

## Study of Clinical Correlation, ECG changes, LV End Diastolic Diameter and prognosis in DCMP Patients

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### Abstract:

Dilated cardiomyopathy is a syndrome characterized by cardiac enlargement and impaired systolic function of one or both ventricles. Due to increased awareness of this condition and improved diagnostic techniques, dilated cardiomyopathy is being recognized as a significant cause of morbidity and mortality. The current study aimed at understanding DCM in the correlation of clinical profile, QRS duration ECG, LV end diastolic diameter on 2D ECHO.

**Material and methods:** A total of 100 patients of dilated cardiomyopathy were studied. ECG, 2D ECHO was done among all these patients using standard techniques. Diagnosis of dilated Cardiomyopathy done by Echocardiography.

**Results:** Both males and females were affected by QRS complex duration changes, ventricular ectopics, left and right bundle branch blocks, ST-T changes were common ECG abnormalities.

**Conclusion:** The ECHO findings in patients revealed a dilated LV cavity with an elevated end-diastolic diameter.

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### I. Introduction

Cardiomyopathy is a primary disorder of heart muscle that causes abnormal myocardial performance and is not the result of disease or dysfunction of other cardiac structures, systemic arterial hypertension, valvular stenosis, or regurgitation<sup>1</sup>. As per WHO<sup>7</sup> and AHA, the most widely used functional classification of cardiomyopathy recognizes three disturbances<sup>2, 3</sup> of function dilation, hypertrophy, and restriction. Dilated cardiomyopathy is the most common form of cardiomyopathy, comprising over 90% of cases. Therefore, the present study was undertaken to study the ECG and 2D ECHO findings in dilated cardiomyopathy patients.

### II. Materials And Methods

The present study was performed on patients with dilated cardiomyopathy either admitted to Government Medical College, Kadapa, or attending a cardiology clinic. A total of 100 patients, out of which 56 were male and 44 were female. The period of study was from 1/4/23 to 30/4/24.

#### Inclusion Criteria:

Patients presenting with signs and symptoms of congestive cardiac failure, asymptomatic patients having unexplained cardiomegaly on chest x-ray and abnormal ECG changes. Diagnosis of dilated cardiomyopathy was done by echocardiography.

1. Each patient was specifically asked about dyspnea, palpitation, swelling of feet, fatigability, sweating, abdominal pain, syncope and chest pain.

2. Patients were asked regarding the major illness like Hypertension, Diabetes Mellitus, Myocardial infarction, Renal disease, COPD.

Family history suggestive of dilated cardiomyopathy was asked. On physical examination, special attention was given to presence of raised JVP, edema, gallop rhythm, systolic murmur, respiratory rate and congestive hepatomegaly<sup>4,5</sup>.

**Exclusion Criteria:**

Patients with signs and symptoms of congestive cardiac failure with cardiomegaly on chest x-ray due to other diseases like coronary artery disease (based on history of myocardial infarction, Q wave in ECG, akinetic segment on 2D ECHO) congenital heart disease, and pericardial diseases.

**III. RESULT**

**Demographic Profile:**

Variables	No of patients	percentage
Gender	56 /44(M/F)	56/44(M/F)
History of Diabetes	44	44
History of Hypertension	56	56
Family History of DCMP	4	4
Edema	28	28
Raised JVP	20	20

**ECG Features in Dilated Cardiomyopathy Patients(n=100):**

Variables	No of patients	percentage
QRS COMPLEX	normal	10
	Wide duration	40
	Narrow duration	10
ARRYTHMIAS	Sinus tachycardia	05
	Atrial fibrillation	05
	Atrial ectopics	02
	Ventricular ectopics	01
	Left bundle branch block	10
Atrial enlargement	Right bundle branch	06
	LAE	04
	RAE	03
Ventricular hypertrophy	LVH	18
	RVH	12

**Echocardiographic Profile:**

Variables		No of patients	percentage
Ejection fraction	40%-45%	20	20%
	30%-39%	20	20%
	20%-29%	44	44%
	< 20%	16	16%
LVEDD	4.5-4.9 cm	14	14%
	5.0-5.9 cm	64	64%
	>6 cm	12	12%
LVSD	3.5 - 4 cm	22	22%
	4- 4.9 cm	54	54%
	>5 cm	22	22%
Mitral regurgitation		62	62%
Tricuspid regurgitation		14	14%
Pericardial effusion		14	14%

**Echocardiographic profile in different studies:**

Parameters	Present study	Bindu et al <sup>2021</sup>	Saxena et al <sup>2018</sup>
LV ejection fraction	35.9%	36.2%	34.3%
L VEDD > 5 cm	86%	84%	83%
L VSED > 4 cm	78%	76%	79%
MR	62%	64%	72%
TR	14%	12%	10%
LV clot	2%	0%	3.33%
Pericardial effusion	14%	12%	06.6%

In present study dilated cardiomyopathy was more common in middle age . Males were affected more commonly than female. The ECG profile (table 2) included abnormal rate, rhythm , and chamber enlargement. The most common abnormality was wide duration QRS complex >120 ms seen in 40% patients. Left bundle branch block was seen in 10% of subjects • LVH was seen in 18% and RVH was seen in 12% patients.

The mean LV ejection fraction was 35.9. The left ventricular ejection fraction was less than 20 % in 16% of subjects. It was between 20 -29% in 44% patients, between 30-39% in 20% patients and between 40-49% in 20% patients.

Majority of the subjects i.e 86% having LV end diastolic diameter more than 5 cm. The LV end systolic diameter is greater than 4 cm was present in 76% patients. Dilatation of all chambers were seen in all patients . In our study MR is present in 62% and 14% had TR, and pericardial effusion was seen in 14% patient.

#### **Discussion:**

The present study aims to evaluate co relation of clinical profile , QRS duration on ECG, LV end diastolic diameter on 2D ECHO and cardiac size in DCMP patients. Among the total 100 subjects, males comprised of 56% and females 44%. DCMP was most commonly seen in middle aged males and in females was predominantly seen in age(22.15+/-3). Idiopathic and alcohol cardiomyopathy were etiologies in males and peripartum dilated cardiomyopathy and thyroid were the most common sub types in females. Breathlessness was most common symptom noticed in majority of patients. PND was seen in 62% patients .Tachycardia was seen in 5% patients, wide QRS duration seen in 40% patients and narrow QRS duration present in 10% patients. In our study chest pain was seen in 35% patients compared to other studies like saxena et al it was present in 40% patients .

#### **Electrocardiogram :**

The QRS axis was normal in 84% of our subjects with wide QRS duration present in 40% subjects, narrow QRS duration present in 10% patients. Sinus Tachycardia was seen in 5% patients of our study compare with saxena et al sinus Tachycardia seen in 40% patients. RBBB, LBBB were more commonly present in our study as compared to other studies . LVH was more commonly seen in our study being present in 18% patients as compared 24% in other studies.

#### **Echocardiographic Profile:**

The mean LV ejection fraction in our study was 35.9%. This was similar to that all other studies on DCMP. Patients with LV end diastolic diameter was greater than 5cm present in 86% patients, LV systolic diameter greater than 4cm were seen in 76% patients which was similar to other studies.

Mitral regurgitation was seen in 62% patients which was less when compare with other studies. 2% patients of our patient had LV clot and AR, compared to 3.6% and 17.8% of patients in jain et al study. Tricuspid regurgitation seen in 10% patients of our study as compared with rana et al 24%.

#### **Etiological Profile:**

In our study most common type of DCMP was idiopathic present in 50% patients followed by alcoholic cardiomyopathy seen in 24% patients, thyroid cardiomyopathy was third most common type seen in 18% patients. Ischemic cardiomyopathy was not included in our study. In saxena et al study idiopathic cardiomyopathy comprised 13% of cases, peripartum DCMP present in 33% alcoholic cardiomyopathy seen in 23%.

### **IV. Conclusion**

A study of 100 cases of dilated cardiomyopathy was done from 1/4/23 to 30/4/24.who were admitted to GGH , kadapa. The conclusion of study were Dilated cardiomyopathy was most commonly present in middle aged people. Dilated cardiomyopathy of more incidence in male and female. Biventricular failure was the most common clinical presentation followed by left heart failure followed by right heart failure. The most common type was idiopathic followed by alcohol , peripartum, thyroid and ischemic cardiomyopathy Echocardiographic profile consisting of sinus tachicardia , ventricular ectopics ,atrial ectopics , LBBB, RBBB, atrial fibrillation, SVT. LVH was present in most of the cases. wide QRS duration present in 50% cases. Echocardiographic profile included reduced ejection fraction and global hypokinesia in all patients. There was varying degree of left ventricular dilatation.

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