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Correlation of left ventricular function and patient prognosis and outcome in acute myocardial infarction

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Abstract

Background: Acute myocardial infarction is one of the most common cause of left ventricular dysfunction leading to morbidity and mortality worldwide. Ventricular function is the best predictor of patient prognosis and death after an acute myocardial infarction.

Methodology: A prospective study was conducted in Sri Siddhartha Medical College& Hospital from July 2022 to 2024.Total 103 acute myocardial patients were included fulfilling the inclusion and exclusion criteria with given consent for the study. This will be followed by detailed history taking , clinical examination and Echo-cardiogram to asses left ventricular ejection fraction . A total of 103 patients of acute myocardial infarction has been included in the study. Echocardiographic ejection fraction has been compared with patient prognosis and outcome.

Result: The patients with acute myocardial infarction of 103 patients, most of the patients on observation , around 14.02% of patients who had cardiac arrest has been with poor prognosis and more drop of left ventricular function and 86 % of the patient who has been stably discharged it had been observed that, not much drop in left ventricular function.

Conclusion: On correlating patients left ventricular function and patient outcome in acute myocardial infarction , it can be concluded that in most of them as low as the left ventricular function decreases the poor prognosis can be expected leading to high morbidity and mortality.

Keywords: Acute myocardial infarction; Left ventricular ejection fraction; Patient outcome; Morbidity mortality

1. Introduction

Coronary heart disease is the most common cause of heart disease . In developed countries it is the most important cause of premature death. Ventricular function is a best predictor of morbidity and mortality after an acute myocardial infarction. Ventricular function serves as a marker of myocardial damage and weakness, provides information on systolic function as well as diagnosis and prognosis. Patients with severe left severe dysfunction, in most of them (LVEF <35%) had a worse in hospital outcomes and in most of the patients with the preserved systolic function (LVEF >55%) had a better prognosis. Risk assessment is a principal element of ST-elevation myocardial infarction (STEMI) after-care. Current guidelines recommend administration of the Global Registry of Acute Coronary Events (GRACE) in Myocardial Infarction with (TIMI) risk scores along with the evaluation of left ventricular ejection fraction (LVEF) in all patients with ST elevation myocardial infarction (STEMI) at admission and before discharge.

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2. Material and methods

A prospective study of 103 patients was done in the department of General medicine, Sri Siddartha medical college Tumkur. A prospective study on 103 cases was done in the Department of Cardiology Medicine , Sri Siddhartha Medical College & Hospital, Tumkur, during a period of 24 months, of both genders who were diagnosed with acute myocardial infraction by considering inclusion and exclusion criteria strictly with written informed consent was taken. All the cases echo cardiogram was done .Patient prognosis and outcome will be monitored in terms of development of arrhythmia, heart failure, pulmonary-edema and sudden cardiac arrest.My study will not interrupt treatment and patient will be treated according to latest guidelines. Routine investigation will be done for etiological determination.

2.1. Inclusion criteria

Patients who are admitted in CCU, MICU, general medicine ward with acute myocardial infarction.

2.2. Exclusion criteria

Patient had previous history of CAD , Patients with valvular heart disease, congenital heart disease, chronic kidney disease , sepsis , , and cardiomyopathy

3. Result

The patients with acute myocardial infarction of 103 patients, most of the patient Out of 103 cases who are diagnosed to have acute myocardial infarction ,10 cases showed LVEF <35 % in 10 patients and 4 (40%) patients had cardiac arrest and 6 (60%) patients survived. 41 patients had LVEF between 35-44% , in that 34% (82.9%) patients survived and 7% (17.1%) patients had cardiac arrest. The sample size was determined using the formula for calculation of sample size for prevalence using confidence level of 95% and precision of 0.05(5%).

4. Discussion

The present study was conducted for a period of 24 months in the Department Cardiology medicine, Sri Siddhartha Medical College & Hospital, Tumkur. .The patients with Myocardial infarction of 103 sample size , in most of the patients on observation, around 14.02 percentage of patients who had cardiac arrest has been with very high more drop of left ventricular function. Most of the patients whose more left ventricular dysfunction, had poor prognosis and more hospital stay and high complications has been observed. It has been observed in around 86.08 percentage of the patients who has been stably discharged , among them most of the patients with not much drop in left ventricular function has moderate to better prognosis and less days stay of hospital and less complications and very low mortality rate.

Table 1 Socio-demographic characteristics of the study participants

Variable	Category	Frequency	Percent
Age	<=40	17	16.5
	41-50	25	24.3
	51-60	27	26.2
	61-70	18	17.5
	>70	16	15.5
Mean±SD		55.25±14.16	
Sex	Male	73	70.9
	Female	30	29.1
Marital status	Married	99	96.1
	Unmarried	4	3.9

Table 2 Habits, Comorbidities and diagnosis

Variable	Category	Frequency	Percent
Habits	Smoke	40	38.8
	Drink	20	19.4
	Tobacco	6	5.8
Co- morbidity	Diabetes	46	44.7
	Hypertension	35	34.0
Diagnosis	Anterior lateral wall MI	1	1.0
	Anterior wall MI	51	49.5
	Inferior wall MI	43	41.7
	Lateral wall MI	3	2.9
	Posterior wall MI	4	3.9
	Posterior lateral wall MI	1	1.0

Table 3 Association of LVEF and Outcome

LVEF	Survived	Cardiac arrest	Total	Chi-square, P-value
<35	6 (60.0%)	4 (40.0%)	10 (100%)	11.602, 0.008
35-44	34 (82.9%)	7 (17.1%)	41 (100%)	
45-54	33 (91.7%)	3 (8.3%)	36 (100%)	
>=55	15 (93.8%)	1 (6.3%)	16 (100%)	
Total	88 (85.4%)	15 (14.6%)	103 (100%)	

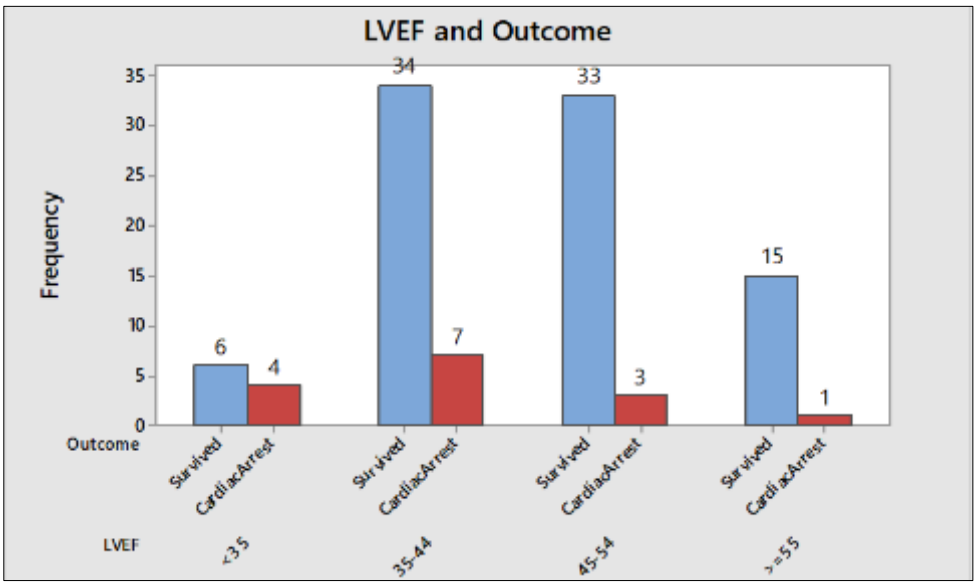

Figure 1 Association of LVEF and Outcome

Comparison of LVEF, Survived, Cardiac arrest (Prognosis determination)

5. Conclusion

On correlating left ventricular function with patient prognosis and outcomes in Acute Myocardial infarction patients it can be concluded that in most of the patients as low as the left ventricular function decreases ,that much the poor prognosis and high the complications, the more the days of hospital stay and high the morbidity and mortality is seen and as high as left ventricular function is in normal range in most of the patients, better the prognosis and outcomes of the patient and less the complications, morbidity and mortality rate.

Compliance with ethical standards

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Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of ethical approval

Ethical approval has been obtained from the institutional ethics committee.

Statement of informed consent

Informed consent was obtained from the participant included in the study.

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