

ORAL PRESENTATION 3-3

심폐재활

발표일시 및 장소 : 10 월 27 일(토) 14:00-14:10 Room D(5F)

OP3-3-1

The Impact of Cardiac Rehabilitation on Clinical Outcomes following Acute Myocardial Infarction

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Introduction

It is believed that cardiac rehabilitation (CR) improves long term clinical outcomes in survivals after acute myocardial infarction (AMI). However, the prognostic effect of CR in the modern era of statins and acute revascularization remains unclear. Focusing on actual clinical practice, the purpose of this study was to observe the effect of contemporary CR program on clinical outcomes including mortality in survivals after AMI. This is the first multicenter study to determine the effect of CR on clinical outcomes in Korea.

Subjects and Methods

This study is a retrospective multicenter cohort study of 11 university hospitals including government initiative 10 regional cardio-cerebrovascular centers in South Korea. The rate of synchronization between medical claims data of Health Insurance Review and Assessment Service (HIRA) and the patients' electronic medical records (EMR) was 98% and the total of 7,136 matched patients were selected as final study subjects. 2,358 were CR users (35%) and 4,385 were non-users. Inclusion criteria were survivals following first ever AMI who received percutaneous coronary intervention and patient education for cardiovascular (CV) risk factor modification by CR staff before discharge. Patient entry ran from January 2012 to December 2015. Using HIRA medical claims data, primary and secondary outcomes from 3 months after discharge to December 2016 were followed up. The primary outcome was all-cause mortality year one to four, and the secondary outcomes was major adverse cardiac event (MACE) including recurrence of AMI, CV or all-cause admission, and repeat revascularization at one to four years. We compared the rates of mortality and MACE using propensity-based matching paired 1,878 CR users with 1,878 nonusers using all observable risk factors.

Results

During the follow up periods, all-cause deaths occurred in 6.6 cases per 1,000 patients-year in CR users compared to 14 cases in nonusers. Repeat revascularizations were needed in 26.6 cases per 1,000 patients-year in CR users compared to 30.1 cases in nonusers (Table 1). By using Cox proportional hazard model, the risk of four year all-cause mortality decreased 59% in CR users compared to nonusers (HR=0.41, 95% CI 0.27-0.63) but the risks of four year MACE decreased by only 4% in CR users without statistical significance

(HR=0.96, 95% CI 0.83-1.12) (Table 2). There was a dose–response relationship between the numbers of CR sessions and the risk of all-cause mortality (Figure 1).

Conclusion

Even though the rate of CR participation was low (35%), CR after AMI was associated with a substantial survival benefit up to four years in the modern era of AMI treatment. However, CR following AMI did not have a significant effect on the incidence of AMI recurrence, re-admission (CV and all cause), and repeat revascularization in this study. We need longer term prospective multicenter cohort study to verify the impact of CR on this secondary outcomes.

Acknowledgment

This study was supported by National Evidence-based Healthcare Collaborating Agency (NECA) under project number NC17-006.

| | CR users (n=1,878) | | Nonusers (n=1,878) | | p-value |
|---------------------------|--------------------|---------------------------|--------------------|--------------|---------|
| | Number (%) | per 1000-pys [†] | Number | per 1000-pys | |
| All-cause mortality | 33 (1.8) | 6.6 | 68 (3.6) | 14.0 | 0.0004 |
| AMI ² | 269 (14.3) | 59.4 | 249 (13.3) | 56.5 | 0.3439 |
| Revascularization | 128 (6.8) | 26.6 | 139 (7.4) | 30.1 | 0.4849 |
| CV ³ admission | 323 (17.2) | 72.4 | 299 (15.9) | 68.8 | 0.2921 |
| Other admission | 555 (29.6) | 133.0 | 538 (28.7) | 134.9 | 0.5414 |
| All MACE | 343 (18.3) | 76.7 | 338 (18.0) | 77.4 | 0.8323 |

PYS[†]: person years

1. MACE: major adverse cardiac event, 2. AMI: acute myocardial infarction, 3. CV: cardiovascular

Table 1. MACE1 between CR users and nonusers after propensity score matching

| Outcome | Univariate | | Multivariate* | |
|---------------------------|------------------|-----------------|---------------|-----------------|
| | HR ^{††} | 95% CI | HR | 95% CI |
| All-cause mortality | 0.47 | (0.31 - 0.72)** | 0.41 | (0.27 - 0.63)** |
| AMI ² | 0.88 | (0.69 - 1.12) | 0.86 | (0.68 - 1.1) |
| Revascularization | 1.05 | (0.88 - 1.25) | 1.04 | (0.88 - 1.24) |
| CV ³ admission | 1.05 | (0.9 - 1.23) | 1.02 | (0.87 - 1.2) |
| Other admission | 0.98 | (0.87 - 1.11) | 0.96 | (0.85 - 1.08) |
| All MACE | 0.99 | (0.85 - 1.15) | 0.96 | (0.83 - 1.12) |

PS[†]: propensity score, HR^{††}: hazard ratio

1. MACE: major adverse cardiac event, 2. AMI: acute myocardial infarction, 3. CV: cardiovascular

* Sex, age, BMI, length of hospitalization, number of diseased vessel, left main lesion, left anterior descending lesion, residual stenosis (> 50%), left ventricular ejection fraction, etc.

** p<0.05

Table 2. Cox proportional hazard of MACE1 between CR users and nonusers after PS[†] matching

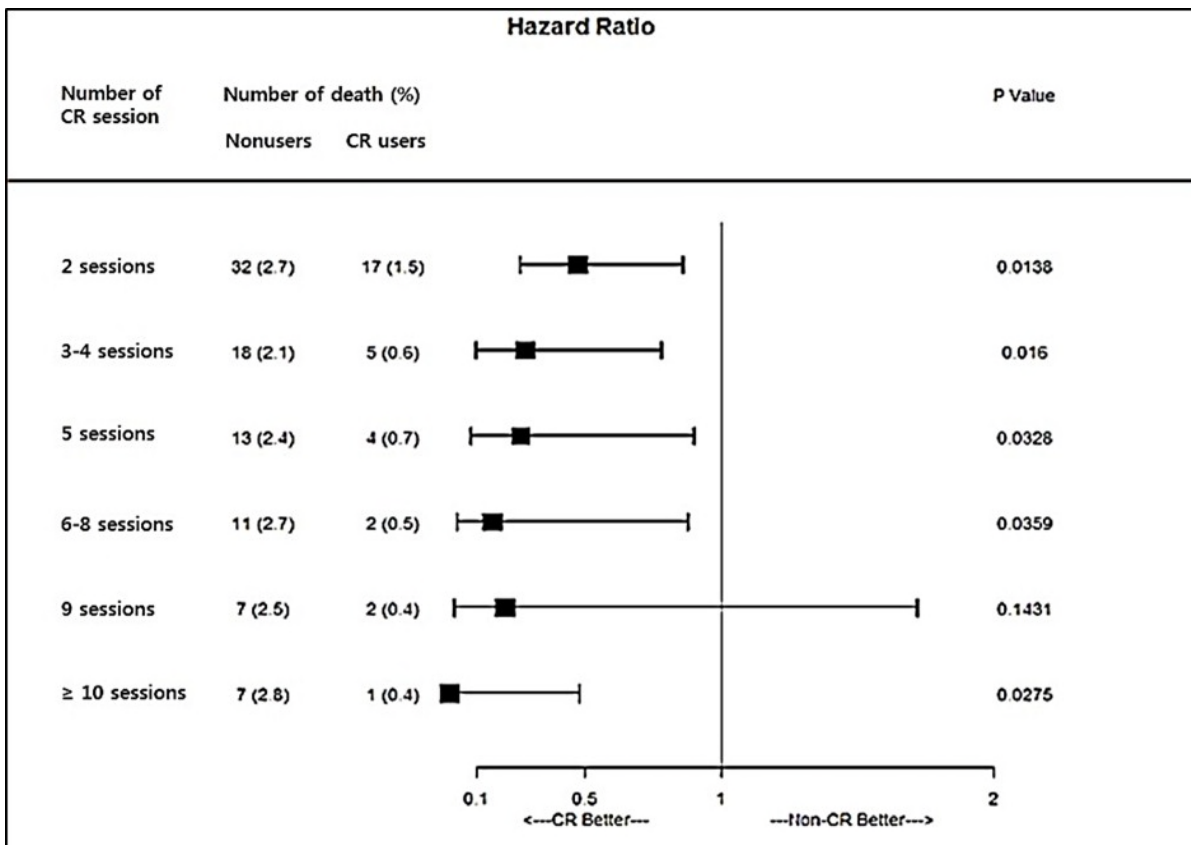


Figure 1. Subgroup analysis of hazard ratio for the effect of CR session number on mortality