

ORAL PRESENTATION 3-1

심폐재활

발표일시 및 장소 : 10 월 26 일(금) 13:15-13:25 Room D(5F)

OP3-1-1

Changes of aerobic capacity over times in elderly patients with AMI after cardiac rehabilitation

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Objective

The purpose of this study is to establish a hypothesis that a longer period of time would be required for older patients compared with younger patients, and to compare the degree of improvement according to time with older and younger patients.

Methods

This retrospective study analyzed the medical records of 70 patients diagnosed with AMI (ST elevation and non-ST elevation myocardial infarction) between January 2011 and September 2017 who were referred to our rehabilitation center after undergoing percutaneous coronary intervention (PCI). Among the patients who underwent exercise tolerance test (ETT) at about 3 weeks after the onset of AMI (T0), about 6 weeks after completion of the first ETT (T1) and about 12 weeks after completion of the first ETT (T2). We divided patients older than 65 years were grouped into older group (24 patients) and the others were grouped into younger group (46 patients). (Table 1.) Study outcomes were estimated from the ETT at both aforementioned assessment points.

Results

The younger group showed improvement of METsmax and VO2max between T0 and T1. However older group showed no significant improvement between T0 and T1. The exercise capacity (METsmax and VO2max) of all groups showed improvement between T0 and T2. METsmax of younger group was 6.08 ± 0.75 at baseline and 7.52 ± 1.66 after 12 weeks, VO2max of younger group was 1.525 ± 0.297 at base line and 1.888 ± 0.511 after 12 weeks. METsmax of older group was 5.18 ± 1.32 at baseline and 6.29 ± 2.00 after 12 weeks, VO2max of older group was 1.120 ± 0.355 at base line and 1.325 ± 0.470 after 12 weeks. (younger group; $p=0.000$, $p=0.000$, older group; $p=0.031$, $p=0.046$) (Table 2., Table 3.)

Conclusion

Patients 65 years of age or younger showed improvement in their ability to exercise through a 6-week CR, whereas those aged 65 and older showed improvement in their

ability to exercise over a 6-week, at least 12-week CR. Therefore, elderly patients need more participation periods of CR than younger ones. Key Words: Cardiac rehabilitation, Old age, Acute myocardial infarction, Exercise capacity, Exercise tolerance test

Table 1. Clinical characteristics of the study population (n,%)

	Whole group (n=70)	Older group (n=24)	Younger group (n=46)	p-value
Age	60.17±11.09	72.87±5.10	53.53±6.65	0.000*
Sex (men)	53(75.7%)	14(70.8%)	39(84.7%)	
BMI (kg/m ²)	24.68±3.38	23.00±3.27	25.55±3.12	0.003*
LVEF(%)	56.00±9.55	60.97±7.87	53.41±9.39	0.001*
Hypertension	32(45.7%)	15(62.5%)	17(36.9%)	
Dyslipidemia	22(31.4%)	17(70.8%)	5(10.8%)	
Diabetes mellitus	20(28.5%)	7(29.1%)	13(28.2%)	
CHD type				
STEMI	37 (52.9%)	14 (58.3%)	23(50.0%)	
NSTEMI	33 (47.1%)	10 (41.6%)	23(50.0%)	
Medication				
B-blocker	50(71.4%)	17(70.8%)	33(71.7%)	
ACEI	30(42.8%)	8(33.3%)	22(47.8%)	
Statin	36(51.4%)	12(50.0%)	24(52.1%)	

Values are presented as mean±standard deviation or number (%) BMI, body mass index; LVEF, left ventricular ejection fraction; CHD, coronary heart disease; STEMI, ST elevation myocardial infarction; NSTEMI, non-ST elevation myocardial infarction; ACEI, angiotensin-converting enzyme inhibitor P values are for comparison between Older group and Younger group *statistically significant (p<0.05) in comparison of the Older and Younger group

Table 2. Comparison of effect on cardiopulmonary exercise capacity

	T0			T1			T2		
	Older group	Younger group	p-value	Older group	Younger group	p-value	Older group	Younger group	p-value
MET _{max}	5.18±1.32	6.08±0.75	0.004*	5.40±1.29	7.28±1.81	0.000*	6.29±2.00	7.52±1.66	0.008*
VO _{2max}	1.120±0.355	1.525±0.297	0.000*	1.156±0.355	1.808±0.524	0.000*	1.325±0.470	1.888±0.511	0.000*
HR _{max}	117.2±19.0	125.9±16.3	0.051	114.7±17.4	134.0±18.0	0.000*	119.2±23.2	131.1±18.1	0.021*
HR _{rest}	74.54±14.24	75.35±15.90	0.836	66.71±9.17	71.04±10.48	0.092	67.17±12.96	69.54±9.95	0.397
SBP _{rest}	124.2±18.4	112.2±17.8	0.010*	121.3±21.6	111.0±17.9	0.037*	122.5±24.2	113.93±19.2	0.111
BMI	23.00±3.27	25.55±3.12	0.002*	23.10±3.21	25.54±3.58	0.007*	22.93±3.35	25.43±3.33	0.004*
TET	603.0±153.9	679.4±134.5	0.035*	603.2±206.1	775.0±148.4	0.001*	649.4±204.2	780.8±160.4	0.004*

Values are mean±standard deviation; T0, exercise tolerance test at 3 weeks after acute myocardial infarction; T1, exercise tolerance test at 6 weeks after T0; T2, exercise tolerance test at 12 weeks after T0; MET_{max}, maximal metabolic equivalents; VO_{2max}, maximal oxygen consumption; TET, Total exercise time; HR_{max}, maximal heart rate; HR_{rest}, resting heart rate; SBP, Systolic blood pressure; BMI, Body mass index

Table 3. Cardiopulmonary exercise capacity at T0, T1 and T2

	T0	T1	T2	p-value T0-T1	p-value T0-T2
Older Group					
MET _{max}	5.18±1.32	5.40±1.29	6.29±2.00	0.455	0.031*
VO _{2max}	1.120±0.355	1.156±0.355	1.325±0.470	0.542	0.046*
HR _{max}	117.2±19.0	114.7±17.4	119.2±23.2	0.495	0.604
HR _{rest}	74.54±14.24	66.71±9.17	67.17±12.96	0.009*	0.032*
SBP _{rest}	124.2±18.4	121.3±21.6	122.5±24.2	0.491	0.718
BMI	23.00±3.27	23.10±3.21	22.93±3.35	0.296	0.836
TET	603.0±153.9	603.2±206.1	649.4±204.2	0.997	0.24
Younger Group					
MET _{max}	6.08±0.75	7.28±1.81	7.52±1.66	0.000*	0.000*
VO _{2max}	1.525±0.297	1.808±0.524	1.888±0.511	0.000*	0.000*
HR _{max}	125.9±16.3	134.0±18.0	131.1±18.1	0.001*	0.029*
HR _{rest}	75.35±15.90	71.04±10.48	69.54±9.95	0.021*	0.005*
SBP _{rest}	112.2±17.8	111.0±17.9	113.93±19.2	0.615	0.549
BMI	25.55±3.12	25.54±3.58	25.43±3.33	0.965	0.685
TET	679.4±134.5	775.0±148.4	780.8±160.4	0.001*	0.000*

Values are mean±standard deviation; T0, exercise tolerance test at 3 weeks after acute myocardial infarction; T1, exercise tolerance test at 6 weeks after T0; T2, exercise tolerance test at 12 weeks after T0; MET_{max}, maximal metabolic equivalents ; VO_{2max}, maximal oxygen consumption; TET, Total exercise time; HR_{max}, maximal heart rate; HR_{rest}, resting heart rate; SBP, Systolic blood pressure; BMI, Body mass index