Original research article

Acute myocardial infarction in the elderly: Differences in clinical presentation from younger patients

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 Abstract

Background and Objectives: In particular for elderly patients, cardiovascular disease is the main cause of morbidity and mortality. It is generally accepted that elderly people exhibit unusual acute MI symptoms. There are fewer local studies on the prevalence of atypical acute myocardial infarction presentation in the elderly than in the younger population. Study the clinical manifestation, risk factors, complications, management, and hospital outcome of AMI patients aged >60 years (elderly), and compare the variations with those aged less than 60 years (younger).

Methods: 50 patients >60 years old (Group 1-elderly) who presented with AMI between February 2021 to October 2021 at Department of General Medicine, Siddartha Medical College, Vijaywada, Andhra Pradesh, India, were examined as part of this prospective observational cross-sectional study to determine their clinical characteristics, complications, management, and mortality. Differences between 50 patients with AMI who were under the age of 60 (Group 2-younger) in terms of clinical presentation.

Results: Group 1 had a 1.63:1 male to female ratio, while Group 2 had a 4.5:1 ratio. Patients in the elderly group reported experiencing 48% atypical chest pain and 24% had no chest pain at all, as opposed to 20% and 4%, respectively, in the younger group. Breathlessness, syncope, giddiness, altered sensorium, and abdominal pain were also more common in elderly patients (52% vs 18%; p=0.001). In comparison to patients who arrived earlier, 72% of elderly patients arrived at the hospital within 12 hours, while only 42% of elderly patients did so (p 0.05). The elderly group utilized beta blockers (46% of them) and thrombolytic therapy (56%) less than the younger group (80% & 90%), respectively (P 0.05). HTN (44% vs 32%), and DM (30% vs 10%) from the past. Major complications like cardiac failure, cardiogenic shock, and arrhythmias were more prevalent in the elderly group (32%, 16%, and 32%) than in the younger groups (10%, 4%, and 10%) (P0.05). When compared to the younger group, older patients had significantly higher rates of mortality (26% vs 4% P0.05), as well as LV dysfunction (50% vs 22%). Patients who presented with cardiogenic shock, complete heart block, advanced age, patients without chest pain, and those who did not receive thrombolysis were linked to higher mortality in this study.

Conclusion: The most frequent atypical symptom among elderly patients was breathlessness. These patients also underwent thrombolysis, had higher mortality, and experienced more complications than younger patients. In this study, mortality was higher in patients who had complete heart blocks, cardiogenic shock, were older, had no chest pain, or had not received thrombolysis. When an elderly patient presents abnormally, having knowledge of atypical presentation in elderly patients will help us to consider an acute cardiac event.

Keywords: Myocardial infarction, thrombolysed, dislipidemia, mortality

Introduction

Acute myocardial infarction continues to be the leading cause of death, especially in people over 65 years old, despite a significant decline in the overall age-adjusted mortality rates from cardiovascular diseases over the past two to three decades [1]. This age group is 8 times more likely than those who are less advanced in age to experience an acute myocardial infarction. Acute myocardial infarction causes more than 50% of in-hospital deaths in patients over 65 [2]. Age gradually increases the prevalence and incidence of acute myocardial infarction. Patients 65 years of age or older account for more than 60% of acute myocardial infarction cases in the US [3]. In India, people over 60 are regarded as elderly, according to an ICMR survey [4, 5]. The majority of people with coronary artery disease worldwide are from South Asia [6]. The progression of acute myocardial infarction in older patients may be adversely affected by a number of factors, including worse baseline functional status, high co-morbidity, prior heart failure,

CVA, DM, and HTN [2, 4, 7]. As a result, it can be more challenging to determine whether the factors affecting mortality are the same as those described for younger adults.

According to reports, elderly patients with acute myocardial infarction present with more atypical symptoms like atypical chest pain, dyspnea, and giddiness. They also have the highest mortality rate from complications like CCF, cardiogenic shock, and arrhythmias. Compared to the younger [4, 8, 6, 7, 9], they receive a more gentle approach.

Acute myocardial infarction diagnosis is frequently overlooked because of the variable presentation. The first 24 hours of management decisions have the biggest impact on survival in the elderly as true of all age groups [4]. There are fewer local studies on the severity of atypical acute myocardial infarction presentation in the elderly than in the younger. When considering acute coronary events, we will be more aware of the differences between elderly and younger acute myocardial infarction patients in our local population, which will also help to lower mortality and morbidity.

Materials and Methods

Patients of either sex with acute myocardial infarction admitted to ICCU of Department of General Medicine, Siddartha Medical College, Vijaywada, Andhra Pradesh, India, are included in this study. In this study 100 cases of acute myocardial infarction patients admitted in ICCU of hospital studied during the period of February 2021 to October 2021.

Cases are monitored all the way through the hospital stay.

One hundred cases are split into two groups.

Patients in Group I, the elderly (≥ 60 years old), total 50. Group II: Younger patients (patients under 60 years old), 50 points.

Inclusion Criteria

- Both sexes must be older than 18 years.
- The presence of typical acute myocardial infarction symptoms, a typical ECG pattern (ST segment elevation of >0.1 mV in at least 2 consecutive limb leads or >0.2 mV in at least 2 chest leads for ST elevation MI), and elevated cardiac enzyme levels (CKMB or Troponin T/I) are indications of the condition.

Exclusion Criteria:

- Less than 18 years old, of either sexe.
- Those who have stable angina.
- Angina patients who are unstable.
- Untimely, unexplained death.

CBC, Blood Urea, Serum Creatinine, FBS, PPBS, Fasting Lipid Profile, ECG, Echocardiography, Cardiac Enzymes CK-MB, Troponin-I, Chest X-ray PA view were the tests performed in this study.

Methodology

50 elderly patients and 50 younger patients who met the inclusion and exclusion criteria had their data collected. Their clinical profile, which included their medical history, risk factors, a thorough physical examination from a prior illness, the results of the investigation, and any complications these patients experienced while receiving hospital treatment, were recorded in the pretested proforma. The results were then analyzed, and any differences were compared.

Results

Table 1: Age of Distribution

Age	Group 1>60 yrs	Group 2 <60 yrs
>80	07 (14%)	0
70-79	15 (30%)	0
60-69	28 (56%)	0
50-59	0	26 (52%)
40-49	0	15 (30%)
30-39	0	9 (18%)
Mean Age	68.60±5.8	46.90±7.4
Range	60-87	30-59

Among elderly patients majority of the patients belongs to 60-69 years and mean age is being 68.60±5.8 yrs and the eldest is 87 yrs where as among younger patients majority belongs to 50-59 yrs age group- mean age is 46.9±7.4 yrs with youngest being 30 yrs.

Table 2: Sex Distribution

Sex	Gr1>60 yrs	Gr2 <60 yrs	P value
Male	31 (62%)	41 (82%)	>0.05
Female	19 (38%)	09 (18%)	<0.05
M:F	1.63:1	4.5:1	<0.05

62% of the patients are males in group 1 while 82% in group 2. 38% were females in group 1 while 18% in group 2. Among elderly patients M:F = 1.63:1 where as in younger group M:F=4.5:1 indicating occurrence of MI is equal in both the genders in elderly population.

Table 3: Presentation with Chest Pain

Chest pain	Gr1>60yrs	Gr2<60yrs	P value
Typical chest pain	14(28%)	38 (76%)	<0.001
Atypical chest pain	24 (48%)	10 (20%)	<0.001
No chest pain	12 (24%)	2 (4%)	<0.001

In elderly group only 28% patients presented with typical chest pain, 48% presented with atypical chest pain and 24% having no chest pain where as among younger patients 76% patients presented with typical chest pain and only 4% presented with no chest pain.

Table 4: Frequency of other Presenting Symptoms

Symptoms at admission	Gr1>60yrs	Gr2>60yrs	P value
Sweating	22 (44%)	24 (48%)	>0.05
Breathlessness	26 (52%)	9 (18%)	<0.001
Nausea/vomiting	14 (28%)	10 (20%)	>0.05
Giddiness	13 (26%)	6 (12%)	<0.05
Syncope	5 (10%)	2 (4%)	<0.05
Palpitations	7 (14%)	3 (6%)	<0.05
Altered sensorium	4 (8%)	1 (2%)	>0.05
Pain abdomen	6 (12%)	2 (4%)	<0.05
Unconciousness	1 (2%)	0	0

When compared to younger patients, elderly patients tended to present with altered sensorium, pain in the abdomen, and breathlessness (52% vs. 18%), giddiness (26% vs. 12%), syncope (10% vs. 4%), and palpitations (14% vs. 8%).

Table 5: Duration of Symptoms in Hours

Duration in hrs	Gr1>60yrs	Gr2 <60yrs	P value
<3hrs	8 (16%)	12 (24%)	>0.05
3-12 hrs	13 (26%)	24 (48%)	<0.05
13-24hrs	9 (18%)	7 (14%)	>0.05
25-48hrs	5 (10%)	4 (8%)	>0.05
>48hrs	15 (30%)	3 (6%)	<0.05

Mean time of presentation in Gr1 33.68hrs, Mean time of presentation in Gr2 13.62 hrs. In elderly patients only 42% V/s 72% presented with in 12hrs compared to younger group and 30% of them presented after 48hrs while 6% of young patients presented after 48 hrs.

Table 6: Type of Acute myocardial infarction

Type of AMI	Gr1 >60yrs	Gr2<60yrs	P value
STEMI	41(82%)	47(94%)	>0.05
AWMI	18(36%)	17(34%)	>0.05
IWMI	12(24%)	14(28%)	>0.05
ASMI	2(4%)	7(4%)	>0.05
Septal	2(4%)	1(2%)	>0.05
ALMI	3(6%)	3(6%)	>0.05
IW & RV	1(2%)	3(6%)	>0.05
AIMI	2(4%)	0	>0.05
ILMI	1(2%)	1(2%)	>0.05
I & PMI	0	1(2%)	0
NONSTEMI	9(18%)	3(6%)	<0.05

NSTEMI is more common in elderly patients compared to young patients 18%v/s6% where as AWMI

(36% VS 34%) and IWMI (24% VS 28%) is equally common among both age groups.

Table 7: Risk Factors

Risk Factors	Gr1>60 yrs	Gr2<60yrs	P value
Hypertension	22 (44%)	16 (32%)	<0.05
Diabetes	15 (30%)	5 (10%)	<0.05
Smoking	14 (28%)	31 (62%)	<0.001
Obesity	4 (8%)	10 (20%)	<0.05
Dislipidemia	20 (40%)	38 (76%)	<0.001
Past h/o IHD	8 (16%)	4 (8%)	>0.05
Family h/o CAD	4 (8%)	10 (20%)	<0.05
No risk factors	10 (20%)	4 (8%)	<0.05

Hypertension (44% Vs 32%), DM (30% Vs10%) were the common risk factors among elderly while smoking (62% Vs 28%), dislipidemia (76% Vs 40%), obesity (20% Vs 8%) and family h/o CAD (20% Vs 8%) were the common risk factors among younger patients.20% of elderly patients found no risk factors.

Table 8: Lipid Profile

Lipid Profile	Gr1>60yrs	Gr2<60yrs	P value
TC>200	7 (14%)	13 (26%)	>0.05
MEAN TC	168.6±37.13	200.74±34.33	<0.01
HDL<40M&<45F	13 (26%)	17 (34%)	>0.05
MEAN HDL	39.8±6.86	38.8±3.30	>0.05
LDL>100	12 (24%)	30 (60%)	<0.001
MEAN LDL	106.3±22.30	114.8±29.19	>0.05
TG>150	8 (16%)	19 (38%)	<0.05
MEAN TG	117.4±90.45	160.3±157.77	>0.05

Younger patients were having high LDL (60% V/s 24%), High TG (38% V/s 16%) when compared to elderly patients.

Table 9: Cardiac Enzymes

Cardiac enzymes	Gr1>60yrs	Gr2<60yrs	P value
CKMB	43 (86%)	33 (66%)	<0.05
MEAN CKMB	98.4±35.6	81.6±31.4	<0.05
TROPI +VE	39 (78%)	31 (62%)	>0.05

CKMB was elevated in 86% of the elderly patients when compared 66% to younger patients. Mean CKMB in elderly was 98.4±35.6 while in younger patients it was 81.6±31.4. Tropi was positive in 78% V/s 62% in younger patients.

Table 10: Left ventricular Dysfunction

LV Dysfunction	Gr1>60YRS	Gr2<60YRS	P value
Normal	10 (25%)	20 (40%)	<0.05
Mild	10 (25%)	19 (38%)	<0.05
Moderate	14 (37%)	8 (16%)	<0.05
Severe	5 (13%)	2 (4%)	<0.05
ECHO not done	11	1	0

Among elderly patients 50% were having mod to severe LV dysfunction in elderly patients for whom echo was done where as only 20% of younger patients had moderate to severe LV dysfunction.

Table 11: Complications

Complications	Gr1>60yrs	Gr2 <60yrs	P value
LVF	16 (32%)	5 (10%)	<0.05
Cardiogenic shock	8 (16%)	2 (4%)	<0.05
Cardiac arrest	2 (4%)	0	
Arrhythmias	16 (32%)	5 (10%)	<0.05
1.VPC	4 (8%)	3 (6%)	
2.VT	3 (6%)	1 (2%)	
3.AV BLOCK			
a.2nd degree	1 (2%)	0	

b.CHB	5 (10%)	1 (2%)	<0.05
4.RBBB	1 (2%)	0	
5.LBBB	1 (2%)	0	
6.LAHB	1 (2%)	0	
Bleeding	4(8%)	1 (2%)	
CVA	1 (2%)	0	
Septal rupture	1 (2%)	0	
Reinfarction	1 (2%)	0	
No complications	16 (32%)	35 (70%)	<0.001

68% of elderly patients had complications but in younger patients only 30% had one or the other complications 32% V/s 10% patients among elderly patients having LVF, 16% V/s 4% cardiogenic shock in elderly, 32% V/s 10% patients had arrhythmias in elderly group compared to younger patients. 1 patient had septal rupture in elderly group and 70% of younger patients had no complications.

Table 12: Thrombolysis

Thrombolysis	Gr1>60yrs	Gr2<60 yrs	P value
Thrombolysed	23 (46%)	40 (80%)	<0.001
Not thrombolysed	27 (54%)	10 (20%)	<0.001

Among 50 patients in GR1 only 23(46%) patients thrombolysed where as in Gr2 40(80%) patients were thrombolysed.

Table 13: Use of Beta Blockers

Beta blockers	Gr1>60yrs	Gr2<60yrs	P value
Used	28(56%)	45(90%)	<0.001
Not used	22(44%)	5(10%)	<0.001

Among elderly patients only 56% received beta blockers where as 90% of the younger patients received beta blockers.

Table 14: Mortality

Mortality	Gr1>60yrs	Gr2<60yrs	P value
Total	13(26%)	2(4%)	<0.001
With in 24 hrs	9(69%)	1(50%)	>0.05
24 hrs-1wk	4(31%)	1(50%)	>0.05

In elderly group 13(26%) patients expired where as in younger group only 2(4%) patients expired. 9(69%) of total deaths among elderly expired with in 24 hrs of admission.

Table 15: Mortality with respect to age

Age distribution	Gr1>60yrs		Gr2<60yrs	
	Total cases	Deaths	Total cases	Deaths
>80	7	3 (42%)	0	0
70-79	15	4 (26.6%)	0	0
60-69	28	6 (21.4%)	0	0
50-59	0	0	26	2 (7.7%)
40-49	0	0	15	0
30-39	0	0	9	0

Out of 7 cases in >80 yrs 3(42%) died, out of 15 cases in 70-79 age group 4 (26.6%) died and in 60-69 age group out of 28 cases 6 (21.4%) cases died showing increase mortality with increased age.

Table 16: Mortality with respect to sex

Sex	Gr1>60yrs		Gr2<60yrs	
	Total cases	Death	Total cases	Death
Male	31	8(28.8%)	41	1(2.4%)
Female	19	5(26.3%)	9	1(11%)
	P value >0.05		$p<0.05$	

Mortality in elderly males 25.8% and females 26.3%. Mortality is not influenced by sex in elderly MI pts.

Table 17: Mortality with respect to presence or absence of chest pain

Chest Pain	Gr1>60yrs		Gr2<60yrs	
	Total cases	Death	Total cases	Death
Present	38	8 (21%)	48	2 (4%)
Absent	12	5 (41.6%)	2	0
	P<0.05		*P*<0.05	

Mortality in elderly patients who presented without chest pain was 41.6% as compared to elderly patients who presented with chest pain where mortality was 21%.

Table 18: Mortality among hypertensives and nonhypertensive

HTN	Gr1>60yrs		Gr2<60yrs	
	Total cases	Death	Total cases	Death
Present	22	6(27%)	16	0
Absent	28	7(25%)	34	2(5.8%)
	P>0.05		*P*>0.05	

Mortality in elderly hypertensive patients is 27% and in non hypertensive elderly patients is 25% Mortality is not influenced by the presence or absence of hypertension in this study.

Table 19: Mortality among diabetics and nondiabetics

Diabetes	Gr1>60yrs		Gr2<60yrs	
	Total cases	Death	Total cases	Death
Present	15	4(27%)	5	0
Absent	35	9(25%)	45	2(4.4%)
	P>0.05		*P*>0.05	

Mortality among elderly diabetic patients is 27% and non diabetic patients is 25% Mortality is not influenced by the presence of diabetes in this study.

Table 20: Mortality among Thrombolysed V/s Non Thrombolysed

Thrombolysis	Gr1>60yrs		Gr2<60yrs	
	Total cases	Death	Total cases	Death
Done	23	4(17%)	40	1(2.5%)
Not done	27	9(33%)	10	1(10%)
	P<0.05		*P*<0.05	

Mortality among patients who are thrombolysed in elderly patients is 17%. Where as mortality among those who are not thrombolysed was 33% in elderly group.

Table 21: Mortality in STEMI V/s NSTEMI

Type of AMI	Gr1>60yrs		Gr2<60yrs	
	Total cases	Death	Total cases	Death
STEMI	41	11 (26.8%)	47	1 (2.2%)
NSTEMI	9	2 (22.2%)	3	1(33.3%)
	P>0.05		*P*>0.05	

Among elderly STEMI patients 28.8% patients were expired and among NSTEMI elderly patients 22.2% were expired. There is no significant difference in mortality between STEMI and NSTEMI.

Table 22: Mortality in patients presented with Cardiogenic shock

Cardiogenic shock	Gr1>60yrs		Gr2<60yrs	
	Total cases	Death	Total cases	Death
Present	8	7 (87.5%)	2	2 (100%)
Absent	42	6 (14.2%)	0	0
	P<0.001		*P*<0.001	

In elderly patients mortality was 87.5% among those presented with cardiogenic shock as compared to 14.2% in those presented without cardiogenic shock.

Table 23: Mortality in patients presented with Complete Heart Block

Complete heart block	Gr1>60yrs		Gr2<60yrs	
	Total cases	Death	Total cases	Death
Present	5	5 (100%)	0	0
Absent	45	8 (17.8%)	50	2 (4%)
	P<0.001		*P*<0.001	

In elderly patients mortality was 100% among those presented with complete heart block as compared to 17.8% in those presented without complete heart block.

Discussion

50 patients >60 years old (Group 1) who presented with AMI were examined in this prospective study to determine their clinical profile, complications, and mortality. Clinical differences between 50 patients with AMI who were under the age of 60 (Group 2).

Age incidence

The mean age in group I and group 2 in this study are 68.6±5.8yrs and 46.9±7.4yrs respectively. These observations were consistent with Holay MP *et al*., [4] where mean age in both are groups 68.2±5.9 and 47.2±7.3 years respectively. Similar observations made in others studies [9, 2].

Gender distribution

In the present study 62% of patients were males in group 1 compared to group 2 where 82% were males .38% were females in group 1 while 18% were females in group 2 and the male to female ratio 1.63:1 group 1 while it is 4.5:1 in group 2. According to Holay MP *et al*. [4], the male to female ratio was 1.37:1 in elderly patients and 3:1 in young MI patients. These observations corroborated their findings. Numerous other studies [9, 2, 7] reported findings that were comparable. Where female patients made up a higher proportion of the elderly than the younger patients. Thus, the current study demonstrates that as age increases, the proportion of male AMI patients declines and the sex ratio shrinks.

Presentation

Previous authors have emphasized the elderly's unusual clinical presentation of AMI [4, 10, 11]. In our study, similar results were found. Although chest pain was the most common symptom in the current study, elderly patients (GR1) had more cases of atypical chest pain (48%), and no chest pain (24%), compared to younger patients (GR2), who had 20% and 4% respectively, when they were admitted to the hospital. These observations were consistent with the study conducted by Holay MP *et al*., [4] where elderly population had atypical chest pain (29.6%).no chest pain 21.8%, as compared to younger population which was 12.5% and 3.5%.

In this study atypical presentations like breathlessness 52% Vs 18%, giddiness 26% Vs 12%, Syncope 10% Vs 4%, palpitations 14%vs6% pain abdomen 12% Vs 4% were more frequently observed in GRI compared to GR2 patients with breathlessness is being the most common atypical symptom in elderly group with P- value <0.001.

These observations were comparable with the studies done by WOON VC *et al* (9) where elderly patients were more likely presented with atypical symptoms 33.7% Vs 10.7%.In a study done by Holay MP *et al*., [4] breathlessness was 40.5% Vs 16.1%, giddiness 24.9% Vs 10.7%, syncope was 12.4% Vs 5.3%. Similar observations were made in others studies [12].

Duration of symptoms to presentation

In elderly patients only 42% patients presented with in 12 hrs after the symptoms onset as compared to 72% in younger patients and 30% of the elderly patients presented >48 hrs while it was 6% in younger pts. Mean time of presentation in GR1 is 33.68 hrs Vs 13.62 hrs in GR2. (p=<0.05).Late presentation was accounted for the major reasons for not thrombolysing the pts. This study is comparable with a study done by Holay MP *et al* (4) where 46.8% of elderly patients presented with in 12 hrs compared to 71.4% in young groups. Similar observations were seen in others studies [7, 13].

Type of AMI

STEMI in elderly group was 82% Vs 94% in young patients in this study while NSTEMI in comparatively higher among older patients 18% Vs 6%. This study is comparable to other studies where NSTEMI is 47.6% Vs 24% in a study by WOON VC *et al*., [9] and in other study by Thresh *et al* 40% Vs 25% [7].

There was no significant differences between the 2 groups regarding the location of AMI in this study (AWMI 46% VS 54% and IWMI 32% VS 36%). This study is comparable with DANG A *et al*., [6] where AWMI was 63.8% Vs 63.3% and IWMI 33% Vs 32.9%in groop1 and 2 respectively.

Another study done by Marisa F Leal *et al*, (8) showed that anterior location was 45.1% Vs 41.6% and interior location was 41.6% Vs 41% in elderly compared to younger.

Risk factors

In this study hypertension (44% Vs 32%), (diabetes 30% 10%) past h/o IHD (16% Vs 8%), were the risk factors in elderly compared to young. while smoking (62% Vs 28%), dislipidemia (76% Vs 40%), obesity(20% Vs 8%), family h/o CAD (20% Vs 8%) were the risk factors in younger patients compared to elderly patients. Similar observations were made in others studies [4, 6, 9, 14]. According to Holay MP *et al*. [4] 's observations, where HTN was a risk factor in 39% Vs. 30.4%, hypertension was noted in 44% of elderly patients compared to 32% of younger patients.

Diabetes was present in 30% of elderly its compared to 10% in younger patients and is comparable with a study by Jean Marc Boucher *et al*., [1] where diabetes was 24.6% Vs 10.9% in elderly compared to young pts.

Past h/o IHD was 16% in elderly population compared to 8% in young which in comparable with the study by Woon VC *et al*., [9] where it was 14.9% Vs 8.9% in elderly compared to young pts.

Smoking was the risk factors in 62% of younger patients compared to 28% of elderly pts. These observations are consistent with study by Gonzalo Suarez *et al*., [2] where 70% of young patients were smokers compared to 39% in elderly pts.

Dislipidemia was seen in 76% of young patients Vs 40% in elderly pts. Similar results seen in a study done by Woon VC *et al*., [9] where 75.9% of younger patients Vs 43.6% elderly patients were having dislipidemia and also similar findings seen in other study [6].

Obesity was seen in 20% of younger compared to 8% elderly patients and family h/o CAD was seen in 20% of younger Vs 8% in elderly. These observations are comparable with Holay MP *et al* (4) where obesity was 12.5% in younger and 4.6% in elderly group and family h/o CAD was 21.3% in young compared to 1.5% in elderly group.

In this study 20% of elderly patients were not having any risk factors at all reflecting "Age" itself a major risk factor for AMI. Similar observations made in a study by Holay MP *et al*., [4] where 40.5% of elderly patients were having no risk factors compared to 4.3% in younger patients.

Young patients were having high LDL and high TG levels compared to elderly pts. LDL was raised in 60% Vs 24% and TG was raised in 38% Vs 16% in younger patients compared to elderly. Similar observation was made in previous study done by Dang A *et al*., [6].

Cardiac enzymes

Cardiac enzymes CKMB values elevated in 86% Vs 68% in elderly compared to younger and trop I was positive in 76% of elderly compared to 62% in young patients. In a study by Hoit BH *et al*. [15], it was noted that the majority of elderly patients had elevated enzyme levels.

LV dysfunction

Among elderly patients 50% was having mod to severe LV dysfunction compared to only 20% in younger. It is comparable to a study Holay MP *et al*., [4] where 63.2% cases in elderly group were having significant LV dysfunction.

Complications

While only 30% of younger patients experienced complications, 68% of elderly patients did. Cardiogenic shock (16% vs 4%), arrhythmias (32% vs 10%), and cardiac failure (32% vs 10%) were among the complications observed during the hospital stay in the elderly patients compared to younger patients. Heart blocks of varying degrees, VPC, and ventricular tachycardia were among the various arrhythmias identified. In comparison to the elderly group, 32% of the younger patients had no complications. These findings are comparable with the study done by Woon VC *et al*., [9] where cardiac failure (65.3% Vs 25%), cardiogenic shock (8.9% Vs 0.9%), arrhythmias (26.7% Vs 22.3%) were more frequent in elderly group compared to young and 22.8% Vs 70% had no complications. Similarly in another study done by Holay MP *et al*., [4] where 75% Vs 46.5% were having heart failure, 9.3% Vs 1.7% were having cardiacgenic shock, 57.8% Vs 37.5% patients were having arrhythmias. In this study 8% Vs 2% had bleeding and1 pt in elderly group had septal rupture.

Thrombolysis

Compared to younger patients, who had a thrombolysed rate of 80%, only 46% of elderly patients had one. Delayed hospital presentation was the primary factor in the failure to thrombolyze. These findings were consistent with the study Woon VC *et al*. [9] where 35.8% Vs 64.8% of older patients were thrombolyzed compared to younger patients, demonstrating that elderly patients were more likely to have a contraindication for thrombolysis. Other studies [4] also came to similar conclusions.

Beta blocker therapy

In elderly group only 56% of AMI patients received beta blocker compared to 90% in young groups (p<0.05). This is compared with a study by Woon VC *et al.*, [9] where 21.8% s 60.7% in elderly group received beta blockers. Elderly patients were more likely to have contraindications for beta blockers like cardiac failure, COPD, Cardiogenic shock.

Mortality

Mortality in this study was 26% in elderly group and 4% in younger age group. It is comparable with a study done by Woon VC *et al.*, [9] where mortality in elderly Vs younger patients were 20.8% Vs 2.7%. Similar observations were noted in other studies [4, 8, 7].

In the study done by Hoit BH *et al.*, (15), which looked at the effect of age on the incidence and prognosis of AMI, 3 out of 7 cases in the >80 yr age group died with mortality being 42%, in the 70-79 yr age group mortality being 26.6%, and in the 60-69 yr age group mortality being 21.4%. It was discovered that the in-hospital case fatality rate rose from 5% in patients younger than 55 years old to 7.9% in patients 55 to 64 years old, 16.1% in patients 65 to 74 years old, and to 32.1% in patients 75 years of age and older. A subsequent study by Paul, Sumita D. *et al.* [14] showed 19% mortality in patients older than 75 years. Senior male mortality was 25.8%, while senior female mortality was 26.3%. In contrast to other studies done by GonZalo *et al.*, [2], where mortality was higher among elderly female patients 32% VS 24%, the mortality of elderly AMI patients in this study was not influenced by sex.

Mortality was high in those who presented without chest pain in elderly group. 41.6% patients expired in those where chest pain absent which in comparable with observations made by Canto *et al.*, [16] and Ting HH *et al.*, [13]. Mortality was not influenced by risk factors like HTN (27%Vs 25%), or DM (27%vs25%) in this study. Similar observations were made in others studies [2, 6].

Mortality was high among those who are not thrombolysed. 33% of elderly group where thrombolysis not done were expired Vs 17% among those thrombolysed expired. Similar findings were reported by Tresch *et al* in their study (14) where mortality was 22% as opposed to 14%. For elderly STEMI patients, the mortality rate was 28.8%, whereas for elderly NSTEMI patients, it was 22.2%. There is no discernible difference between STEMI and NSTEMI in terms of mortality, which is comparable to the study by Gonzalo Suarez *et al.* [2], where mortality was 29% 21.4%. Mortality among elderly patients who had cardiogenic shock was 87.5%, with 7 out of 8 patients dying, which is comparable to Woon VC *et al*'s [9], who reported a mortality rate of 9 out of 9. In contrast to other studies, among patients who had complete heart block, 5 out of 5 died from their condition with 100% morality.

Thus in this study among elderly patients mortality was high with Increasing age, patients who presented without chest pain, patients without thrombolysis, patients presented with cardiogenic shock and complete heart block.

Conclusion

In acute MI patients though the chest pain was the most common presentation in both age groups, it in less frequent in elderly patients. Atypical presentation like breathlessness, giddiness, syncope were more common in elderly and elderly patients were under thrombolysed and have higher complications and mortality compared to younger patients. In elderly patients mortality was high among those patients who presented without chest pain, Patients who are not thrombolysed, patients with increasing age, patients with complete heart block and those who presented with cardiogenic shock. Understanding atypical presentations in elderly patients will enable us to take an acute cardiac event into consideration when an elderly patient presents abnormally.

Conflict of interest: None

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