Acute Coronary Syndrome Process In Geriatric Population: One Year Follow-Up Study

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Abstract: The majority of people with cardiovascular disease are aged more than 65 years. The aim of this study was to establish current prognostic data based on the management and one-year follow-up of geriatric patients with acute coronary syndrome who were hospitalized in the coronary care unit. A total of 114 patients who were diagnosed as having acute coronary syndrome (ACS) and admitted to our coronary care unit (CCU) were separated into two groups: patients below the age of 65 and those aged more than 65 years. The two groups were then compared based on several aspects: symptoms upon admission to the CCU, history of smoking, comorbidities, diagnoses on admission, length of hospital stay, CRP levels on admission, treatments and interventions received, cardiovascular incidents during hospitalization, as well as recurrent cardiac symptoms, and mortality. Among the geriatric patients admitted to our CCU with ACS, dyspnea was the most frequently stated primary symptom on admission. According to the data obtained in our study, geriatrics had higher mortality rates during early periods of hospitalization. However, during the one-year follow-up, the mortality rates of these patients were similar with those of younger patients. The mortality rates of geriatric patients with acute coronary syndrome were similar with to those of younger patients in the one-year follow-up. Thus, geriatric patients at aged 65 years or more should be approached from a multidisciplinary standpoint, especially in the early stages of admission, treated promptly with appropriate protocols and closely followed up.
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Introductıon

In our country, Turkey, where lifespans are expected to increase, the incidence of cardiovascular diseases has accordingly increased with the growing elderly population. Along with aging being a risk factor in itself, coronary risk factors become more frequent with age. In the Framingham cohort, the prevalence of coronary heart disease (CHD) between the ages of 70 and 84 years was found as 44% in men and 28% in women. Although patients aged more than 75 years constitute 6.1% of the population, 36% of all cases of myocardial infarction and 60% of deaths caused by myocardial infarction have been observed in this age group (1).

Our knowledge about the management of old patients with ACS is limited as a result of the insufficient number of elderly patients included in most ACS studies (2,3). In almost all of these studies, the percentage of patients over the age of 75 years far from represents the percentage that we see in our daily clinical practice. The patients selected to be enrolled in these studies have fewer cardiovascular risk factors and comorbidities, and better hemodynamic and renal function. Cardiac risk increases in the elderly population. Therefore, in patients where the risks of treatment do not outweigh the benefits promised by said treatment, it is predicted that the elderly population would benefit more from treatment than the younger population. Taking these facts into consideration, the American College of Cardiology/American Heart Association (ACC/AHA) guidelines state that treatment decisions for the elderly should be made based on every patient's general condition of health as well as their cognitive status and life expectations, rather than their chronologic age (4,5).

The probability of having ACS is higher in an old patient with another acute disease. It is thought that these secondary coronary events that occur because of other underlying diseases result from hemodynamic stress and increased need for oxygen faced by those with atherosclerotic diseases. It has been shown that the atypical presentation commonly seen in the elderly patients, causing delays in diagnosis and treatment, is responsible for the three times higher mortality rate within hospital (6). Although the elderly people constitute a high risk patient group and therefore would benefit highest from aggressive treatment, in practice, they are treated with conservative and less aggressive measures.

In daily practice, despite the death rate of 1% during hospitalization of people below the age of 65 who had ACS, this rate goes up to 10% in those above the age of 85 (6). Similarly, while the one year mortality rate is 1 in 5 in those above the age of 75, it is 1 in 4 in patients above the age of 85.

Due to the limited number of studies, especially in our country, including the patient population above the age of 65, further studies are needed to determine the clinical and demographic characteristics of people aged ≥65 years along with the factors that may affect mortality in the early and late stages, and to compare said factors between different age groups.

In our study, we aimed to gather data in order to compare the 50-65 years age group with those aged ≥65 years in the geriatric age group, and to compare these data with those of larger scale studies.

Materıal And Method

In this prospective observational study, 114 patients were included who were hospitalized in the CCU after being diagnosed as havaing ACS in accordance with the criteria in the ACC/AHA guidelines. Before initiation, approval from the hospital ethics committee was obtained and throughout its course, as a part of the obtained approval, the study was conducted in compliance with the 2008 Declaration of Helsinki. Once the necessary approval from the ethics committee was obtained, we searched for patients aged more than 50 years who were diagnosed as having ACS and admitted to the CCU, who were then enrolled in the study after verbal and written consents were obtained.

The inclusion criteria for our study were:

- Age above 50
- Admission to our CCU and ACS diagnosis
- Patient's consent

Exclusion criteria for our study were:

- Any type of malignancy
- Dementia, Alzheimer's disease or inadequate orientation and cooperation; therefore, inability to give consent or anamnesis.

A total of 114 patients were included in the study. Upon discharge, verbal and written consent, as well as contact information were obtained from the patients, and they were informed that they would be contacted. The patients were separated into two groups according to their ages; 50-65 years and ≥65 years. For each age group, clinical features such as sex, body mass index (BMI), primary symptom on admission, high sensitive CRP level on admission, comorbid diseases (diabetes mellitus, hypertension, hyperlipidemia, chronic kidney disease, ischemic heart disease), cigarette smoking history, and other demographic features, type of ACS, death rates within the hospital, length of hospital stay, recurrency of chest pain on follow-up visits, whether the patients had angiography and/or bypass, occurence of cardiac problems on follow-up requiring hospitalization, and medical treatment used at the end of one year were recorded and ratios were compared between these two age groups.

The patients were called for their 3rd, 6th, 9th and 12th month follow-ups. They were interviewed about their current situations and the information obtained was recorded along with the physical examination findings.

Gathered data were evaluated using the statistical package Statistical Package for Social Sciences (SPSS) version 20.0. For the evaluation of data analysis, independent sample test was used. Group data were assessed using Chi-square test and statistical data were obtained. Survival analysis was studied through SPSS using Logrank and survival time. In all statistics, $p<0.05$ was considered statistically significant.

Results

Of the 114 patients with ACS, 62 were in the 50-65 age group; 36 (58%) were men and 26 were women (42%). Of the 52 patients in the ≥65 years age group, 22 (42.3%) were men and 30 (57.7%) were women. There was no significant statistical difference between the two groups in sex distribution (p= 2.80) (Table 1).

In the 50-65 years age group, 16 (25.8%) patients were diagnosed as having ST elevation myocardial infarction (STEMI), 42 (67.7%) had non-ST elevation myocardial infarction (NSTEMI), and 4 patients (6.5%) had unstable angina pectoris (USAP). In the ≥65 years age group, 9 (17.3%) patients were found to have STEMI, 33 (63.5%) had NSTEMI, and 10 (19.2%) had USAP. Between the two groups, the ratios of the types of acute coronary syndrome seen were similar (p= 0.092) (Table 1).

The analysis of primary symptoms at admission showed that in the 50-65 age group, 50 patients (80.6%) had chest pain, 7 patients (11.3%) had shortness of breath, and 5 patients (8.1%) had other symptoms, whereas in the ≥65 years group, 22 patients (42.3%) had chest pain, 24 (46.1%) had shortness of breath, and 6 (11.6%) had other symptoms. The evaluation of these findings revealed a significant statistical difference between groups (p= 0.0001). Compared with other symptoms, having shortness of breath as the primary symptom on arrival at the emergency department was significantly higher in the ≥65 years age group ($p<0.05$). Moreover, the number of patients who came to the emergency department with shortness of breath and were diagnosed as having ACS was significantly higher than in the younger age group ($p<0.05$) (Table 1).

The two age groups were found similar regarding hypertension, diabetes mellitus, and hyperlipidemia.

Evaluation of the groups regarding chronic kidney disease (CKD) revealed that 8 (12.9%) patients aged between 50-65 years and 21 (40.3%) patients aged ≥65 years had CKD. There was a significant statistical difference between the two groups (p= 0.00079). There were a significantly a higher number of patients with CKD aged ≥65 years.

Twenty-six patients (41.9%) in the 50-65 age group and 28 (54.9%) aged ≥65 years were revealed to have preexisting ischemic heart disease (IHD) after questioning the two groups. There was no significant statistical difference between the two groups (p= 0.204) (Table 1).

There was no significant difference in BMI and CRP levels between the groups.

Regarding smoking history, 34 (54.8%) patients in the 50-65 age group and 12 (23.1%) in the group aged ≥65 years were found to smoke. There was a significant statistical difference between the two groups (p= 0.00057). The number of patients who smoked was significantly higher in the 50-65 age group than in the ≥65 years group (Table 1).

The number of emergency department admissions because of cardiac reasons during the one-year follow-up were reviewed and showed that 24 (38.7%) patients of the 50-65 age group and 24 patients (46.1%) of those aged ≥65 years attended the emergency department because of cardiac reasons. There was no significant statistical difference between the two groups (p= 0.422) (Table 2). During the one-year follow-up, there was no significant statistical difference between the groups regarding recurrence of chest pain, hospitalizations due to recurrent cardiac reasons and recurrence of MI (Table 2).

The comparison of the groups regarding the number of patients receiving coronary artery bypass grafting showed that 16 (25.8%) patients from the 50-65 age group had coronary artery bypass grafting, and the number of patients who did so in the group aged ≥65 years was 7 (13.5%). There was no significant statistical difference between the two groups (p= 0.101).

The evaluation of the groups regarding acute (within the hospital) death rates revealed that 1 (1.6%) patient died from the group aged 50-65 years; the number of patients who died in the group aged ≥65 years was 9 (17.3%), the difference was statistically significant (p= 0.012). A significantly higher number of patients died acutely in the older group compared with those aged 50-65 years (p= 0.00317). Of the 10 patients who died in the CCU, 7 died within the first 3 days of hospitalization, 6 of which were aged more than 65 years.

An investigation of the groups regarding death during the one-year of follow-up period showed that 6 patients (18.8%) from the group aged 50-65 years and 6 (14%) aged ≥65 years died in this period. There was no significant statistical difference between the two groups (p= 0.059) (Figure 1).

The duration of hospitalization in the CCU of the patient groups were also compared. The evaluation showed a mean length of hospital stay of 5 days group aged 50-65 years and 8 days in the group aged ≥65 years.

Fifteen patients from group aged 50-65 years received thrombolytic therapy. This constituted 93.7% of patients with STEMI. Seven patients aged ≥65 years were given thrombolytic therapy. Of the older age group, 78% of the patients with STEMI received thrombolytic therapy. The statistical analysis that compared the two groups revealed no significant difference (p= 0.148).

Discussion

Age is a strong negative prognostic factor in ACS. Mortality increases around 70% every 10 years in older patients (7). Despite the fact that the elderly are high-risk patients and therefore would benefit most from aggressive treatment, in practice, these patients are treated using conservative and less intense measures. Our knowledge as to how to manage and treat these patients is limited because there are insufficient numbers of older patients included in most studies regarding ACS (8,9). Consequently, treatment measures tend to vary from one center to another.

Some 65.7% of the patients enrolled in this study had NSTEMI. In studies conducted in various centers (8-12), only 33-44% of the patients with ACS under follow-up had NSTEMI. The higher rate in our study compared with the current literature might be due to the fact that patients diagnosed with STEMI were transferred, under appropriate circumstances, to other centers for primary PTCA.

In the geriatric population, patients with ACS who present to the emergency department have nonspecific symptoms, dyspneic symptoms are more heavilly emphasized. According to the GRACE study in which 18466 patients with NSTEMI were enrolled and followed up for 6 months, older patients with ACS often presented with atypical symptoms that were not accompanied by chest pain. In patients with ACS, although the presence of chest pain in patients aged more than 85 years is only 40%, it is 77% in patients aged less than 65 years. In older patients, the clinical findings of ACS tend to be shortness of breath, sweating, nausea and vomiting, and syncope (8). In our study, the rate of chest pain as the primary symptom on admission was 80.6% (50 patients) in the group aged 50-65 years. This rate was found less in

the group aged ≥65 years where the rate was 35.5% (22 patients). The rate of shortness of breath upon admission was higher at 46.1% (24 patients) in the elderly population. The distribution of symptoms according to age was similar between the groups in our study.

The evaluation regarding hospitalizations of patients in the CCU demonstrated that patients from the group aged 50-65 years had a mean length of stay of 5 days and those aged ≥65 years had a mean length of stay of 8 days in the coronary and post coronary intensive care unit for treatment and follow-up. The difference between the two groups was considered to be related to decreased blood flow to vital organs such as the liver, kidney, and brain, along with age and ACS, which is one of the basic problems of the elderly, and to several other factors lengthening the hospital stay of geriatric patients such as atherosclerosis, comorbidities, and polypharmacy.

In our study, in 9.3% of the patients with NSTEMI and in 4% of those with STEMI had a reinfarction. In the literature, 7.4% of patients with STEMI and 8.5% of those with NSTEMI presented with reinfarction (7,8). The fact that the rate of reinfarction in patients with NSTEMI was similar but that of STEMI was lower compared with the current literature was thought to be related to the lower number of patients enrolled in our study.

In studies conducted in different centers, death rates within the hospital ranged from 2.5-7%. The mortality rates during one-year follow-ups in the same studies were found to range between 9.2-12% (7-12). A total of 22 (19.2%) of the patients who were admitted to our CCU and received treatment were reported to have died, 10 during hospitalization and 12 during the one year follow-up period. Seven (32%) of these patients died within the first three days of hospitalization. The high rates observed in our study were considered to be related to the low number of patients enrolled and the inability to perform interventional procedures such as primary PTCA in our facility. Should the data be observed along with the patients who were not admitted to our CCU and directly transferred to facilities with catheter laboratories, lower mortality rates could be appreciated.

Figure And Table Legends:

Table 1: Baseline demographic features of the patients

	Patients aged 50-65 yearsn (%)	Patients aged ≥65 yearsn (%)	P value
SexFemaleMale	26 (42%)36 (58%)	30 (57.7%) 22 (42.3%)	>0.05>0.05
Primary symptom on admission Chest pain Shortness of breath Other symptoms	50 (80.6%)7 (11.3%)5 (9.1%)	22(42.3%)24 (46.1%)6 (11.6%)	>0.05<0.0001>0.05
Cigarette smoking history	34 (54.8%)	12 (23.1%)	0.00057
Basal diagnoses:HT	36 (61.3%)	35 (68.6%)	0.504
DM	22 (35.5%)	27 (52.9%)	0.774
HL	42 (67.7%)	26 (51%)	0.054
CKD	8 (12.9%)	21 (42%)	0.00079
IHD	26 (41.9%)	28 (47.8%)	0.204
Type of ACS:STEMINSTEMIUSAP	16 (25.8%)42 (67.7%)4 (6.5%)	9 (17.3%)33 (63.5%)10 (19.2%)	>0.05>0.05>0.05

HT, hypertension; DM, diabetes mellitus; HL, hyperlipidemia; CKD, chronic kidney disease; IHD, ischemic heart disease; ACS, acute coronary syndrome; STEMI, ST segment elevation myocardial infarction; NSTEMI, non-ST segment elevation myocardial infarction; USAP, unstable angina pectoris

Table 2: Comparison of the two groups regarding recurrent chest pain, recurrent admissions to emergency departments for cardiac reasons, recurrent MI, recurrent hospitalizations for cardiac reasons during the one-year follow-up period

One year follow-up	Patients aged50-65 yearsn (%)	Patients aged ≥65 yearsn (%)	P value
Recurrent chest pain	26 (41.9%)	22 (42.3%)	0.968
Recurrent emergency department admissions for cardiac reasons	24 (38.7%)	24 (46.1%)	0.422
Recurrent MI	4 (6.5%)	5 (9.6%)	0.796
Recurrent hospitalizations for cardiac reasons	19 (30.6%)	12 (23.1%)	0.365

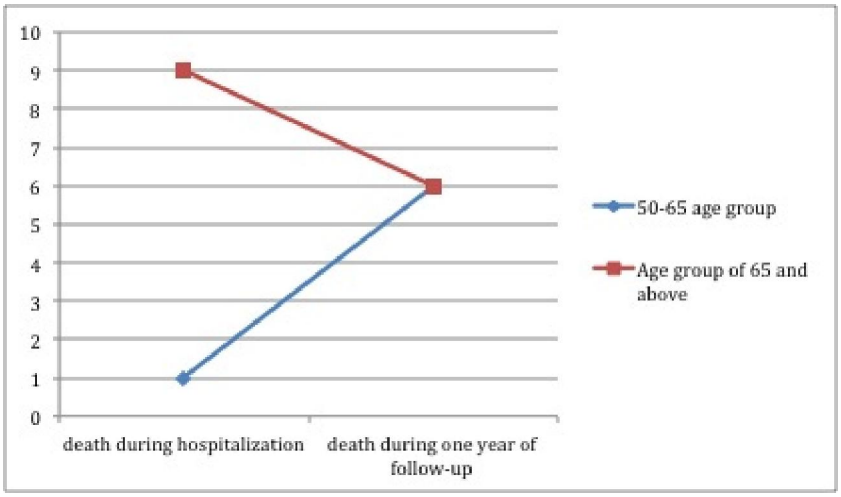

Figure 1: Death rates of age groups during hospitalization and during one year of follow-up

Conclusıon:

Among the geriatric patients admitted to our CCU with ACS, dyspnea is the most frequently reported primary symptom on admission. According to the data obtained in our study, geriatric patients have higher mortality rates during early periods of hospitalization. However, during one-year follow-up, the mortality rates of these patients are similar with those of younger patients. Thus, older patients aged ≥65 years should be approached from a multidisciplinary standpoint, treated promptly with appropriate protocols, and closely followed up, especially in the early stages of admission.

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Conflıct Of Interest:

No potential conflict of interest relevant to this article was reported.

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