Results (cont.)

Figure 1. Change scores for GS comparing LEF vs NEF

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean ± SD</th>
<th>P Value</th>
</tr>
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<tbody>
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<td>L6M (m)</td>
<td>6</td>
<td>323 ± 28</td>
<td>&lt;0.005</td>
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<tr>
<td>N6M (m)</td>
<td>25</td>
<td>318 ± 30</td>
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Delta Gait speed (m/s): 0.05 ± 0.23

Results (cont.)

Figure 2. Change scores for 6MWD comparing LEF vs NEF

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Delta 6MWD (m): 40.8 ± 44.9

Patient characteristics: Admitting diagnoses to CR included ischemic heart disease, coronary artery bypass surgery, valve replacement/repair and HF.

Entry to CR: (Baseline)
- 198 patients mean age 66 ±9.6 (age range 44-93)

Conclusion

• Baseline data showed a significant difference between the groups for GS and 6MWD
• GS and 6MWD change scores (baseline to follow-up) showed no differences between groups on the amount of improvement through CR
• Change scores for both groups showed clinically significant improvement in GS and 6MWD

Implications

• This promising data suggest that the physical benefits from CR are similar for GS and 6MWD in patients with LEF and NEF.
• Patients starting with LEF and lower functional capacity derive benefits that are equivalent to those with NEF.
• CR led to improvements in multiple domains of functional improvement in LEF and NEF, both daily function and quality of life seem likely to improve
• More research regarding utility of CR for HFrEF and HFP EF are indicated.