



“A STUDY OF CLINICAL PROFILE OF PATIENTS OF DILATED CARDIOMYOPATHY”

General Medicine

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ABSTRACT

BACKGROUND: Dilated cardiomyopathy (DCM) is a chronic heart muscle disease characterized by “the presence of dilatation and systolic impairment of the left or both ventricles unexplained by abnormal loading conditions or coronary artery disease sufficient to cause the observed myocardial dilation and dysfunction.” We aimed to study the epidemiology, symptomatology and ECG and 2D Echo findings in patients of DCM.

METHODS: It was a single-centre observational study conducted from October 2018 to March 2020 on 50 patients of 2D Echo proven dilated cardiomyopathy either admitted or attending cardiology clinic in RSCMGMC & CPR Hospital, Kolhapur.

RESULTS: It was found that elderly and middle-aged population was predominantly affected with a male to female ratio of 3: 2. Common risk factors were alcoholism, diabetes, peripartum period and positive family history while the cause remained unknown in about 46% cases. Dyspnea was invariably present in all patients and majority had severe dyspnea [NYHA class III (48%) and IV (40%)]. Raised JVP (96%), pedal oedema (86%), gallop rhythm (92%) and respiratory rales (74%) were the common signs. Left axis deviation (44%), LVH (44%) were common on ECG while cardiomegaly was characteristic on a chest X-ray. The 2D Echo revealed a dilated LV cavity with low ejection fraction in all patients. Valvular regurgitation was seen in 86% of patients.

CONCLUSION: A high index of suspicion should be maintained for DCM when a young male or female presents with unexplained breathlessness.

KEYWORDS

dilated cardiomyopathy

INTRODUCTION

Cardiomyopathy is a primary disorder of the heart muscle that causes abnormal myocardial performance and is not secondary to atherosclerotic coronary artery disease, valvular disease, congenital heart disease or systemic hypertension. Cardiomyopathies are classified into dilated, hypertrophic and restrictive type depending upon the basic disturbance of the function. **Dilated cardiomyopathy (DCM)** is a syndrome characterized by dilated left ventricle with systolic dysfunction that is not caused by ischemic or valvular heart disease. With increasing awareness of this condition along with improvement in diagnostic techniques, dilated cardiomyopathy is being recognized as a significant cause of morbidity and mortality. Present study was undertaken to focus on dilated cardiomyopathy in Indian patients and to analyze clinical, electrocardiographic, radiological and echocardiographic features.

AIM AND OBJECTIVES

1. To study the clinical profile of patients of Dilated Cardiomyopathy.
2. To analyze ECG changes & 2D Echo features in patients of dilated cardiomyopathy.

MATERIAL AND METHODS

STUDY POPULATION- Study was performed in the patients of 2D Echo proven cases of dilated cardiomyopathy either admitted or attending cardiology clinic in RSCMGMC & CPR HOSPITAL, KOLHAPUR during study period.

STUDY DURATION- 18 months (October 2018 to March 2020)

STUDY DESIGN- Observational study

INCLUSION CRITERIA-

Patients were selected from those presenting as –

- 1) Age > 18 years
- 2) 2D Echo proven cases of Dilated Cardiomyopathy

EXCLUSION CRITERIA-

Patients with signs and symptoms of congestive cardiac failure due to other diseases were excluded like –

- 1) Coronary artery disease
 - Past history of myocardial infarction.
 - Significant Q wave in ECG.
 - Scars/akinetic segment/Regional Wall Motion Abnormality on

ECHO

- 2) Rheumatic Valvular heart disease
 - By History
 - By Echocardiography.
- 3) Congenital heart disease
 - By Echocardiography.
- 4) Pericardial disease
 - By Echocardiography.
- 5) Systemic Hypertension
 - By history

OBSERVATIONS AND RESULTS

Table 1: Frequency Distribution Of Demographic Variables

Variable	No. of cases	%
Age in years		
20-29	6	12
30-39	8	16
40-49	17	34
50-59	8	16
60+	11	22
Total	50	100
Sex		
Males	30	60
Females	20	40

In the present study, dilated cardiomyopathy was more common in the middle-aged and elderly, most common in the fifth decade.

Males were affected more commonly than females (M: F ratio – 3:2)

Table 2: Associated Risk Factors

Past History (Risk Factors)	No. of risk factors	%
DM	3	6
Alcoholism	18	36
Family History	2	4
Obstetric (Peripartum)	5	10
None	23	46

In the present study, out of 50 patients 3(6%) had history of diabetes

mellitus, 18(36%) were alcoholics, 2(4%) had significant family history, and 5(10%) patients were in peripartum group and of which one patient had history of hypertension during pregnancy. In 23 (46%) patients, no risk factor could be identified.

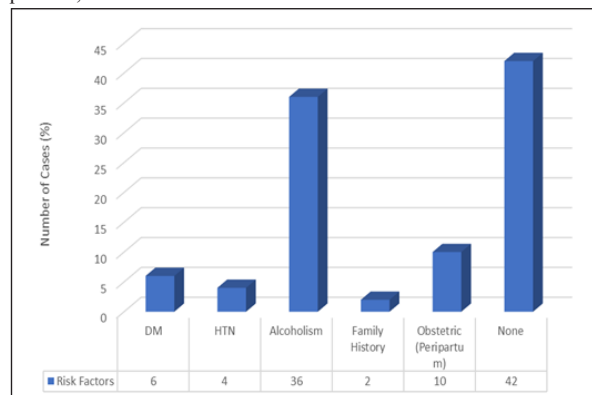


Table 3: Symptomatology Of Dcm

Symptoms	No. of cases	%
Dyspnea (I, II, III, IV)	(00, 06, 24, 20)	100
Palpitations	25	50
Fatigue	36	72
Swelling of Feet	28	56
Abdominal Pain	12	24
Syncope	1	2
Cough	30	60
Fever	10	20
Chest Pain	15	30

In the present study, dyspnea was invariable and was present in all 50 (100%) patients. Dyspnea was class II in 6 (12%) and majority of patients had higher NYHA class i.e. class III in 24 (48%) and class IV in 20 (40%) of patients. Fatigability (72%), cough (60%), swelling over the feet (56%) and palpitations (50%) were other predominant symptoms. Chest pain, abdominal pain, fever, syncope were uncommon symptoms. None of the patients were asymptomatic.

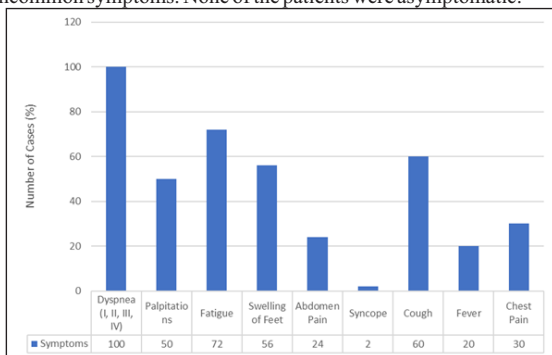


Table 4: Clinical Signs Of Dcm

Clinical Features	Mean	SD
Pulse	105.3	9.47
SBP	113.44	25.04
DBP	73.68	12.28

Table 5: Frequency Distribution Of Clinical Signs

Clinical Features	No. of cases	%
Raised JVP	48	96
Edema	43	86
Icterus	13	16
Thrill	1	2
Systolic Murmur	25	50
Gallop	47	92
Loud P2	9	18
Respiratory Rales	37	74
Hepatomegaly	45	90
Ascites	5	10

On examination, most patients were found to have signs of CCF with edema on feet (86%), raised JVP (96%) and congestive hepatomegaly (90%).

On cardiovascular examination, gallop rhythm was present in 92%, systolic murmurs in 50%, loud P2 in 18% and precordial thrill in 2% of the patients. 74% of patients had respiratory rales and 10% patients had ascites.

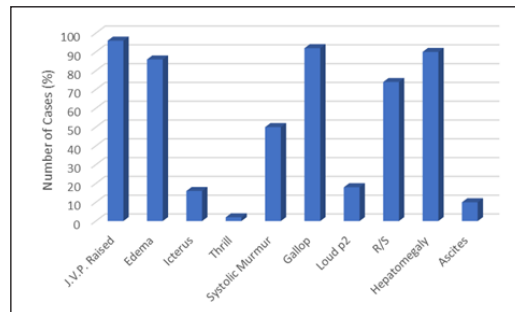


Table 6: Ecg Abnormalities In Dilated Cardiomyopathy

ECG Features	Mean	SD
Rate (per min)	107.0	10.51
PR Interval (sec)	0.176	0.0287
QRS Interval (sec)	0.0986	0.0293
QT Interval (sec)	0.4118	0.0245
S1+RV6	32.38	11.08
RV6/RMAX	2.604	0.843

Mean ventricular rate in the present study was 107.0 ± 10.51 per min. Most of the patients had sinus tachycardia as they were in congestive heart failure.

Table 7: Frequency Distribution Of Ecg Features.

ECG Features	NO	Percentage
Left axis deviation ($<0^\circ$)	22	44
Atrial enlargement	Total 14	
	Right 04	
	Left 08	
	Bi-atrial 02	28
Left ventricular hypertrophy (S in V1 + R in V5/V6 > 35 mm)	22	44
R V6/ R max ≥ 3	21	42
QRS duration	≤ 0.10 sec 31	62
	0.11 to 0.12 sec 10	20
	≥ 0.12 sec 09	18
AV Blocks	Total 05	10
	First degree 05	10
	Second degree 00	00
	Third degree 00	00
Bundle branch block-	Total 19	38
	LBBC 09	18
	RBBB 03	06
	LAHB 07	14
Arrhythmia-	Total 09	18
	Atrial fibrillation 05	10
	Ventricular 03	06
ectopics	Non-sustained VT 01	02

In the present study, range of QRS axis was from -50° to $+90^\circ$. Left axis deviation was seen in 22 (44%) patients. 5 patients (10%) had first degree AV block. No patients had second- or third-degree AV block. 22 patients had evidence of LVH on ECG.

Table 8: Radiological Features Of Dcm

X-ray Features	No. of cases	%
CT- Ratio		
0.51 - 0.55	8	16
0.56 - 0.60	13	26
0.61 - 0.65	18	36
0.66 -	11	22
> 0.7	00	00
Pulmonary Congestion	40	80
Bilateral Pleural Effusion	06	12

An analysis of the table of radiological findings shows that all patients had cardiothoracic ratio of more than 0.5. Mean CT ratio was 0.6194. Most of the patients had CT ratio more than 0.55 and pulmonary

congestion on chest x-ray suggesting advanced disease.

Table 9: Echocardiographic Features Of Dem

2 D ECHO Features	Mean	SD
LVIDd	60.78	06.56
LVIDs	50.38	07.86
RV	22.84	07.20
LA	40.94	06.30
IVS	09.39	01.57
LVPW	09.55	01.45
EF	28.60	06.60

In the present study, left ventricular dilatation was seen in all 50 (100%) patients and the LV ejection fraction was less than 40% in all 50 (100%) patients. The lowest EF observed was 10%. Left atrial enlargement was seen in 27 (54%) patients and mean LA diameter was 40.94 ± 6.30 mm and right ventricular dilatation was seen in 20 (40%) of patients and mean right ventricular diameter was 22.84 ± 7.20 mm.

Table 10: Distribution of 2D Echo Features

2 D ECHO Features	No. of cases	%
LA>40 mm	27	54
RV>23 mm	20	40
Diastolic Dysfunction	21	42
Valvular Regurgitation	43	86
MR	12	
TR	01	
MR+TR	26	
MR+TR+AR	04	
Pericardial Effusion	15	30
Clots	05	10
Pulmonary HT	12	24

In the present study, valvular regurgitation was seen in 43 (86%) of patients. There was isolated MR in 12 (24%) of patients, while MR was associated with TR in 26 (52%) patients and with TR and AR in 4 (8%) patients. There was isolated TR in 1 (2%) patient.

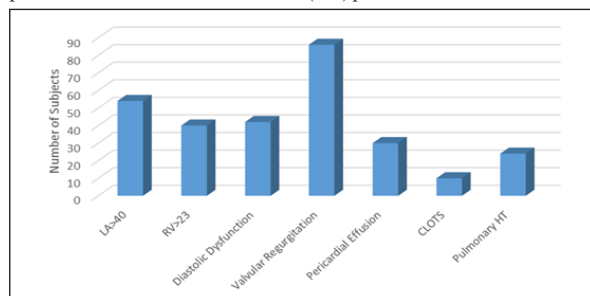


Table 11: Analysis of mean of LVIDd in Valvular regurgitation.

Valvular Status	LVIDd mm		Unpaired t test	P
	Mean	SD		
No Valvular regurgitation	59.85	06.76	0.399	0.691 NS
Valvular regurgitation	60.93	06.60		

In the present study, 7 patients did not have valvular regurgitation; mean LVIDd was 59.85 ± 6.76 mm in such patients. 43 patients had valvular regurgitation; most of them had mitral regurgitation. Mean LVIDd in such patients was 60.93 ± 6.60 mm. This difference was not statistically significant.

Table 12: Analysis of Mean of LA Diameter in Atrial Fibrillation.

Rhythm	No of patients	LA diameter mm		Unpaired P t test	Sig
		Mean	SD		
Atrial Fibrillation	05	48.0	06.04	02.82	0.007
No Atrial Fibrillation	45	40.15	05.88		

In the present study, left atrial diameter in patients having atrial fibrillation was 48.0 ± 6.04 mm while in patients without atrial fibrillation it was 40.15 ± 5.88 mm. This difference was statistically significant.

DISCUSSION

50 patients of dilated cardiomyopathy were studied in present study. Males were more commonly affected than females. (M: F =3: 2) and elderly middle-aged population was predominantly involved. (Mean

age- 45.16 years). These observations are similar to studies done by Pelliccia et al¹, Robert et al² and Fuster et al³.

Alcohol was the commonest risk factor seen in 36% of the patients, followed by peripartum period (10%), DM (6%), family history of DCM (2%) and in 46% of the patients no risk factor could be identified which matches Karl et al⁴, Fuster et al³ and Parale et al⁵.

Dyspnea was the commonest symptom and was present in all 50 patients. Other predominantly reported symptoms were fatigability, cough, swelling over the feet and palpitations. Chest pain, abdominal pain, fever, syncope were uncommon symptoms. These findings are comparable to Shirey et al⁶.

Raised JVP (96%), pedal oedema (86%), gallop rhythm (92%), systolic murmur (50%), congestive hepatomegaly (90%) and respiratory rates (74%) were the most frequently observed clinical signs which are in line with Andersson et al⁷, Redfield et al⁸ and Goodwin et al⁹.

Left axis deviation (44%), LVH (44%), bundle branch block (38%), atrial fibrillation (10%) were the commonest ECG abnormalities which were also reported by Hollister et al¹⁰, Wilensky et al¹¹ and Barbosa et al¹².

Cardiomegaly and pulmonary congestion was seen on X-ray of almost all patients like that in studies by Fuster et al³ and Goodwin et al⁹.

The 2D Echo findings in patients revealed a dilated LV cavity with low ejection fraction in all patients. Valvular regurgitation was seen in 86% of patients; predominantly MR. This is similar to Levismann et al¹³, Rihal et al¹⁴ and Andersson et al⁷.

There was significant correlation between NYHA class of dyspnea and cardiothoracic ratio on chest X-ray but no significant correlation between LVIDd and valvular regurgitation which is comparable with Takenaka et al¹⁵.

In the present study, LA diameter in patients with atrial fibrillation was significantly more than in patients without atrial fibrillation, similar to a study by Henry et al¹⁶.

CONCLUSION

Our study concluded that dilated cardiomyopathy was more common in middle-aged and elderly, most common in the fifth decade. So it will be beneficial to keep a high index of suspicion in young and middle-aged males, and also in peripartum females with unexplained heart failure. Alcohol was the most common identified risk factor but in almost half of the patients, the cause remained idiopathic. Common symptoms were dyspnea, fatigue and swelling of the feet while raised JVP, gallop rhythm, systolic murmur, congestive hepatomegaly and respiratory rates were the commonest signs. ECG showed non specific abnormalities like sinus tachycardia, left axis deviation and left ventricular hypertrophy. Cardiomegaly was the commonest chest x-ray finding. The most frequent 2D Echo abnormalities were dilated, poorly contracting ventricles and reduced ejection fraction. Also, the incidence of atrial fibrillation increased with increase in LA diameter.

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