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Original Research Paper

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# LOW EJECTION FRACTION PREDICTOR OF SHORT TERM MORTALITY IN CASE OF ACUTE ST SEGMENT ELEVATION MYOCARDIAL INFARCTION (STEMI)

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**KEYWORDS :**

## INTRODUCTION:

The leading cause of death worldwide is coronary artery disease1. In 2015 coronary artery disease accounted for 7.2 million deaths world wide2,3, 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 hypertension6,7. 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 situation9,10 .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 STEMI 12.

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 failure17,18,19.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 low ejection fraction in a case of acute ST segment elevation myocardial infarction.
2. To study the relationship between severity of low ejection fraction and short term mortality.
3. To determine the prognostic importance of low ejection fraction in a case of acute ST segment elevation myocardial infarction.
4. To assess the usefulness of low ejection fraction 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,renaldisease, 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.

## RESULTS

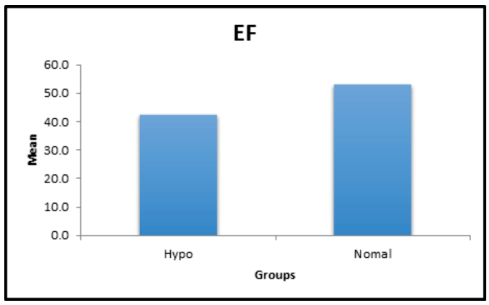
**Table 1**

| | | N | MEAN | SD | SEM |
|---|---|---|---|---|---|
| EF | Hypo | 14 | 42.500 | 9.1041 | 2.4332 |
| | Nomal | 36 | 52.972 | 9.6525 | 1.6087 |

**Table 2**

| | | | | F | sin | t | DF | sin | mean | std |
|---|---|---|---|---|---|---|---|---|---|---|
| EF | Equal variances assumed | .254 | .616 | -3.497 | 48 | .001 | -10.4 722 | 2.99 45 | -16.49 30 | -4.4 515 |

ASSOCIATION OF EJECTION FRACTION AND HYPONATREMIA




## 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 neurohormonal 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

### Association Between Hyponatremia And Ejection Fraction

The mean ejection fraction was lower among patients who presented with hyponatremia (mean EF 43.33%) or developed hyponatremia within 72 hours(mean EF 47.33%) when compared to patients with normal sodium levels(mean EF 54.4%). Our results were consistent with the study conducted by Goldberg A ,Hammerman H et al, were the mean EF among patients with normal sodium levels,Hyponatremia on admission and hyponatremia within 72 hours was 47%,42% and 42% respectively

## CONCLUSION :

There is significant role of acute mortality in patients with low ejection fraction in case of acute ST segment elevation myocardial infarction.

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