



ROLE OF AGE DISTRIBUTION AS A PREDICTOR OF SHORT TERM MORTALITY IN CASE OF ACUTE ST SEGMENT ELEVATION MYOCARDIAL INFARCTION (STEMI)

General Medicine

Dr. Shweta

Sureshbabu Saritha

Junior Resident , Sree Balaji Medical College And Hospital

Dr. K.

Shanmuganandan*

Professor, Department of General Medicine, Sree Balaji Medical College & Hospital, Chennai *Corresponding Author

Dr. Suresh Kanna

Assistant Professor, Department of General Medicine, Sree Balaji Medical College & Hospital, Chennai

KEYWORDS

INTRODUCTION:

The leading cause of death worldwide is coronary artery disease¹. In 2015 coronary artery disease accounted for 7.2 million deaths worldwide^{2,3}, 80% of which were in low income countries like India⁴. It has been estimated that by 2020, 2.6 million Indians are predicted to die because to coronary artery disease⁵. Indians are prone to get coronary artery disease at an earlier age compared to people in developed countries because of the high prevalence of risk factors like diabetes and hypertension^{6,7}. ST segment elevation myocardial infarction is most common type of acute coronary event contributing 60.6% of overall incidence of acute coronary syndrome in Indian population⁸. The overall mortality in STEMI is approximately 4 to 7% or even less in the published clinical trials.

However this is not the case in the real world situation^{9,10}. This is because the patients enrolled in the randomized trials are selected ones and represented low-risk subgroup. Therefore the results of these trials are not applicable to 50% of patients in clinical practice¹¹. A realistic view can be obtained from registry data.

In India, CREATE registry data recorded an in-hospital mortality rate of 7.9% and 30 day mortality rate of about 8.6%, which included both patients with unstable angina and AMI. V.Jacob Jose and Satya N. Gupta from Vellore (Tamilnadu), observed 16.9% in hospital mortality amongst the South Indian population following STEMI¹².

Hyponatremia is a common electrolyte disorder amongst the inpatients in hospital^{13,14,15,16}, especially with cardiac failure, cirrhosis or nephrotic syndrome. Hyponatremia plays a major role in prediction of cardiovascular mortality amongst patients with cardiac failure^{17,18,19}. The neurohormonal activation accompanying an acute myocardial infarction is similar to the one which accompanies a cardiac failure²⁰.

Hyponatremia is common after Myocardial infarction²¹, and a rise in plasma sodium concentration accompanies clinical improvement in patient²². The prognostic importance of hyponatremia in a case of chronic heart failure is very well established whereas its importance acute myocardial infarction is lacking^{23,24,25}. The study was conducted to determine the prognostic importance and usefulness of hyponatremia for predicting short term survival in a case of acute ST segment elevation MI.

AIMS & OBJECTIVES:

1. To study the prevalence of age in a case of acute ST segment elevation myocardial infarction.
2. To study the relationship between severity of age and short term mortality.
3. To determine the prognostic importance of age in a case of acute ST segment elevation myocardial infarction.
4. To assess the usefulness of age as an independent risk factor in predicting short term mortality.

MATERIALS & METHOD:

50 subjects admitted in the ICU of Sree Balaji Medical College & Hospital between November 2017 to July 2019., with acute ST

segment elevation myocardial infarction (STEMI) were studied in a prospective manner.

STUDY DESIGN:

1) Single centred 2) Prospective 3) Follow up study Acute STEMI was diagnosed according to the following criteria

DIAGNOSIS OF STEMI:

1. Presence of chest pain of >20min duration and
2. ST segment elevation of >1mm in atleast two standard limb leads or >2mm in atleast two contiguous precordial leads or new onset of Left bundle Branch block and / or
3. Elevated cardiac biomarkers.

STUDY PARTICIPANTS:

INCLUSION CRITERIA:

Patients who presented within 12 hrs of onset of symptoms, with electrocardiographic evidence of STEMI, elevated cardiac biomarkers and received a thrombolytic therapy with streptokinase were included in the study.

EXCLUSION CRITERIA:

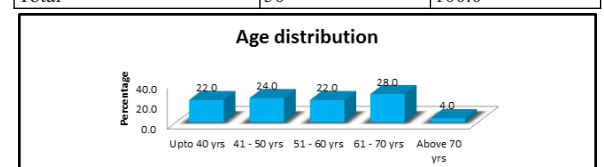
1. Patients with Non STEMI or Unstable angina.
2. People with previous history of coronary artery disease.
3. People with previous history of arrhythmias.
4. People with previous history of cardiomyopathy or heart failure.
5. People with previous diuretic use.
6. People with cirrhosis of liver, renal disease, hypothyroidism.
7. Serum Creatinine > 2mg%, Blood urea > 60mg/dl.

Patients who fulfilled the above inclusion criteria and not having any of the above said exclusion criteria were included in the study as a participant

RESULT:

Table Showing Age Distribution In The Study Group

	Age	
	Frequency	Percent
Upto 40 yrs	11	22.0
41 - 50 yrs	12	24.0
51 - 60 yrs	11	22.0
61 - 70 yrs	14	28.0
Above 70 yrs	2	4.0
Total	50	100.0



DEMOGRAPHIC DISTRIBUTION OF AGE IN OUR STUDY

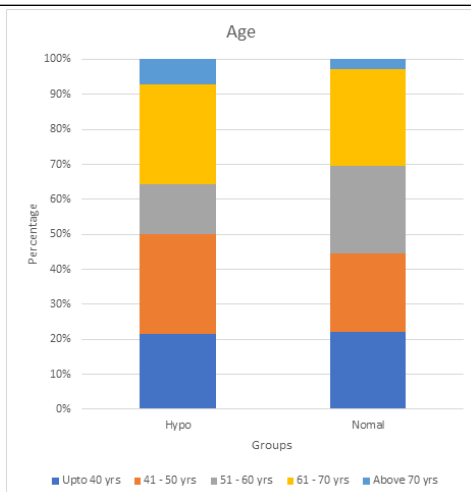
The Youngest Age Was 29 Yrs , the Oldest Age Was 80 Yrs , The Age Group Affected Highest Is 61-70yrs 28%, Lowest Above 70yrs 4%.

Age * Status

Crosstab					
		Status	Hypo		Total
			Hypo	Normal	
Age	Upto 40 yrs	Count	3	8	11
		%	21.4%	22.2%	22.0%
41 - 50 yrs	Count	Count	4	8	12
		%	28.6%	22.2%	24.0%
51 - 60 yrs	Count	Count	2	9	11
		%	14.3%	25.0%	22.0%
61 - 70 yrs	Count	Count	4	10	14
		%	28.6%	27.8%	28.0%
Above 70 yrs	Count	Count	1	1	2
		%	7.1%	2.8%	4.0%
Total		Count	14	36	50
		%	100.0%	100.0%	100.0%

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	1.181a	4	.881
Likelihood Ratio	1.173	4	.883
Linear-by-Linear Association	.015	1	.901
N of Valid Cases	50		

a. 6 cells (60.0%) have expected count less than 5. The minimum expected count is .56.



The patients with hyponatremia belonged to the age group of 41-60 yrs and 61-70yrs. Mean age was found to be 54yrs with a standard deviation of 14 and after applying chi-square test there was no significance found in association of hyponatremia and age.

DISCUSSION:

In acute myocardial infarction the development of hyponatremia is a marker that probably incorporates different prognostic entities, including severe left ventricular dysfunction, hemodynamic alterations, and the extent of neuro hormonal activation.

Goldberg A66 et al studied 1047 patients with acute ST elevation MI, without past history of heart failure. It was found that hyponatremia on admission or early development of hyponatremia was independently associated with short term mortality.

AGE DISTRIBUTION IN MYOCARDIAL INFARCTION

Our study comprised of 50 patients with acute ST elevation MI. The mean age was 52.7 ± 12.5. Majority of the cases were in the age group of 61-70. In the study conducted by Aziz M et al⁶⁷, the mean age was 57.28±6. In Goldberg's study the mean age was 61±12. When compared to the other studies it is seen that Indians are prone to get MI at an earlier age.

CONCLUSION :

As per the study conducted on 50 cases of case of acute STEMI followed up over a period of month showed no significant role of age in case of acute ST segment elevation myocardial infarction.

REFERENCES :

- Lopez AD, Mathers CD, Ezatti M, et al. Global and regional burden of disease and risk factors 2001: systematic analysis of population health data, Lancet 2006;367:1747-57
- Castelli WP. Epidemiology of coronary heart disease; the Framingham study. Am J Med 1984; 27: 4- 12.
- Roger's WJ, Canto JG et al., Temporal trends in the treatment of over 1.5 million patients with Myocardial Infarction in the US from 1990 through 1999. The national registry of Myocardial Infarction 1,2&3. J. Am. Coll Cardiol 36 : 2056;2000.
- Reddy KS, Cardiovascular disease in non -Western countries NEngl J Med 2004;350(24):2438-40
- Ghaffer A, Reddy KS, Singhi M. Burden of non- communicable diseases in South Asia BMJ 2004; 328:807-10
- Mohan V , Deepa R, Rani SS, Premlatha G. prevalence coronary artery disease and its relationship to lipids in selected population in South India .The Chennai Urban Population Study (CUPS No 5) J Am coll Cardiol 2001;38:682-87
- Joshi P, Islam S, Pais P, et al. Risk factors for early myocardial infarction in South Asians compared with individuals in other countries JAMA 2007;297:286-9
- Pais P, Xavier D, Gupta R, et al. Treatment and outcome of acute coronary syndrome in India the (CREATE): a prospective analysis of registry data Lancet 2008;371:1435-42
- Brown N, Young T, Gray D et al. Inpatient deaths from acute myocardial infarction 1982-1992: analysis of data in Nottingham heart attack register BMJ 1997;315:159-164
- Every NR, Freiderick PD, Robinson M, et al .A comparison of the National registry of myocardial infarction -2 with the co-operative cardiovascular project J Am Coll Cardiol 1999;33:1886-94
- Zeymer U, Senges J. Why do we need prospective registries in patients with myocardial infarction Eu heart J 2003;24:1611-12
- V Jacob Jose , Satya N Gupta et al Morbidity and mortality of acute ST segment elevation myocardial infarction in the current era Indian Heart J 2004;56:210-14
- Upadhyay A, Jaber BL, Madias NE. Incidence and prevalence of hyponatremia. Am J Med. 2006;119(7 Suppl 1):S30-S35.