

ORIGINAL ARTICLE

CORRELATION OF ECG AND 2D-ECHO TO ESTIMATE LVEF IN MI

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ABSTRACT

Cardiovascular disease accounts for approximately 12 million deaths annually and is the commonest cause of death globally. QRS scoring by ECG to calculate LVEF can be used as a supplement for prognostification of MI patients.

Keywords: AMI, STEMI, ECG, 2D-ECHO, QRS scoring

1.INTRODUCTION

Cardiovascular disease accounts for approximately 12 million deaths annually and is the commonest cause of death globally.. The incidence of CAD in India has more than doubled in the last 25 years & is currently the leading cause of death in India(Siddharth and Shah,2015)

This study was undertaken to correlate the EF as calculated by ECG and 2D Echo, to assess the severity and prognosis of patients with myocardial infarction.

2.METHODOLOGY

This study included 100 patients admitted to R.M.M.C.H, Chidambaram, who were diagnosed as acute myocardial infarction.

Patients above the age of 70 yrs and those with previous history of MI, subendocardial infarction, posterior wall infarction, right ventricular infarction, LVH, CHD, valvular heart disease, cardiomyopathy, pericardial disease were excluded from the study.

ECG was recorded on a standard paper at a speed of 25mm/sec taken at the time of admission for the diagnosis of myocardial infarction. QRS score was calculated from the

ECG using the QRS scoring of Palmeri and Wagner,(2008) as indicated in the table. From this QRS score, Left Ventricular Ejection Fraction (LVEF) was estimated by means of the formula

3.OBSERVATIONS:

	Mean ± SD	
EF by ECG	48.51 ± 6.57	p > 0.05
EF by 2D-ECHO	48.38 ± 9.37	Correlation Co-efficient r = 0.84

Sub-groups of MI	Mean ejection fraction by ECG (QRS scoring)	Mean EF by 2D Echo	P – Value
Anterior wall MI (n = 68)	46.72 ± 5.11*	45.58 ± 7.80	P > 0.05
Inferior wall MI (n = 28)	54.55 ± 3.82	56.25 ± 6.65	P > 0.05

Mean ± Standard Deviation

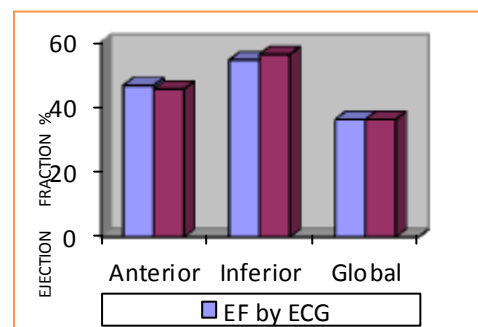


Figure 3: Comparison of mean LVEF as calculated from ECG and 2D-ECHO in various sub groups of MI

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Table Showing the mean EF as calculated by ECG (QRS scoring) and 2D-ECHO in sub-groups of MI patients

Lead	Duration (msec)	Amplitude Ratios		Max points
I	Q \geq 30	1	R/Q \leq 1	1 2
II	Q \geq 40	2		2
	Q \geq 30	1		
avL	Q \geq 30	1	R/Q \leq 1	1 2
avF	Q \geq 50	3	R/Q \leq 1	2 5
	Q \geq 40	2		
	Q \geq 30	1	R/Q \leq 2	1
V1	Any Q R	1		
	\geq 50	2	R/S \leq 1	1 4
	R \geq 40	1		
V2	Any Q or R \leq 20 R	1		
	\geq 60	2	R/S \leq 1.5	1 4
V3	R \geq 50	1		
	Any Q or R \leq 30	1		1
V4	Q \geq 20		R/Q or R/S	2
		1	\leq 0.5	
			R/Q	1
			or R/S	1
			\leq 1	

4.DISCUSSION:

In our correlative study of EF with ECG & echocardiography we found that there was a good correlation in anterior wall MI & in global MI.

ECG showed EF of 46.72% (mean \pm 5.11) when compared to EF by echo study which showed 45.58(mean \pm 7.80) in anterior wall MI. While in global MI, ECG showed a low EF of 35.25 \pm 7.09, Echo study showed an EF of 36.25 \pm 5.91. The index of ejection fraction in inferior wall infarction was better than anterior wall MI. EF by ECG was 54.55 \pm 3.82. The EF by echocardiography was 56.25 \pm 6.65 in inferior wall myocardial infarction

In our study, the statistical analysis done on the basis of linear regression curve reveals a fair degree of correlation between ejection fraction as obtained by ECG and echocardiography with r – 0.84 and p>0.05.

5.CONCLUSION:

In spite of the relative inadequacies of this study, relative fair correlation was obtained between ECG QRS scoring and echocardiographic LV pump function. Hence this can be used as an additional method of evaluating left ventricular function in 'Q' wave infarction

6.REFERENCES:

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