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Study of Correlation of Clinical Profile, QRS Duration on ECG, LV End Diastolic Diameter on 2decho and Cardiac Size on Chest X-Ray 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 2DECHO, and cardiac size on chest x-ray.
Material and methods: *A total of 50 patients of dilated cardiomyopathy were studied. ECG, 2DECHO, Chest X-ray 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[1]. As per WHO [7] and AHA, the most widely used functional classification of cardiomyopathy recognizes three disturbances[2, 3] 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 2DECHO 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 50 patients, out of which 28 were male and 22 were female. The period of study was from 1/5/19 to 30/4/20.

Inclusion Criteria:

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

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

2. Patients was 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, gallope rhythm, systolic murmur, respiratory rate and congestive hepatomegaly[4,5].

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

III. Result

Demographic Profile:

Variables	No of patients	percentage
Gender	28/22(M/F)	56/44(M/F)
History of Diabetes	22	44
History of Hypertension	28	56
Family History of DCMP	2	4
Edema	14	28
Raised JVP	10	20

ECG Features in Dilated Cardiomyopathy Patients(n=50):

Variables		No of patients	percentage
QRS COMPLEX	normal	15	30
	Wide duration	25	50
	Narrow duration	10	20
ARRYTHMIAS	Sinus tachycardia	05	10
	Atrial fibrillation	05	10
	Atrial ectopics	02	04
	Ventricular ectopics	01	02
	Left bundle branch block	12	24
	Right bundle branch	06	12
Atrial enlargement	LAE	06	12
	RAE	03	06
Ventricular hypertrophy	LVH	12	24
	RVH	04	08

Echocardiographic Profile:

Variables		No of patients	percentage
Ejection fraction	40%-45%	10	20%
	30%-39%	22	44%
	20%-29%	10	20%
	< 20%	08	16%
LVEDD	4.5-4.9 cm	08	16%
	5.0-5.9 cm	32	64%
	>6 cm	10	20%
LVSD	3.5 - 4 cm	12	24%
	4- 4.9 cm	27	54%
	>5 cm	11	22%
Mitral regurgitation		32	64%
Tricuspid regurgitation		06	12%
Perticardial effusion		06	12%

Echocardio graphic profile in different studies:

Parameters	Present study	Saxena et al[2018]	Rana et al[2014]
LV ejection fraction	36.2%	34.3%	30.5%
L VEDD > 5 cm	84%	83%	64.5%
L VSED > 4 cm	76%	79%	58%
MR	64%	72%	63%
TR	12%	10%	26%
LV clot	0%	3.33%	3.6%
Pericardial effusion	12%	06.6%	04%

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 50% patients. Left bundle branch block was seen in 24% of subjects • LVH was seen in 24% and RVH was seen in 08% patients.

The mean LV ejection fraction was 36.2. The left ventricular ejection fraction was less than 20 % in 16% of subjects. It was between 20 -29% in 20% patients, between 30-39% in 44% patients and between 40-49% in 20% patients. Majority of the subjects i.e 84% having LV end diastolic diameter more then 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 64% and 12% had TR, and pericardial effusion was seen in 12% patient

IV. Discussion:

The present study aims to evaluate co relation of clinical profile , QRS duration on ECG, LV end diastolic diameter on 2DECHO and cardiac size and chest x-ray in DCMP patients. Among the total 50 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 dialated cardiomyopathy and thyroid were the most common subtypes in females. Breathlessness was most common symptom noticed in majority of patients. PND was seen in 66% patients .Tachycardia was seen in 10% patients, wide QRS duration seen in 50% patients and narrow QRS duration present in 20% patients. In our study chest pain was seen in 30% patients compared to other studies like saxena et al it was present in 40% patients .

Echocardio Graphic Profile :

The QRS axis was normal in 82% of our subjects with wide QRS duration present in 50% subjects, narrow QRS duration present in 20% patients. Sinus Tachycardia was seen in 10% 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 24% patients as compared 20% in other studies.

Echocardiographic Profile:

The mean LV ejection fraction in our study was 36%. This was similar to that all other studies on DCMP. Patients with LV end diastolic diameter was greater than 5cm present in 84% patients, LV systolic diameter greater than 4cm were seen in 76% patients which was similar to other studies.

Mitral regurgitation was seen in 64% patients which was less when compare with other studies. None 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%.

Chest Radiograph:

Chest radiograph was abnormal in all the cases showing varying degree of cardiomegaly with cardiothoracic ratio varying between 0.5-0.7.This was similar to study done by saxena et al and massumi et al. Pulmonary plethora was seen in 50% compare to 72% in massumi et al and 53% in saxena et al.xx

Etilogical Profile:

In our study most common type of DCMP was idiopathic present in 50% patients fallowed by alcoholic cardiomyopathy seen in 24% patients, thyroid cardiomyopathy was third most common type seen in 10% 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 cardiomyopthy seen in 23%.

V. Conclusion

A study of 50 cases of dilated cardiomyopathy was done from 1st may 2019 to 30th april 2020 who were admitted to GGH , kadapa. The conclusion of study were Dilated cardiomyopathy was most commonly present in middle aged people. Dilated cardiomyopathy of equal incidence in male and female. Biventricular failure was the most common clinical presentation fallowed by left heart failure fallowed by right heart failure.The most common type was idiopathic fallowed by alcohol , peripartum, thyroid and ischeamic 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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