

# Changes in Life and Social Activity and their Causes in Elderly Myocardial Infarction Patients Over Two Years After the Onset

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**Purpose** : The study was conducted to ascertain changes in life and social activity among elderly myocardial infarction (hereafter MI) patients in two years after leaving hospital and to identify their causes. **Methods** : Ten persons aged over 65 who had the first MI were visited during a period to two years after being released from hospital to carry out a prospective study. A semi-structured interview was conducted and the social activity indicator was used to measure social activity. **Results** : The score of the social activity indicator was the lowest in the third month after leaving hospital, which then increased up to the twelfth month. However, it dropped two years after leaving hospital. In the high activity level five cases made a good recovery in their social activity and quality of life. On the other hand, in two cases their recovery remained only at about 50%. In the low activity level group the score of the social activity indicator slightly declined in the third month, which was maintained up to the twelfth month, and further dropped two years after leaving hospital. As to influencing factors for expanding social activity, the patient had anxiety about a recurrence of paroxysms and chest pain and the family had the same fear also in six cases. **Conclusions** : This study implied the necessity of including the following support in continuous nursing for elderly MI patients : to assess the conditions and socio-psychological maladaptation of the patients who show no signs of expanding their social activity for six months after leaving hospital, to assess the patient's and family's fear of a recurrence of paroxysms. (Kitakanto Med J 2011 ; 61 : 307~317)

**Key words** : elderly person, myocardial infarction, social activity, continuous nursing, longitudinal study

## I. Introduction

In Japan the number of heart disease patients has increased in recent years together with changes in living habits and lifestyles. Above all, marked are sharp increases in the incidence rates of ischemic heart diseases, typically acute myocardial infarction and angina pectoris, in relation to aging.<sup>1</sup> Ischemic heart diseases account for 42% of deaths from heart diseases.<sup>1</sup> Together with recent increases in the number of people and potential people with metabolic syndrome, in all likelihood, the number of old people who will suffer from ischemic heart diseases will further increase in the future.<sup>2</sup> From the perspective of

checking increases in the number of old people who will become in need of social care services in the future, it is of great social significance to provide support to elderly myocardial infarction patients so that they recover satisfactorily.

There is a study<sup>3</sup> reporting that a person perceives "an illness or injury that has happened to him/herself" as a "negative incidence" among various events in life experienced by elderly people. It gives an account of subsequent physical and psychological effects on health conditions, life and family relations. Other researches argue that if such an event takes place unexpectedly, its subsequent effects are far extensive.<sup>4</sup> Based on the findings of these studies, an approach for

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elderly persons who have had an acute myocardial infarction, which is generally perceived as a sudden illness, should be different from the approach taken for elderly patients who have succumbed to myocardial infarction during their middle age and also the elderly with chronic diseases.

It has been argued that in elderly people social activity is related to their health conditions as well as their daily living habits.<sup>5,6</sup> Similarly, some studies assert that elderly men who stay connected with society and socialize with people maintain their ADL abilities at a higher level three years later and such social activity is effective for vital prognosis.<sup>7</sup> Also, a survey as to the relation between social activity and living habits, on the one hand, and needs for social care services after three years, on the other, in elderly people living in the community has revealed that social connectedness is associated with the maintenance of mental and physical functions.<sup>8</sup> Hence, the maintenance of health conditions and social activity is evidently related to preventing the need for care in old age. As to the relationship between elderly myocardial infarction patients and social activity, there is a report implicating a possibility that cardiac rehabilitation during the acute phase leads to the maintenance of ADL and social activity and is also beneficial for preventing the need for care.<sup>9</sup> However, no studies have been done to prove the hypothesis.

I have been conducting practical studies towards expanding activity in elderly people after leaving hospital. The study on myocardial infarction patients demonstrated that the patients who had held a prospect of reducing the scope of their lives indeed lowered the level of their social activity and quality of life after leaving hospital.<sup>10</sup> Similarly, the study on patients after digestive organ surgery revealed a significant reduction particularly in social roles in their activity after the surgery. The reduction is characterized by terminating active leisure activity such as sports.<sup>11</sup> However, both are cross-sectional studies conducted within six months after hospital discharge. I thought that a longitudinal study focusing on changes in the quality of life would be necessary.

As stated above, an acute myocardial infarction among acute illnesses that happen in old age causes many problems in life even after leaving hospital as well as during hospitalization due primarily to the acuteness of the onset, potential life-threatening consequence, and fear of a recurrence of paroxysms which restricts activity in life. Thus, it is important to provide continuous nursing support based on knowledge about the lifestyle of each patient after leaving hospital, particularly about the content and cause of changes in social activity.

However, changes in life and social activity in elderly people after acute myocardial infarction and their detailed contents have not been studied sufficiently.

## II. Purpose

This study aimed for ascertaining changes in life and social activity in elderly patients during the first two years after myocardial infarction and developing a hypothesis concerning issues in continuous nursing support.

## III. Methods

### 1. Sample population

The sample population consisted of ten patients aged over 65 who had had acute myocardial infarctions and hospitalized in two hospitals in Prefecture A that had a cardiology ward and an outpatient department. I entrusted the head nurse with the selection of patients based on the conditions that rehabilitation in the acute phase after myocardial infarction had been progressing as programmed, the patient had no complications with either moderate-to-severe degree heart failure or arrhythmia, and the patient had the ability to judge and communicate to spend a normal social life without dementia or mental disorder.

### 2. Methods

#### 1) Time of the study

I visited each patient, after he/she has been transferred from CCU to a general bed and under the rehabilitation program, to explain about my study in writing and received consent from the patient and his/her family.

Thereafter, I revisited the patient in his/her hospital room prior to release from hospital to collect information on his/her living conditions before hospitalization and outlook for his/her life after leaving hospital while trying to establish good rapport. After hospital discharge, I made six interview visits, one month, three months, six months, nine months, twelve months and two years, and carried out a prospective study with patient and family participation. I rated the score of the social activity indicator for the elderly at the five visits during the time from the third month to the second year.

#### 2) Contents and methods of the study

##### ① Basic attributes and medical data

I used medical records and nursing records as to the patient's basic attributes, conditions of the disease, and progress while being hospitalized.

##### ② Living conditions

In this study by interview visits, a semi-structured interview was conducted that included the following

issues: the progress of treatment; doctor's instructions, if any, on activity after leaving hospital; living conditions; the present content, level and scope of activity; self-evaluation of activity amount in comparison to the amount prior to the disease (=100); and what he/she thinks about his/her life in general. I asked his/her family member(s) to join the interview. Interviews were recorded with prior approval from the patient and later transcribed. The issues that I have observed during each interview were written down later.

### ③ Social activity indicator for the elderly

In order to evaluate changes in life after myocardial infarction, I used the social activity indicators for the elderly.<sup>12</sup> The indicators have been developed by Hashimoto *et al.* to measure elderly persons' levels of social activity. This indicators had enough Validity and reliability for practical use.<sup>13,14</sup> They consist of 21 categories from four aspects; job (1), social activity (6), learning activity (4), and personal activity (10). I collected information from the patient, through recalling, about activity prior to hospitalization in the interview immediately before hospital discharge and gathered information on his/her activity after leaving hospital through interviews.

### 3. Analysis

I analyzed the patient's life after being released from hospital, changes in social activity and their causes by using a case-study method,<sup>15</sup> chronological analysis<sup>15</sup> and pattern analysis.<sup>15</sup>

Chronological analysis was carried out in the procedure discussed below.

#### 1) The data obtained from interviews and observations were classified by following issue for each case

- ① Medical management
- ② Instructions on activity
- ③ Self-evaluation of activity amount {in a numerical value of present activity level *vis-à-vis* the pre-hospitalization level (=100)}
- ④ Major activity (four categories of exercise/sports, job, domestic chores, and outings: none, partly, the same as before, or more than before; excluding ADL)
- ⑤ What he/she thinks about his/her life in general

#### 2) Confirm the content of cross-sectional changes in each case concerning the categorized data

#### 3) Confirm the factors influencing changes

#### 4) Describe the features of each case

The procedure for pattern analysis is:

- ① Based on a pattern common to changes in the score of the social activity indicator, the ten cases were classified into three groups.

- i. Maintaining group of high activity levels – group of patients who scored high in social activity prior to the disease and the score rose in a given period of time after leaving hospital
- ii. Decline group of high activity levels – group of patients who scored high in social activity prior to the disease, but the score did not rise even after a given period of time
- iii. Low activity level group – group of patients who scored low in social activity prior to the disease, and the score did not rise after a given period of time

② Substantiate the commonalities and differences of cases in each group

③ Confirm the differences and features by comparing the three groups

④ Differences and commonalities of the above factors in comparison to other cases

### 4. Ethical considerations

For conducting this study, I described clearly in writing the purpose, methods, data management, protection of information as to the individual and the facilities, and anonymity of the patients in publication, and received consent from each patient and his/her family verbally and in writing.

The study was approved by the Ethics Committee of Gunma PAZ College.

## IV. Results

### 1. Outline of the sample population (Table 1)

The sample population consisted of ten patients – seven males and three females aged from 68 to 89. Their mean age was 78.0 (SD ± 7.3). Two persons had a job. The family composition of the patients was: four living with their spouses, one living with spouse and child's family, three living with the child's family, and two living alone. Cases D and G needed partial assistance in taking a bath. Case I had received knee arthroplasty due to chronic rheumatoid arthritis. Seven patients except for cases B and H received percutaneous transluminal coronary angioplasty within six hours after the onset, and all of them were responsive to medical treatments. When they were transferred to general beds and before they were discharged from hospital, all patients received instructions and advice from the doctor, nurse, registered dietician and pharmacist by using brochures, videos and other teaching materials.

### 2. Changes in the social activity indicator

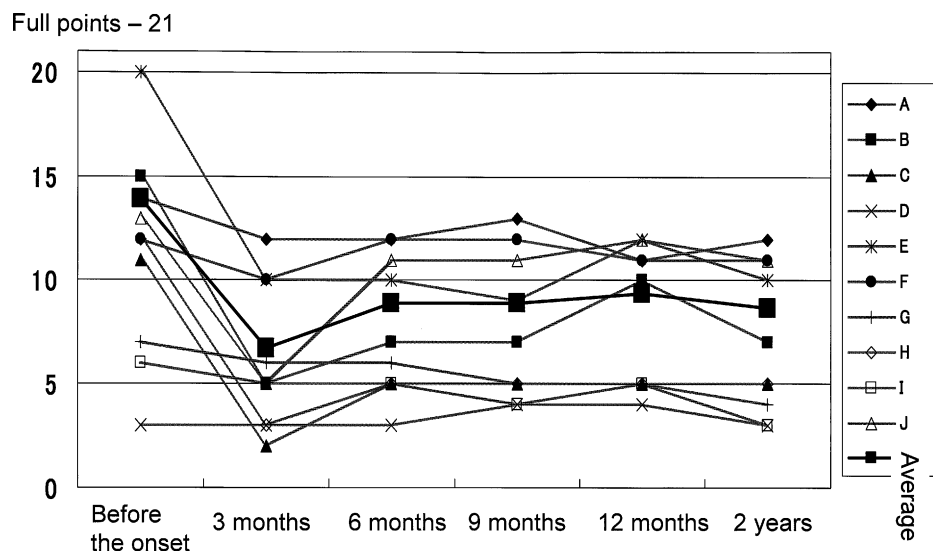
#### 1) Overall (Figure 1)

As seen in Figure 1, the change in the mean score

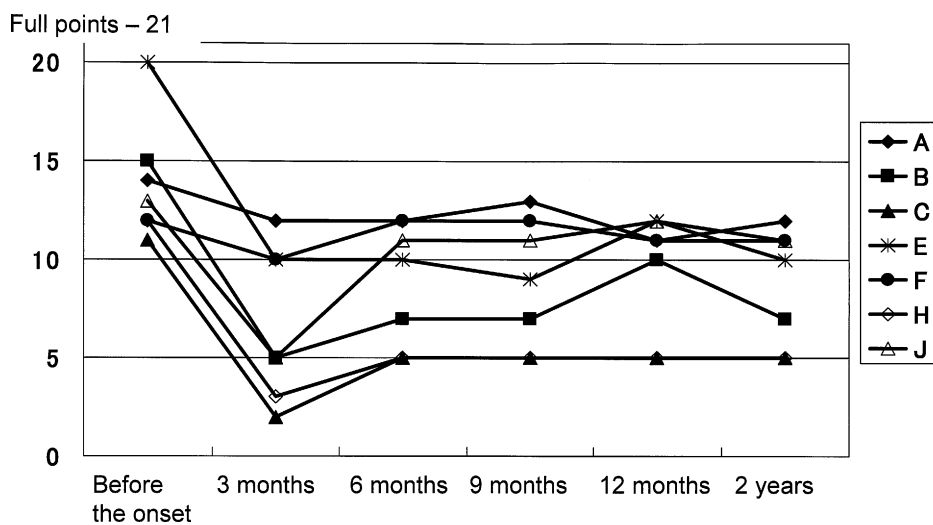
**Table. 1** Outline of the sample population in this case study

Case	Age	Sex	Job	Family composition	ADL	Treatment	Risk factor, etc.
A	79	Male	None	Living with the child's household	Independent	PTCA, Stent	Angina pectoris
B	73	Male	None	Living with spouse	Independent	Thrombolytic therapy	Diabetes, hyperlipemia, smoking
C	87	Female	None	Living with the child's family	Independent	PTCA, Stent	Hypertension, angina pectoris
D	89	Female	None	Living with the child's family	Partially supported	PTCA	Hypertension
E	74	Male	Agriculture	Living with spouse	Independent	PTCA	Diabetes, hyperlipemia
F	75	Male	None	Living with spouse and child's family	Independent	PTCA	Smoking
G	84	Male	None	Living alone	Partially supported	PTCA, Stent	Diabetes, hyperlipemia, angina pectoris
H	82	Male	Diary farm	Living with spouse	Independent	Thrombolytic therapy	Borderline diabetes
I	68	Female	None	Living alone	Independent	PTCA, Stent	Borderline diabetes, rheumatism
J	69	Male	None	Living with spouse	Independent	PTCA, Stent	Diabetes, hyperlipemia

Mean 78.0±7.3



**Fig. 1** Changes in the score of the social activity indicator (overall)



**Fig. 2** Changes in the score of the social activity indicator : High activity level group (N= 7)

of the ten cases from the time prior to hospitalization and during two years after leaving hospital indicates that a pre-hospitalization score of 11.3 dropped to the

lowest 6.1 in the third month. Thereafter, it was maintained on a level of 7, rose to 8 one year after, and then slightly dropped to 7.1 two years after.

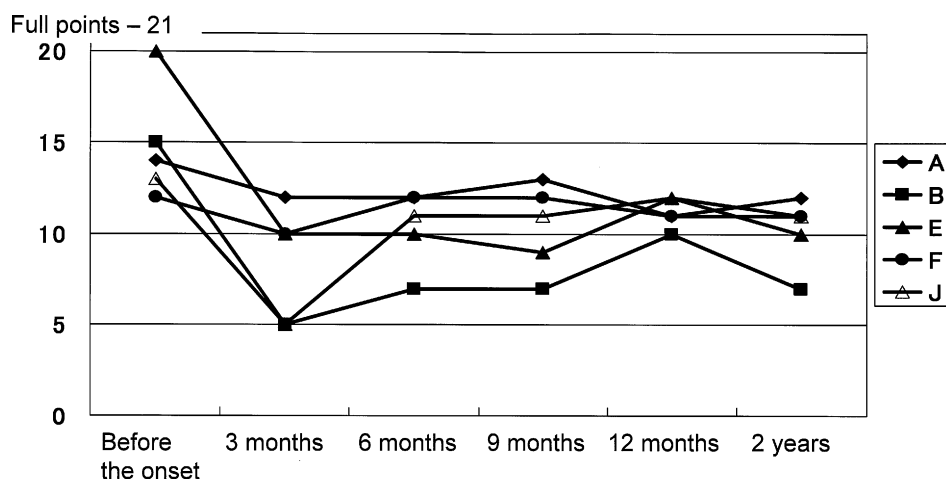


Fig. 3 Changes in the score of the social activity indicator : Maintaining group of high activity levels (N= 5 )

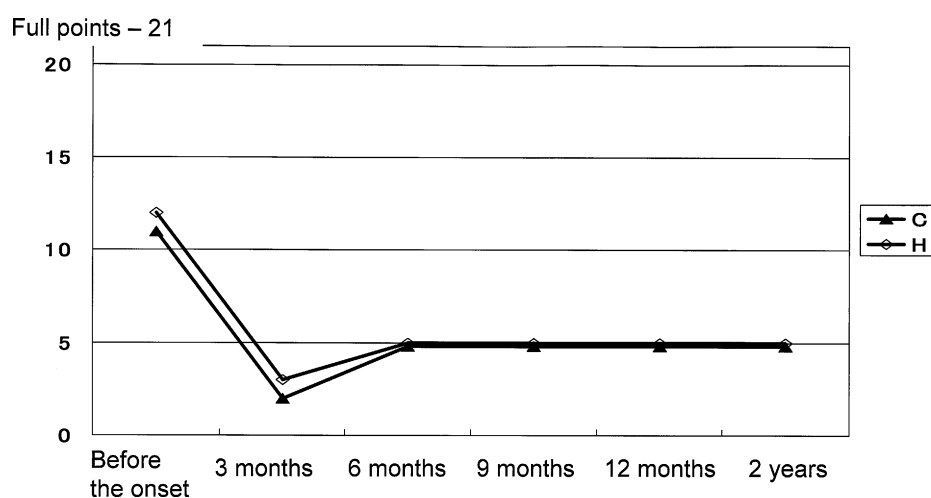


Fig. 4 Changes in the score of the social activity indicator : Decline group of high activity levels (N= 2 )

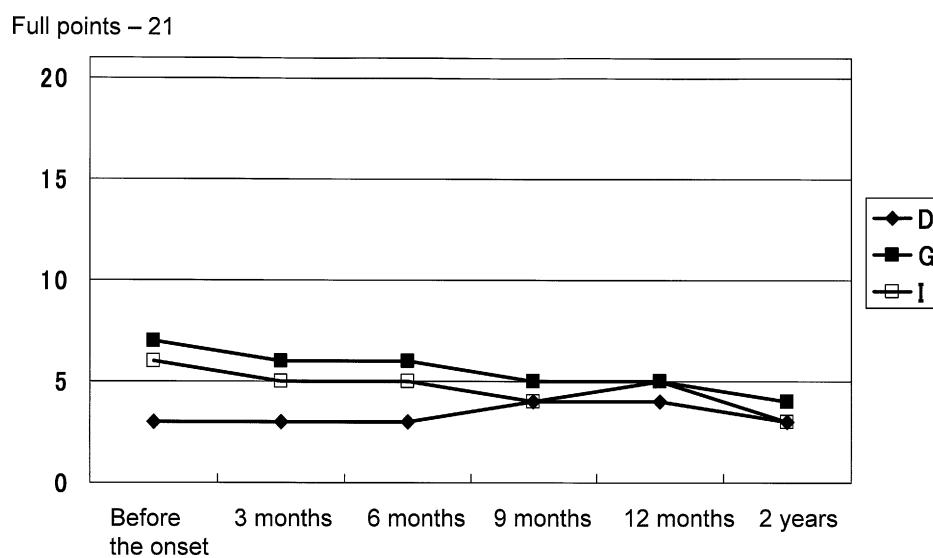


Fig. 5 Changes in the score of the social activity indicator : Low activity level group (N= 3 )

In terms of the pre-hospitalization scores of ten cases, cases D, G and I scored less than 10 and classified into the low activity level group, whereas other

seven cases scored 10 points or more and classified into the high activity level group.

## 2) High activity level group (Figures 2, 3 and 4)

In the high activity level group (Figure 2), the scores were the lowest in the third month after leaving hospital but increased thereafter in some cases. In other cases, on the other hand, the scores did not increase. Cases A, B, E, F and J in the high activity level group that made a relatively satisfactory recovery were classified into the maintaining group of high activity levels. As shown by Figure 3, this group scored the lowest in the third month and higher after the sixth month, and kept the scores up to the second year. However, no cases recovered to a pre-hospitalization level.

In the high activity level group, cases C and H were classified into the decline group of high activity levels because their scores did not increase in a given period of time after leaving hospital. In this group (Figure 4), the scores drastically dropped in the third month after leaving hospital, and the scores were maintained at five up to the second year.

## 3) Low activity level group (Figure 5)

Three cases in the low activity level group that scored under 10 prior to the disease (Figure 5) did not show any big changes after leaving hospital and maintained low scores up to the twelfth month. The scores slightly dropped two years after the release.

### 3. Outline of changes in life after leaving hospital and the features of cases (Tables 2)

The section below describes the features of changes in life in one cases of each group during the two years after being released from hospital.

#### 1) Maintaining group of high activity levels

Case A in table 2 outlines changes in life after leaving hospital in the maintaining group of high activity levels.

Self-evaluation after leaving hospital by the maintaining group of high activity levels was 70% or more within the first year compared to the content and level of activity prior to the onset (=100), which was maintained up to the second year. Activities such as ADL, domestic chores, and light work at home were resumed at a relatively early stage after being released from hospital, and exercises/sports were often resumed six month after the release. The persons who had held some positions in the community network association or the elderly club quit the positions without exceptions after myocardial infarction. In this group cases B, E and F, all males, who had been active in sports or hobby activity prior to hospitalization, were restricted in their activity or put under the wife's supervision after returning home. They felt liable for the burden placed by the disease and subsequent hospitalization on the family and tried to follow the restrictions. In

three cases, they also conformed to the instructions given by the wife as to self-care for the disease and made earnest efforts to observe strictly such instructions. The wife of case B, who had myocardial infarction during a trip, had an intense fear of a recurrence of paroxysms, and both the patient and his wife realized that "he had no choice but accepting restrictions more or less, thanking for a narrow escape from death."

#### 2) Decline group of high activity levels

Case C in this group had great anxiety because paroxysms of chest pain could not be controlled and also because she had to spend a lot of time alone at home. Hence, the patient could not resume her activity which had been carried out before hospitalization, and this condition lasted for some time. Finally she regained psychological stability since she began to use day care services. Case H aged 82 had been managing a dairy farm with his son, but the disease drastically changed his life and forced him into convalescence at home. He had unidentified complaints for about one year. After he began to visit a psychiatrist, his symptoms had dissipated. Since then, he became psychologically stable and resumed his hobby activity.

#### 3) Low activity level group

Case D in table 2 summarizes changes in life in the low activity level group after leaving hospital.

Cases D and G in this group, aged 89 and 84, had been in the need for social care services in taking a bath and walking up and down the staircase before myocardial infarction. During hospitalization, they carried out activity according to the rehabilitation program for the acute phase and continued it after leaving hospital. As a result, ADL was expanded temporarily. Case D began to use day care services a year after returning home, while case G started using the services immediately after being released from hospital. In both cases the level of ADL and cognitive ability decreased two years after coming home, with which the content and level of their activity dwindled. Case I had suffered chronic rheumatoid arthritis for a prolonged period of time. Thus, the patient did not sustain an extensive effect from myocardial infarction from the aspect of reduced social activity. However, an adverse effect on life increased due to additional illnesses, orthopedic disease (lumbar spondylolisthesis) and respiratory disease (interstitial pneumonia), thereby beginning to receive social care services. Despite a sudden onset of myocardial infarction, the patient could leave hospital in good conditions. Thus, she accepted the new illnesses with the determination that she would live the rest of her life in the way that she would not regret.

**Table.2** Summary and features of changes in life after leaving hospital : Maintaining group of high activity levels

Group	Case	Pre-hospitalization	After leaving hospital					Features of the case	
			One month	Three months	Six months	One year	Two years		
high activity level	A	Medical management	Hospital visit every two weeks	Heart catheterization, Hospital visit every 4 weeks	Hospital visit every four weeks	Hospital visit every four weeks	Hospital visit every four weeks	Based on the result of heart catheterization examination carried out three months after leaving hospital, he was told to expand his activity amount. Thereafter, he has gradually increased his activity in general. He evaluates himself that he has restore	
		Instructions on activity	None	Activities can be carried out without restrictions.	None	Do something.	None		
		Self-evaluation of activity amount	100	60	80	80	95		90
		Major activities	Gate ball	—	△	△	○		○
			Growing vegetables	△	△	△	△		△
			Game of go	—	○	⊙	⊙		⊙
			Domestic chores	△	○	○	○		○
Thoughts about life in general	—	—	△	○	○	○			
Thoughts about life in general		He is concerned about becoming senile or bed-ridden if he keeps his present lifestyle, but in the meantime restricts his activity. He lives in constant fear.	He believes that he will be able to do things as he used to do, but he is concerned about recurrence, so he won't do. He quit the official's position of the circle after the disease. He feels at ease.	His lifestyle has been restored close to a level of pre-hospitalization lifestyle. He has regained his confidence through a trip.	He has almost recovered the pre-hospitalization level. He did not expect that he would be able to recover his health condition to this extent. He cannot keep his patience long time, however.	He will not be able to regain the previous lifestyle. Even if he did, he will be afraid of a recurrence of paroxysms. He wants to keep the present level.			
decline of high activity level	C	Medical management	Hospital visit every two weeks	Hospital visit every two weeks	Hospital visit every two weeks	Hospital visit every four weeks	Cataract surgery, hospital visit every four weeks	She was playing the role of housewife in a three-generation household in which other members were not often at home. After leaving hospital, her lifestyle underwent a sea change. Because her chest pain could not be controlled, she felt anxious and helpless for six months. The resumption of use of the day care center gives her a sense of satisfaction. One year after leaving hospital, she has come to term with her age and physical condition and is now psychologically stable.	
		Subjective symptoms	Chest pain	Chest pain	Chest pain	None	None		
		Instruction about activity	Activity only to an extent of walking in garden	Not to take a bath alone	None	None	None		
		Self-evaluation of activity amount	100	Under 50	60	Under 50	50		50
		Major activities	Gate-ball	—	—	—	—		—
			Meeting and going out with friends	—	—	△	△		△
			Domestic chores	—	△	△	△		△
Day service	—	—	Started to use the service	Use the service	Use the service				
Thoughts about life in general		She still has chest pain caused by strain. Hence, she refrains from doing activity in general. She spends her time during day alone, thus feeling anxious. She has weakened rapidly.	She is cautious of activities in cold, and so she is not sufficiently active. However, she is aware of gradual recovery in physical strength. She thinks that she may die in case of a recurrence of the disease.	She used to enjoy playing gate-ball and meeting friends, but now she feels she cannot do it any longer. To replace the pleasures of her life, she began to go to the day care service facilities. Her family warns her not to do too much.	She has an easy life now, but feels bored without social interactions. Her family no longer depends upon her for domestic chores. She voluntarily avoids hard work due to anxiety about chest pain.	She enjoys going to the day care service center. She wants to keep living without becoming bed-ridden.			
low activity level	D	Medical management	Hospital visit every two weeks	Hospital visit every two weeks	Hospital visit every four weeks	Hospital visit every eight weeks	Hospital visit every eight weeks	She had myocardial infarction at 89. After leaving hospital, she spent her time mostly in her room with help from her family. During hospitalization, she underwent rehabilitation as programmed. Hence, her activity level increased than the pre-hospitalization level. After coming home, she actively walked and was able to do some activities that she had not been able to do for the last few years. Her activity outside decreased during winter, and since then, the amount of activity has gradually declined. She now uses day care services to alleviate a burden on the family. With aging, her cognitive functions have been gradually deteriorating.	
		Instructions on activity	To the extent without strain	None	None	None	None		
		Self-evaluation of activity amount	100	100 or more	100 or more	100	80		60
		Major activities	Walking in garden	⊙	⊙	○	△		△
			Copying sutras	⊙	⊙	○	—		—
			Day service	—	—	—	Began to use day service		Suspended
		Thoughts about life in general		She is happy to have regained her health. Her son tells her to walk in the garden. Now she can use all of her time to thinking about herself.	She could walk the staircase up and down and weed in the garden for the first time after a few years. She is aware that falling down will bring an end to the present lifestyle. Hence, she is very cautious in her moving.	As winter is drawing on, she is cautious not to put a strain on the heart. She does not go out on cold days.	Activity decreased during a cold winter, and so in comparison to the time immediately after leaving hospital, her activity level declined. Even with the decrease, the activity level is still on the pre-hospitalization level. Taking a bath at home places a burden on the family, so she began to use the day service center after the process of certification. She forgets things more frequently.		A few symptoms of dementia have begun to be observed. She now does not want to go to the day care service center. She spends her time mostly in her room, but she is physically OK in her own way.

⊙ : Same as the pre-attack level ○ : Close to the pre-attack level △ : Partially — : Suspended

**Table 3** Features of elderly myocardial infarction patients extracted from the cases

	No.	Content	Applicable case			Non-applicable case		
			Maintaining group of high activity levels	Decline group of high activity levels	Low activity level group	Maintaining group of high activity levels	Decline group of high activity levels	Low activity level group
Changes in life and social activities after leaving hospital	1	In general it takes the patient a year to stabilize his/her life after leaving hospital.	A/B/J	C/H		E/F		D/G/I
	2	The patient makes various adjustments or create a new lifestyle in order to adapt to seasonal climate changes.	E/J	C/H	D/G	A/B/F		I
	3	The patient has anxiety about a recurrence of paroxysms and symptoms of acute myocardial infarction.	A/B/F/J	C/H		E		D/G/I
	4	The patient understands that one of the factors to induce a recurrence of paroxysms is activity (exercise).	A/B/F/J	C/H		E		D/G/I
	5	The patient tends to restrict his/her activity to avoid a recurrence of paroxysms.	B	C/H		A/E/F/J		D/G/I
	6	The level and scope of the patient's activity are reduced in comparison to the pre-hospitalization level.	B/F/J	C/H	I	A/E		D/G
	7	The patient is aware that he/she will not be able to restore the pre-hospitalization life.	B	C/H		A/E/F/J		D/G/I
	8	The patient accepts the restrictions in life caused by the disease, thanking a narrow escape from death.	B	C/H		A/E/F/J		D/G/I
	9	The patient tries to make earnest efforts to follow professional guidance/advice on living	B/E/F	H		A/J	C	D/G/I
	10	The family has anxiety about a recurrence of paroxysms and symptoms of acute myocardial infarction.	B/E/F	C/H	I	A/J		D/G
	11	The family restricts and keeps an eye on the level and scope of the patient's activity (exercise).	B/E/F			A/J	C/H	D/G/I
	12	The patient recognizes that he/she has placed a burden on his/her family due to the disease and subsequent hospitalization.	B/E/F			A/J	C/H	D/G/I
	13	The patient tries to follow the restrictions and accept supervision of his/her family on activity (exercise).	B/E/F			A/J	C/H	D/G/I
Issues in continuous nursing support	14	The patient has the needs to talk about how to live his/her life and anxiety about a recurrence of paroxysms or have consultation with the doctor when he/she visits the outpatient department.	A/B/E/F	C/H		J		D/G/I
	15	It may be necessary to provide counseling/support during the time from leaving hospital to heart catheterization examination.	A/B/E/F/J	C/H				D/G/I

#### 4. Features of elderly myocardial infarction patients extracted from the cases (Table 3)

I analyzed the descriptions categorized as the "features of a case" in the ten cases to extract the "features of elderly myocardial infarction patients," which were tabulated in Table 5. "Changes in life and social activity after leaving hospital" were classified into 13 categories and "issues in continuous nursing support" into two categories, 15 in total.

Among "changes in life and social activity after leaving hospital," the following features are related to the content of changes: "About one year until stability," "Adjustments in lifestyle in the way to adapt to seasonal changes," "Restrictions on activity to avoid recurrence," "Reduction in the level and scope of activity," and "Earnest efforts to follow guidance/advice on living daily lives." The following features are related to the patient's perception: "Patient's anxiety about recurrence," "Activity as recurrence-inducible factor," "Perception of changes in quality of life," and "Acceptance of restrictions in life." Furthermore, the following categories were related to the features of the family: "Family's fear of recurrence," "Activity restrictions imposed by the family," "A sense of liability for the burden placed on the family by the attack and hospitalization" and "Acceptance of activity restrictions and supervision imposed by the family."

Each category of the above features is shown by applicable cases. There are many applicable cate-

gories in the maintaining group of high activity levels, whereas there are a fewer categories in the decline group of high activity levels and the low activity level group.

## V. Discussions

### 1. About changes in social activity after myocardial infarction

An overall score of the social activity indicator was 11.3 prior to hospitalization. The score of the high activity level group was 13.9, whereas the score of the low activity level group was 5.3. It can be inferred, compared to the findings of the report on elderly people who live in community,<sup>12</sup> that the patients in the high activity level group were involved actively in social interactions before disease. The score dropped by nearly half three months after the onset, i.e. 54% of the pre-hospitalization score, and recovered to 70% in the twelfth month. However, the pre-hospitalization level did not return. Furthermore, it dropped to 63% in the second year, which was lower than the first year after leaving hospital.

Myocardial infarction is classified as so-called internal disorder,<sup>16</sup> and in many cases it does not lead to a motor disorder and an ADL disorder, which are the problems caused by cerebral vascular disorder and femoral neck fractures. That is, it is not necessarily related to the conditions that require social care services immediately after the onset. However, it has been reported that as the lower the elderly person's



level of social activity is, the higher the reduction rate in ADL gets ten years later.<sup>6</sup> Thus, it is an important issue for the elderly myocardial infarction patient to maintain social activity to the best of his/her ability towards long/medium-term prevention of the need for social care services.

The level of social activity dropped again two years after leaving hospital. This is true of both the high activity level group and the low activity level group. There is a report<sup>17</sup> on the process of aging in relation to social activity arguing that the older people grow, the lower the level of activity gets. Indeed, this is what we experience in our daily life and also in medical scenes. It has been reported that the correlation between aging and social activity stems from reductions in physical functions with aging.<sup>18</sup> In this study, in the low activity level group that showed a low level of social activity prior to the disease, case D was 89 and case C was 84. Thus, it will be necessary to watch carefully changes in the level of social activity, in particular, of people who are in their 80s, after being released from hospital. However, in all the three cases of the low activity group, the rehabilitation program for the acute phase that they underwent during hospitalization was equal to or higher than the level of their exercises prior to hospitalization. As a result, after leaving hospital, they continued walking and water walking as a similar level of in-hospital rehabilitation. Thus, the levels of their activity at home slightly increased, albeit temporarily. In elderly myocardial infarction patients on the borderline of the need for social care services, rehabilitation for the acute phase and recovery phase may be effective for preventing the need for social care services.

## 2. About the content of social activity

As to changes in the content of activity after leaving hospital, in the high activity level group people began their activity around the house such as tending garden and growing vegetables at an early stage. They partially resumed sports and trips in the sixth month. There is a study done about elderly patients after digestive organ surgery claiming that they stopped their active leisure activities such as learning and sports, whereas they began health maintenance activities such as walking.<sup>11</sup> The same tendency that active leisure activity is terminated was observed among elderly myocardial infarction patients in this study. Only case I that had had knee arthroplasty began water walking as health maintenance activity. There were some patients who thought that coldness in winter and heat in summer would induce a recurrence of paroxysms and took an overly reactive behavior such as avoiding going-out, let alone outdoor sports, as the

way to adapt to climate changes. It will be necessary to provide counseling and advice to such individual at the time when he/she visits hospital, in addition to guidance before leaving hospital, so that he/she will be able to take a proper action to adapt to climate changes.

All male patients who used to be the officials of the community network association or other clubs quit the position. There is a research reporting that formal social activity is not related to active life expectancy (or health expectancy).<sup>19</sup> In this study these patients all said, "The myocardial infarction gave me a good opportunity to quit the position." However, it will be important to provide different advice according to each individual to meet his/her idiosyncratic conditions as to change in the content of activity.

## 3. Related factors

In this study, only cases B and F in the maintaining group of high activity levels voluntarily asked the doctor concerning the resumption of sports and other activities. The study conducted on elderly patients who had suffered femoral neck fractures and their families<sup>20</sup> revealed that both the patients and their family members failed to realize the guidance/instructions given at the time of hospital release as such. As a result, a rehabilitation program shown at that time was not carried out. This fact indicates that unless guidance/instruction is given in the way it can be related to each patient's lifestyle after returning home, it will not be actually reflected in his/her living. As to the resumption of sports and other activities after the disease, the concept of informed choice<sup>21</sup> will be important also for elderly patients in order for them to make choice and judgment based on their own will, which affects greatly the quality of life after myocardial infarction. The following issues will play the key roles in nursing support to elderly myocardial infarction patients: 1) to provide scientific information on the pathology of the disease, 2) to get information from experts for decision-making, and 3) to provide support to the patient in his/her self-decision making.

Some studies point out the factors related to social activity among elderly people such as depression control and easy access to transportation systems<sup>22</sup> and actual physical complaints.<sup>23</sup> Out of the two cases in the decline group of high activity levels, case C continued to suffer from uncontrollable paroxysms of chest pain even after returning home. Case H was in the state of psychological maladaptation caused by forced resignation from active vocational life. As a result, both patients spent two years without expanding their activity. Furthermore, case H had a fear of driving, thereby terminating his participation in hobby

activity.

All these factors were observed in cases B, E and F as well who showed over-adaptation in observing the activity restrictions imposed by the family. Only through guidance based on a lifestyle after leaving hospital, it will be possible to discern the causes of problems as to social activity and take measures suited for each individual.

#### **4. Patient's and family's fear and problems related to the fear in activity**

One study demonstrates that myocardial infarction patients show strong symptoms of neurosis, have anxiety, and suffer from mild depression, due to a general understanding that the heart is the life-sustaining organ and also due to fear of a shock at the time of paroxysms and their recurrence.<sup>24</sup> Out of the ten cases in this study, in six cases the patient expressed his/her anxiety about a recurrence of paroxysms and symptoms of acute myocardial infarction such as chest pain, and also in six cases the family expressed the same fear. In some cases the patient believed that activity would induce paroxysms, and hence, limit his/her activity. The same can be said about the family members who live with the patient. That is, owing to a fear of recurrence, they verbally and behaviorally tried to restrict the patient's activity. In fact, there was one family member who constantly kept an eye on the patient's activity. In cases B, E and F, the patients took overly reactive behaviors in following all the activity restrictions set by the family because of their perception that they had caused inconveniences to their families by the sudden attack and subsequent hospitalization.

A study on the families of myocardial infarction patients<sup>25</sup> revealed that emotional instability and changes in living patterns continued even for six months after the onset. Another study exposed that the families of patients with femoral neck fractures limited the latter's activity due to anxiety about falling and re-fractures. As a result, the patient's independence in living decreased further than the time of release from hospital.<sup>20</sup> Unless counseling is provided based on the assessment of fear and its cause to the patient and also family members living with him/her and individualized measures are taken concerning recovery, a sense of anxiety will never be resolved in the patient and his/her family. Moreover, there is a risk that the patient's social activity may be decline.

#### **5. Limit of this study and issues in the future**

The results of this study are limited to the findings based on only ten cases that have given me consent to the interview visit. The sample population of this

study was selected on the conditions that the patient's rehabilitation program had progressed as planned and the patient's myocardial infarction was without complications of either moderate-to-severe degree heart failure or arrhythmia. Hence, excluded were seriously ill patients and patients who had not undergone a satisfactory recovery process due to complications. That is, these patients were the targets of medical treatment, and they were not included in this study. The long-term purpose of this study lies in providing support to self-care by the patients who are able to participate in health-making after the onset of myocardial infarction. This is a particular feature of this study. That is, this study aims for elderly myocardial infarction patients who have a room for self-regulated health control rather than seriously ill patients who are placed primarily under medical management.

I believe that it is necessary to expand the study further by exploring practical knowledge concerning problems in self-care by elderly patients to be obtained from proficient nurses in cardiology and carrying out a quantitative study as to changes in life and social activity in patients and problems in continuous nursing.

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#### **References**

1. Ministry of Health, Labour and Welfare. 2008 Demographic Survey, Homepage of the Ministry of Health, Labour and Welfare <http://www.mhlw.go.jp/toukei/list>
2. Nakamura Y, Yoshida M, Kita Y, et al. Ischemic heart diseases among Japanese - Epidemiological statistics of ischemic heart diseases in Japan. *Japanese Journal of Clinical Medicine* 2003; 61: 719-725.
3. Shimonaka J, Nakazato K, Kawai C, et al. A psychological study on life events in middle and old age and their influences. *Japanese Journal of Gerontology* 1995; 17: 40-56.
4. McLanahan SS, Sorensen AB. Life event and psychological wellbeing. *Social Science Research* 1984; 13: 111-128.
5. Kawakami N, Shimizu H, Ikari A, et al. Development of evaluation methods for social activity support projects for the elderly by the municipality. *Japanese Journal of Public Health* 1998; 45: 893-904.

6. Haga H, Shibata H, Mathuzaki T, et al. Follow-up study on the ADL ability of the elderly living in the community. *The Japanese journal of health and human ecology* 1988; 54: 217-233.
7. Sugisawa H, Nakatani H, Maeda D, et al. Relationship between social integration and prognosis of ADL ability in the elderly. *Japanese Journal of Public Health* 1994; 41: 975-986.
8. Shinohara R, Sugisawa Y, Anme T, A study on the factors related to the need for social care services three years later among the elderly living in the community. *Japan Journal of Nursing Science* 2007; 27: 14-22.
9. Nagayama M. Prevention of the need for social care services and cardiac rehabilitation. 2006; 11: 245-249.
10. Ito M, Iida S. Prospect on life after leaving hospital and changes three months later in elderly myocardial infarction patients. *The KITAKANTO Medical Journal* 1999; 49: 269-275.
11. Ito M, Iida S. Activity ability and changes in lifestyle in elderly patients with laparotomy. *Health Care* 1999; 41: 627-631.
12. Hashimoto S, Aoki T, Tamakoshi A, et al. Development of social activity indicators for the elderly. *Japanese Journal of Public Health* 1998; 44: 760-768.
13. Takahashi M, Shibazaki T, Hashimoto S, et al. Evaluation of the operation of supporting programs for social activity of the elderly by city, town, village governments in Japan. *Japanese Journal of Public Health* 2000; 47: 47-54.
14. Kawakami N, Shimizu H, Ikari A, et al. Assessment method for supporting programs for social activity of the elderly by city, town, village governments in Japan. *Japanese Journal of Public Health* 1998; 45: 893-904
15. Yin, Robert K. (translated by Kimihiko Kondo), *Case Study Research: Design and Methods*, 67,142,151, Chikura Publishing Co., Ltd., 1996.
16. Sato T. *Medical disorders*, Sato, Tokutaro, ed., *Rehabilitation for medical disorders (enlarged edition)*, 1, Ishiyaku Publishing, Inc., 1999.
17. Hashimoto S, Aoki T, Tamakoshi A, et al. Relationship between municipal projects in social activity by the elderly and their personal activity. *Journal of Health Sciences* 1998; 45: 18-22.
18. Aoki R, Ohno Y, Tamakoshi. A Lifestyle determinants for social activity levels among the Japanese elderly. *Archives of Gerontology and Geriatrics* 1996; 22: 271-286.
19. Kagawa K, Nakajima K, Haga H. Relationship between social activity and life satisfaction among the elderly. *Japanese Journal of Human Sciences of Health-Social Services* 1998; 5: 71-77.
20. Soyano A, Ohta K, Asahara K, et al. Discourse on guidance before hospital discharge - with focus on the elderly experienced femoral neck fractures and the family's involvement. *Journal of Japan Academy of Gerontological Nursing* 1998; 3: 35-42.
21. Hoshi T. Health education and strategy controlling new health, Japan Certified Health Education Specialist Training Organization (ed.), *Preventive Measures against Metabolic Syndrome*, 18, Hokendojinsha, Inc. 2009.
22. Okamoto H, Shirasawa M. Factors related to satisfaction with participation in social activity among the rural elderly. *Journal of Japan Academy of Home Care* 2006; 10: 29-38.
23. Okamoto H, Okada S. Factors related to social activity by the elderly in major metropolitan areas - from physical, psychological social and environmental factors, *Japanese Journal of Public Health* 2006; 53: 29-38.
24. Majima T, Sato R. A study on evaluation methods of nursing intervention in psychology and activity of myocardial infarction patients *Journal of Chiba Academy of Nursing Science* 1999; 5: 1-6.
25. Hilgenberg, C. Changes in family patterns six months after a myocardial infarction, *Cardiovasc Nurs.* 1992; 6: 46-56.