Rehabilitation in Uncomplicated Myocardial Infarction at Ramathibodi Hospital : 5 Years Follow-up

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Abstract

Prospective study : 44 cases of post acute uncomplicated myocardial infarction were divided into 2 groups : control and exercise groups. The control group consisted of 22 patients, 35 - 74 years (mean 63.25) and exercise group consisted of 22 patients, 33 - 71 years (mean 54). The exercise test was performed at 5 METS predischarge then an exercise program conducted by a physiatrist (physician specialized in physical medicine and rehabilitation) but was not given in control group. The exercise test was repeated 12-weeks post discharge with results showing a remarkable difference between the 2 groups statistically. Also, after a 5 year follow-up, the exercise group were living, normally, 77 per cent *versus* only 30 per cent in the control group. Death in the exercise group and the control group was 5 per cent and 45 per cent respectively.

In recent years, an intensive approach has been taken in the evaluation and management of acute myocardial infarction (MI)[1,2]. Early post-infarction exercise stress testing has achieved popularity as an effective, noninvasive method of defining high-risk patients after acute myocardial infarction and providing a proper strategy for these [2-5]. It is generally known that heavy physical exercise may trigger the onset of acute myocardial infarction[6,7]. Therefore, a supervised rehabilitation program by prescribing proper regular exercise is important.

MATERIAL AND METHOD

The subjects were screened for eligibility by cardiologists and were selected if they had a history of uncomplicated myocardial infarction. The complicated cases will not be discussed in this paper. The patients were classified into two groups :

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Group I : The control group : twenty patients were enrolled, aged 35-74 years (mean 63.25), 17 men and 5 women ; 10 with diabetes mellitus 15 with hypertension. These patients had uncomplicated acute myocardlial infarction and achieved 5 METS on predischarge and repeat 3 months' post discharge exercise stress tests, no program of exercise was suggested.

Group II : The trial group (exercise group) : twenty two patients were enrolled, aged 33-71 years (mean 54.2), 20 men and 2 women ; 5 with diabetes mellitus, 18 with hypertension. They had undergone an exercise program when they were in the coronary care unit and continued when transferred to the ward. Also they achieved 5 METS on predischarge and repeat 3 months' post discharge exercise stress test in which the exercise program was based on that for out-patients. The program was as follows :-

Day 1-2 in C.C.U. :	calisthenic exercise to upper and lower extremities
Day 3-5 in ward :	walk around the bed in the ward, may increase the distance if the difference between resting heart rate and exercise heart rate is not more than 20 beats/min, systolic BP rise not more than 20 mmHg.
Day 5-7 in ward :	same program as above can walk downstairs one floor/ storey (with monitor)

The exercise stress test was performed predischarge expecting 5 METS. The ECG was normal.

After discharge, the patients were instructed as out-patients. They could walk a longer distance by controlling the heartbeat and systolic blood pressure as above. They could jog or ride a bicycling as they liked. Then, 12 weeks after discharge the exercise stress test was repeated.

Statistic analysis

The Mann-Whitney U. test was used to compare the characteristics of group one and group two. The $p<0.001$ was considered statistically significant.

RESULTS

1. Attendance and experiment

Control and trial subjects were well matched on post myocardial infarction. The age of group 1 ranged from 35-74 years old (mean 63.25) and of group 2 from 33-71 years old (mean 54.2). The comparison of METS at predischarge and 3 months' post discharge was as follows :

group 1 <control> 24 METS = 0.1914 $p<0.001$
group 2 <exercise> 91 METS = 4.301 $p<0.001$

Table 1 shows that in both the control and study group, predischarge exercise test should get 5 METS then the controlled group, we did not give exercise program whereas the study group, the exercise program given. Three months' post discharge the exercise stress test was performed. The comparison between pre and post discharge in the control group was 24 METS, and the study group 91 METS.

2. Performance after discharge (from 3 months to 12 months)

Group 1 (control group) : the patients maintained their life simply : no exercise was instructed. It was found that twelve patients were undersupervision, six patients were under nursing care and two died.

Group 2 (study group) : fifteen cases returned to work and are leading normal lives : three cases underwent CABG and four cases were under full nursing care.

3. Quality of life

Five-year follow-up revealed the following :

group 1 (control)	- able to live a normal life	6 subjects = 30 %
	- underwent CABG	5 subjects = 25 %
	- death	9 subjects = 45 %
group 2 (study)	- able to live a normal life	17 subjects = 77 %
	- underwent CABG	2 subjects = 9 %
	- repeat attack	2 subjects = 9 %
	- death	1 subject = 5 %

Table 1. The difference of metabolic unit (METS) between predischarge and 3-months postdischarge (by exercise stress test)

No.	group 1 (controlled group)			No.	group 2 (studied group)		
	predischarge	3 month postdischarge	difference		predischarge	3 month postdischarge	difference
1	5	6	1	1	5	12	7
2	5	7	2	2	5	7	2
3	5	5	0	3	5	9	4
4	5	7	2	4	5	7	2
5	5	6	1	5	5	8	3
6	5	7	2	6	5	10	5
7	5	7	2	7	5	8	3
8	5	6	1	8	5	8	3
9	5	5	0	9	5	12	7
10	5	8	3	10	5	10	5
11	5	6	1	11	5	12	7
12	5	7	2	12	5	12	7
13	5	5	0	13	5	7	2
14	5	5	0	14	5	5	0
15	5	5	0	15	5	8	3
16	5	5	0	16	5	11	4
17	5	7	0	17	5	10	5
18	5	6	2	18	5	10	5
19	5	7	1	19	5	7	2
20	5	7	2	20	5	8	3
21	5	5	0	21	5	9	4
22	5	5	0	22	5	11	4
			24				91

Table 2. Five-year follow-up for quality of life.

	group 1 (control group)		group 2 (study group)	
	No.	Per cent	No.	Per cent
normal life	6	30	17	17
underwent CABG	5	25	2	9
repeated attack	-	-	2	9
death	-	-	1	5

DISCUSSION

Dennis and Wenger emphasized that an appropriate exercise program should reduce that the risk factor in acute myocardial infarction and promote a better quality of life[1,6]. This paper shows that the patients who were instructed to do adequate had a better chance to live with a good quality of life. The different characteritics of the control group and the study group are evident in our study. Patients with post myocardial infarction could do appropriate exercise under a physician's control and from the comparison between the two groups, 77 per cent of the exercise group have survived with a normal life, but the control group's figure is 30 per cent. The disadvantage of this paper is that it was not well controlled by age and risk factors, and the exercise program was not adequate enough.

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เวชศาสตร์ฟื้นฟูในผู้ป่วยกล้ามเนื้อหัวใจตายเฉียบพลันที่โรงพยาบาลรามาธิบดี : การติดตามการรักษา 5 ปี

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ทำการศึกษาผู้ป่วยกล้ามเนื้อหัวใจตายเฉียบพลันจำนวน 44 ราย โดยแบ่งกลุ่มผู้ป่วยเป็น 2 กลุ่ม คือ กลุ่มควบคุมและกลุ่มทำการทดลอง กลุ่มควบคุมประกอบด้วยผู้ป่วย 22 ราย อายุระหว่าง 35 – 74 ปี (mean 63.25) และกลุ่มทำการทดลองประกอบด้วยผู้ป่วย 22 ราย อายุระหว่าง 33–71 ปี (mean 54.2) ก่อนกลับบ้านได้ทำ exercise stress test ทุกคน และได้ 5 METS กลุ่มควบคุมให้ใช้ชีวิตตามปกติ และกลุ่มทำการทดลองได้รับการอธิบายและให้คำแนะนำเกี่ยวกับการออกกำลังกายที่เหมาะสม เมื่อครบ 12 อาทิตย์ นำผู้ป่วยทั้งสองกลุ่มทำ exercise stress test อีกครั้ง ได้พบว่ามีความแตกต่างกันอย่างมีนัยสำคัญ เมื่อติดตามผู้ป่วยอย่างต่อเนื่อง 5 ปี พบว่า กลุ่มทดลองสามารถอยู่ได้อย่างปกติ 77% ตาย 5%, 9% ได้รับการผ่าตัดและ 9% เกิด recurrent attact ส่วนกลุ่มควบคุมสามารถอยู่ได้อย่างปกติ 30%, ตาย 45% และ 25% ต้องได้รับการผ่าตัดตามลำดับ

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