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Comparison of Clinical Profile of Acute Myocardial Infarction between Elderly and Young Patients Attending Tertiary Care Hospital

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Abstract

Background: Myocardial infarction is an important acute disease to be treated in the emergency department. The symptoms of myocardial infarction have shown variation in elder patients in comparison with the younger patients. *Materials and Methods*: A cross sectional study was conducted in emergency department of Basaveshwara Medical College and Hospital, Chitradurga for a period of three years. About 120 patients attending the department were divided equally in to elder and younger groups. Risk factors, symptoms, time of presentation and type of MI were compared with the young patients. *Results*: The mean age of the elder patients was 70.1 years and younger group was 38.2 years. The risk factors were not significantly different in both the groups. Majority of the elder patients presented with atypical chest pain and breathlessness and Pain abdomen were the atypical symptoms in the elder patients. The time of presentation was 3–12 hours in both the groups. Anterior and Inferior wall MI was common in both the groups. *Conclusion*: Myocardial infarction can manifest with atypical symptoms in the elder patients. A thorough knowledge about the symptoms is required for an emergency physician for the better patient management.

Keywords: Acute myocardial infarction; Atypical chest pain; Risk factors; Symptoms; Type of MI.

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Introduction

Myocardial infarction is a major public health problem across the world and carries higher burden of mortality and disability. The myocardial infarction is mainly due to coronary pathology leading to stable and unstable periods of myocardial infarction. The imbalance in perfusion between the supply and demand leads to death of the myocytes as a result of ischemia.[1]

Hypertension and diabetes mellitus are the main risk factors of the myocardial infarction which are equally spread over young and elderly MI patients.[2] Patients with diabetes carries higher extent of the coronary disease than other patients which may also lead to silent infarction. The progression of the cardiovascular disease is hailed by diabetes hypertension.[3] The studies have shown that, the antihypertensive treatment has lower risk of MI, heart failure, stroke and cardiovascular death.

Cigarette smoking is often established risk factor for myocardial infarction and sudden cardiac death. But, it has been established that the cigarette smoking may be less risk for the cardiovascular disease during the old age. Infarction in the old patients might be significantly less likely to be associated with the cardiac risk factors of a family history of MI, smoking or hypercholesterolemia.[4, 5]

The ECG studies have established that the elderly patients are likely to have non Q wave infarction and some patients have shown to have symptoms and ECG findings qualifying then for the thrombolytic therapy.[6] The elderly patients likely to have reduced incidence of sudden plaque rupture as result of collateral circulation and cardiovascular complications may include cardiogenic shock, atrial fibrillation and heart failure.[7] While in the young patients the studies have shown to have supraventricular arrhythmias and atrial flutter. The supraventricular tachycardia was commonly demonstrated in young patients than the elderly patients. A study has shown that the elderly patients usually presented with breathlessness, giddiness, syncope and palpitations when compared with the young patients.[8]

The studies pertaining to the comparison of risk factors of myocardial infarction are scant in this part of the country and hence, it was decided to take up this study in order to assess the risk factors of myocardial infarction between the elderly and young patients.

Materials and Methods

This cross sectional study was conducted in Basaveshwara Medical College and Hospital, Chitradurga between January, 2016 to December 2018 for a period of two years. A total of 120 patients attending the department of emergency medicine were equally divided in to two groups comprising of 60 patients aged more than 60 years and 60 patients aged less than 60 years. The patients of age more than 18 years and both the sexes with symptoms and ECG features and elevated cardiac enzymes suggestive of myocardial infarction were included in to the study. The patients with stable angina, unstable angina and sudden unexplained death were excluded from the study. The patients thus selected were subjected for detailed clinical examination for the risk factors of MI and routine lab investigations including the investigations suggestive of myocardial infarctions. All the details were entered in to a predesigned proforma and then was compiled using Microsoft excel spreadsheet. It was transferred and analyzed using Statistical Package for Social Services (SPSS *vs* 20). The categorical data was presented as frequencies and percentages and *chi*-square test was used as test of significance and quantitative variables were analyzed using measures of central tendency and dispersion. A p value of less than 0.05 was considered as statistically significant.

Results

Table 1: Distribution of the study according to age.

Age	More than 60 years	Less than 60 years	T value	P value, Sig
Mean ± SD	70.1 ± 8.24	38.2 ± 11.52	17.415	0.000, Sig

The mean age of the elderly patients was 70.1 years and younger patients was 38.2 years which was statistically significant.

Table 2: Distribution of the study according to sex.

Sex	More than 60 years n (%)	Less than 60 years n (%)
Male	33 (55.0)	36 (60.0)
Female	27 (45.0)	24 (40.0)
Total	60 (100)	60 (100)

χ^2 value=0.000 df=1 p value=1.0, NS

About 55% of the elder and 60% of the younger patients in this study were males which was not statistically significant.

Table 3: Distribution of the study according to risk factors.

Risk factors	More than 60 years n (%)	Less than 60 years n (%)	χ^2 value	p value, Sig
Hypertension	29 (48.3)	29 (48.3)	0.000	1.0, NS
Diabetes mellitus	27 (45.0)	26 (43.3)	0.034	0.854, NS
Dyslipidemia	23 (38.3)	24 (40.0)	0.035	0.852, NS
Smoking	13 (21.7)	14 (23.3)	0.048	0.827, NS
Obesity	18 (30.0)	18 (30.0)	0.000	1.0, NS

Hypertension was the main risk factor in 48.3% of the elder and younger patients. Diabetes mellitus was present in 45.0% of the elder and 43.3% of the younger patients. Dyslipidemia was the risk factor in 38.3% of the elder and 40% of the younger patients. Smoking was the risk factor in 21.7% of the elder and 23.3% of the younger patients. Obesity was found in 30% of both the groups.

Table 4: Distribution of the study according to presentation.

Presentation	More than 60 years n (%)	Less than 60 years n (%)
Atypical	21 (35.0)	11 (18.3)
Typical	39 (65.0)	49 (81.7)
Total	60 (100)	60 (100)

χ^2 value=4.261 df=1 p value=0.039, Sig

Table 5: Distribution of the study according to symptoms.

Symptoms	More than 60 years n (%)	Less than 60 years n (%)	χ^2 value	p value, Sig
Sweating	22 (36.7)	16 (26.7)	1.386	0.239, NS
Breathlessness	35 (58.3)	13 (21.7)	16.806	0.000, Sig
Nausea/Vomiting	24 (40.0)	22 (36.7)	0.141	0.707, NS
Giddiness	23 (38.3)	24 (40.0)	0.035	0.852, NS
Syncope	23 (38.3)	22 (36.7)	0.036	0.85, NS
Palpitation	22 (36.7)	26 (43.3)	0.556	0.456, NS
Altered sensorium	5 (8.3)	3 (5.0)	0.536	0.464, NS
Pain abdomen	18 (30.0)	2 (3.3)	15.36	0.000, Sig
Unconsciousness	20 (33.3)	21 (35.0)	0.037	0.847, NS

The chest pain was atypical in 35% of the elder and 18.3% of the younger patients. This difference was statistically significant between the elder and younger patients.

Breathlessness and Pain abdomen was significantly higher in elderly patients when compared to younger patients. It was followed by Sweating (36.7%), Nausea vomiting (40.0%), giddiness (38.3%), altered sensorium (8.3%) and unconsciousness (33.3%) of the cases which were not statistically significant when compared with younger patients.

Table 6: Distribution of the study according to duration of symptoms.

Duration of symptoms	More than 60 years n (%)	Less than 60 years n (%)
Less than 3 hours	8 (13.3)	8 (13.3)
3 – 12 hours	24 (40.0)	23 (38.3)
13 – 48 hours	21 (35.0)	22 (36.7)
> 48 hours	7 (11.7)	7 (11.7)
Total	60 (100)	60 (100)

χ^2 value=0.045 df=3 p value=0.998, NS

The onset of symptoms to presentation to the emergency OPD was 3 – 12 hours in 40% of the elderly patients and 13 – 48 hours in 35% of patients. In younger patients, about 38.3% of the cases presented between 3 – 12 hours and 36.7% of the cases presented between 13 – 48 hours after onset of symptoms which was not statistically significant.

Table 7: Distribution of the study according to type of MI.

Type of MI	More than 60 years n (%)	Less than 60 years n (%)
ALWMI	9 (15.0)	1 (1.7)
ASWMI	9 (15.0)	5 (8.3)
AWMI	12 (20.0)	25 (41.7)
IWMI	17 (28.3)	17 (28.3)
LWMI	4 (6.7)	3 (5.0)
PWMI	5 (8.3)	6 (10.0)
RVMI	4 (6.7)	3 (5.0)
Total	60 (100)	60 (100)

χ^2 value=12.487 df=6 p value=0.052, NS

About 28.3% of the elderly patients presented with Inferior was MI followed by anterior wall MI. About 41.7% of the younger cases presented with anterior wall MI followed by inferior wall MI. This difference was not statistically significant.

Discussion

This study was mainly undertaken to compare the risk factors and symptoms of the myocardial infarction between the elder and younger patients. The studies available have shown that the typical risk factors including smoking, hypercholesterolemia and family history of MI are usually lacking in elderly patients when compared to younger patients which can be attributed for the collateral circulation in the elder cases.[7]

The mean age of the elder patients in this study was 70.1 years and 38.2 years. There was no statistically significant difference in between the two groups and thus ensuring the comparability. These findings can be compared with a study by Chavan et al.[8] Similar findings were also observed by the Holay et al.[9] A study by Bhatia et al had shown that the males outnumbered females in elder group and three times more in younger group.[11]

The main risk factors in the elder patients were hypertension, diabetes mellitus, dyslipidemia and obesity. There was no statistically significant difference in the risk factors between the elder and younger patients. A study by Bhatia et al had shown that, hypertension followed by dyslipidemia were the risk factors in both young and elder patients.[11]

The chest pain was atypical in almost 35% of the elderly patients in this study which was significantly different from younger patients. In a similar study by Chavan et al., almost 60% of the elderly patients presented with atypical chest pain.[8] In a study by Holay et al., about 33.7% of the elder patients had atypical chest pain compared to 10.7% of the younger patients.[9] Woon C et al. also noted

similar findings in a group of elderly and younger patients.[10] A study by Bhatia et al also noted similar findings.[11]

The symptoms were significantly atypical in elder patients than the younger patients. Breathlessness and pain abdomen were common symptoms in elderly patients which were significant in comparison with young patients. A study by Chavan et al. also shown that, atypical presentations including breathlessness, vomiting, altered sensorium and epigastric pain were seen in elderly patients when compared to younger patients.[8] In a study by Bhatia et al., Breathlessness and nausea and vomiting were the atypical symptoms observed most among the elder patients.[11]

The time of presentation to the hospital was not statistically significant between the elder and younger patients. A study by Chavan et al. had shown that, 42% of the patients presented within 12 hours after the onset of symptoms when compared to 72% of the younger patients unlike this study.[8] A study by Holay et al reported that, 46.8% of elderly and 71.4% of the younger patients presented within 6 hours to the hospital.[9]

Inferior wall MI was commonly seen in the elder patients and anterior and inferior wall MI was common in younger patients. Chavan et al. had reported that, 42% of the patients had inferior wall MI, anterior wall in 30% of the cases and anteroseptal in 8% of the elderly patients. In younger group 24% of the cases had inferior wall MI and 54% had anterior wall MI.[8]

Conclusion

This study has shown that, breathless and pain abdomen were seen most as atypical symptoms in elder patients when compared to younger patients. The symptoms of acute Myocardial infarction are different in elderly patients than the younger patients.

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