Effect of a Comprehensive Cardiac Rehabilitation Program on Cardiac Related Events in Subjects of Advanced Age

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INTRODUCTION

Numerous studies have demonstrated the favorable effect of participation in a cardiac rehabilitation (CR) program. Unfortunately, a substantial number of subjects eligible for CR are still not enrolled in such programs. Subjects of advanced age that are diagnosed with cardiac disease are particularly at risk for lower referral rates to CR. Compounding this clinical pattern is the lack of evidence investigating the beneficial outcomes of CR in individuals of advanced age.

Purpose

- ✓ *Assess the effect of Cardiac Rehabilitation on subsequent cardiac related events in a group of subjects 80 years or older.*

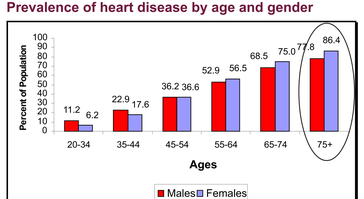
Cardiology, 2005

Interventional cardiology procedures represent state of the art in Cardiovascular medicine.

- ✓ *Better technology, more skill*
- ✓ *Patients that used to go to surgery, now go to the Cardiac Cath Lab*
- ✓ *Heart Attacks are being pre-empted by Interventions*

While restenosis rates are reduced following the deployment of stents, especially drug eluting stents, heart disease remains a relentlessly progressive disease.

Prevalence of heart disease by age and gender



Source: CDC/NCHS and NHLBI. These data include coronary heart disease, congestive heart failure, stroke and hypertension.

METHODS

The study included

- ✓ 78 *patients in this retrospective analysis*
- ✓ Mean age was 83.0 (+/-3.2) years

After suffering an initial cardiac event requiring percutaneous transluminal coronary angioplasty with drug-eluting stent, 24 (11 male/13 female) of the subjects were enrolled in a comprehensive CR program. The cardiac rehab program lasted 12 weeks and included exercise training, education and case management of risk factors. The remaining 54 subjects (29 male/25 female)received standard care, which entailed routine follow up with their physician. All subjects were tracked for subsequent cardiac related events for a mean duration of 22.2 (+/-12.6) months.

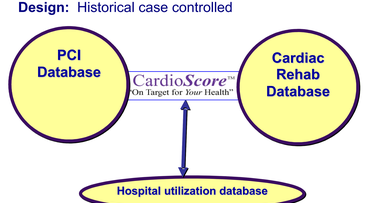
Case Management

Identification and tracking of risk factors;
Coordination with related programs

- ✓ *Lipid Clinic*
- ✓ *Heart Failure Treatment Clinic*
- ✓ *Diabetes Center*

Individual goal planning

Design: Historical case controlled



Data Collection:

Cardiac Rehabilitation:

- ✓ *Quality of Life*
- ✓ *6-minute walk test*
- ✓ *Lipid Profile*
- ✓ *Risk factors*
- ✓ *Medications*
- ✓ *Goals*

Cath Lab:

- ✓ *Type of procedure*
- ✓ *Location of lesion*
- ✓ *Type of device*
- ✓ *Risk factors*

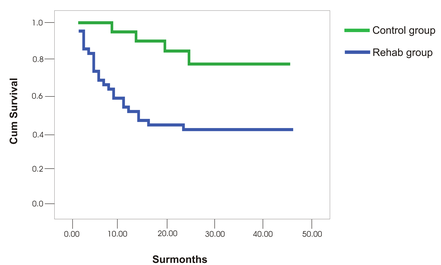
Hospital:

- ✓ *Medications*
- ✓ *Hospital admission*
- ✓ *Diagnosis*
- ✓ *Procedure*
- ✓ *Cost*

RESULTS

Unpaired t-testing revealed the mean age between the CR and control group was not significantly different [83.4 (+/-3.8) vs. 82.6 (+/-2.8) years, p = 0.15]. There were 4 and 24 subsequent cardiac related events in the CR and control group respectively. In both groups, the primary subsequent event was an additional coronary revascularization procedure. Kaplan-Meier analysis revealed 84.6% of the CR group and 55.6% of the control group remained event free during the tracking period. The difference in cardiac related events between groups was statistically significant over the tracking period (Log-rank = 6.7, p=0.01).

Survival Functions



Survival Analysis for surmonths

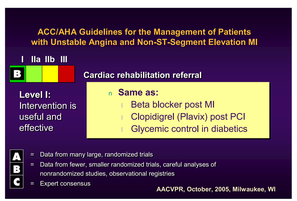
Group	Total	Number of Events
Contol Group	24	4
Rehab Group	54	24
Overall	78	28

Test Statistics for Equality of Survival Distributionsfor group

	Statistic	Significance
Log Rank	6.71	.0096

DISCUSSION

The results of the present study indicate participation in CR had a positive impact on reducing subsequent cardiac related events in a group of subjects 80 years of age or older. This finding supports the assertion that advanced age should not be a barrier for referral to a CR program. Future research should continue to be directed towards examining the effects of CR in this important subgroup.



- ✓ *While coronary stenting remains a vital, life saving component of cardiology, cardiac rehabilitation, focused on case management of risk factors may play an important role in the delay of progression of the disease as well as improved health status.*
- ✓ *It is important to differentiate events from restenosis*
- ✓ *Cardiac rehab is often neglected in interventional cardiology patients, especially in the elderly because of an ambiguous definition of stable angina, and because these patients tend to have shorter length of stays compared to MI and CABG patients*
- ✓ *While the stent solves the immediate problem, it does not modify risk factors or improve endothelial function*

References:

Dunn, P, Kolodziej, M, Wasielewski, R, Gambetta, M. Reduction in cardiovascular events and improvement in health status with cardiac rehabilitation following coronary stenting. Oral Presentation, AACVPR Annual Meeting, Long Beach, CA, October, 2004. *Beginning Investigator Award*

Gambetta, M, Dunn, P, Arena, R. Effect of a Comprehensive Cardiac Rehabilitation Program on Cardiac Related Events in a Female Cohort. Oral Presentation, AACVPR Annual Meeting, Milwaukee, WI, October, 2005.