

# Clinical Profile of Patients with Dilated Cardio Myopathy (DCM)

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## ABSTRACT

**Background:** Cardiomyopathy is a heterogeneous group of disorders of varying aetiology. The term dilated cardiomyopathy (DCM) refers to a spectrum of heterogeneous myocardial disorders that are characterized by ventricular dilation and depressed myocardial performance in the absence of hypertension, valvular, congenital, or ischemic heart disease. In view of the high prevalence of chronic heart failure and underlying dilated cardiomyopathy and the lack of data on Dilated Cardio Myopathy (DCM) this study was undertaken. **Aim and Objective:** To determine the clinical profile and risk factors associated with patients of dilated cardiomyopathy. **Methods:** A 2-Year hospital-based cross sectional observational study conducted in Department of Medicine in a Tertiary center of Kumaon region in Uttarakhand involving 100 patients with Dilated Cardiomyopathy. Risk factor assessed were IHD, Diabetes Mellitus, Smoking, Alcohol. **Results & Conclusion:** Dilated cardiomyopathy was observed at all age groups but more common in middle aged (47%) and elderly population (39%). It is more common in males. The most common risk factor were ischemic heart disease (78%) followed by diabetes (70%), alcoholic (61%) and smoking (39%). The common presenting symptoms included exertional dyspnea, easy fatigability, palpitation and pedal edema.

**Keywords:** Dilated cardiomyopathy, Congestive heart failure, Diabetic, Alcoholic.

## INTRODUCTION

Cardiomyopathies are defined as myocardial disorders in which the heart is structurally and functionally abnormal. Morphologically defined subtypes include hypertrophic cardiomyopathy (HCM), dilated cardiomyopathy (DCM), arrhythmogenic cardiomyopathy, and left ventricular (LV) noncompaction cardiomyopathy and each of these subtypes can be genetically mediated. Cardiomyopathy is a heterogeneous group of disorders of varying aetiology. Heart failure from systolic and/or diastolic cardiac dysfunction is common to all. The term dilated cardiomyopathy (DCM) refers to a spectrum of heterogeneous myocardial disorders that are characterized by ventricular dilation and depressed myocardial performance in the absence of hypertension, valvular, congenital, or ischemic heart disease. The reported incidence of DCM varies annually about 5 to 8 cases per 100,000 of the population. The true incidence may be underestimated due to

underreporting or under detection of asymptomatic cases of DCM. The clinical characteristics and natural history of adults with idiopathic dilated cardiomyopathy are well described.<sup>[1-3]</sup>

### Classification of cardiomyopathy

The first classification on this topic categorized cardiomyopathies as heart muscle diseases with dilated (DCM), hypertrophic, restrictive, arrhythmogenic right ventricular cardiomyopathy (ARVC), or non-classifiable cardiomyopathy in 1980.<sup>[4,5]</sup> Subsequently, the World Health Organization/International Society and Federation of Cardiology classification in 1996 added inflammatory and viral cardiomyopathies as new and distinct entities.<sup>[6-8]</sup>

### Diagnostic criteria for DCM

Left ventricular Ejection fraction <0.45 and/or a fractional shortening of <25%, and a left ventricular end diastolic dimension of >112% predicted value corrected for age and body surface area based on 2D-ECHO. The criteria for left ventricular enlargement are based on data of Henry et al.<sup>[9]</sup>

### Aim and Objectives

To determine the clinical profile and risk factors associated with patients of dilated cardiomyopathy.

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## MATERIALS AND METHODS

This cross - sectional observational study was carried out in The Department of Medicine, Government Medical College and Dr. Susheela Tiwari Government Hospital, Haldwani (Uttarakhand) from September 2017- August 2019. Patients with documented evidence of Dilated Cardiomyopathy were admitted through Casualty (emergency) / Medicine OPD/Medicine Ward or ICU. This hospital caters to the entire Kumaon region of Uttarakhand adjoining areas of Uttar Pradesh and Nepal. The research procedure followed was in accordance with the approved ethical standards of hospital, Ethics committee (Human).

### Inclusion criteria:

All patients presenting with signs and symptoms suggestive of Dilated Cardiomyopathy who fulfilled the echocardiographic criteria were included in this study.

### Exclusion criteria:

- Patients diagnosed to have Valvular Heart disease.
- Patients diagnosed to have Congenital Heart Disease.
- Presence of Systemic Hypertension
- Presence of Coronary Artery Disease

### Procedure methodology:

The clinical evaluation included symptoms and signs of heart failure. The symptom profile included dyspnoea, palpitation, Paroxysmal nocturnal dyspnea, orthopnea, pedal edema, chest pain, cough, easy fatigability, etc. Physical examination included signs like basal crepitations, raised JVP, hepatomegaly, pedal edema, S3, murmur, etc. All baseline blood investigations were done in the Dept. of Biochemistry and Dept. of Pathology, GMC Haldwani, X-ray Chest, ECG, Echocardiography was done.

## RESULTS

**Table 1: Distribution of patients on the basis of Age, Gender**

Variable	No. of patients (n=100)%	Percentage (%)	
Age Groups (Years)	21-40	9	9%
	41-60	47	47%
	61-80	39	39%
	>80	5	5%
	Mean±SD (Range)	60±14(21-94)	
Gender	Male	68	68%
	Female	32	32%

The Mean ± SD age of the patients in our study was 60±14 years (Range: 21- 94 years). Majority of the patients, 47(47.0%) belonged to the age group 41 - 60 years followed by 39 (39.0%) patients of age group 61-80 years; 5 (5.0%) were > 80 years age and

9 (9.0%) were age group 21-40 years. Out of 100 patients, 68 (68.0%) were male and 32 (32.0%) were females.

**Table 2: Distribution of patients on the basis of signs and symptoms and NYHA grade**

Variable	No. of patients (n=100)	Percentage (%)	
Signs	Basal Crackles	82	82%
	Added Heart Sounds	82	82%
	Raised JVP	69	69%
	Apex Beat Shift	60	60%
	Hepatomegaly	45	45%
	Irregular Pulse	34	34%
Symptoms	Dyspnea	100	100%
	Fatigue	73	73%
	Palpitations	71	71%
	Pedal Edema	67	67%
	Cough	63	63%
	PND	55	55%
	Orthopnea	47	47%
	Chest Pain	36	36%
Abdominal Pain	29	29%	
NYHA grade	I	5	5%
	II	57	57%
	III	29	29%
	IV	9	9%

Basal crackles were seen in 82% of the subjects. Raised JVP was seen in 69%. Added heart sounds were present in 82%. Hepatomegaly was noticed in 45%. Apex beat shift and irregular pulse were observed in 60% and 34% cases respectively. Breathlessness was present in 100% constituting the most common symptom. It was followed by Fatigue and palpitation which were observed in 73% and 71% of patients respectively. History of pedal edema, cough, paroxysmal nocturnal dyspnea and Orthopnea were seen in 67%, 63%, 55% and 47% of patients respectively followed by chest pain 36%, and abdominal pain 29%. Majority of the patients in our study were in NYHA class II (57.0%) and class III (29%).

**Table 3: Distribution of patients on basis of risk factors**

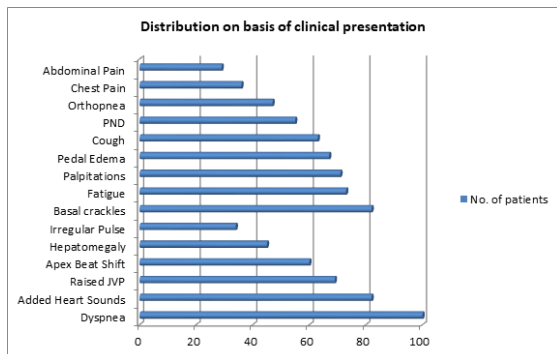
Risk Factors/Comorbidity	No. of patients (n=100)	Percentage
IHD	78	78%
Diabetes	70	70%
Alcohol	61	61%
Smoking	39	39%

In this study, 78% patients were IHD and 70% diabetic followed by 61% and 39% patients were alcoholic and smoker respectively.

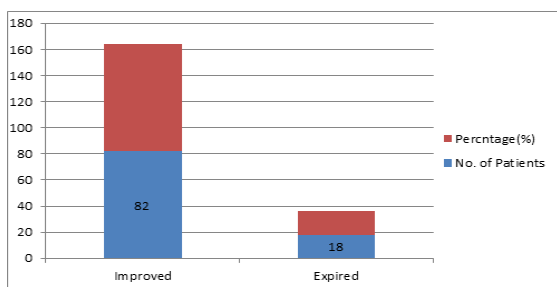
**Table 4: Distribution of patients on basis of ECHO Findings**

Variables	Mean ± SD
Left Ventricular Ejection Fraction (%)	36.2±5.2 (22.0 - 45.0)
End Diastolic Diameter (cm)	5.9±0.5 (5.3 - 7.2)
End Systolic Diameter (cm)	4.8±0.5 (4.0 - 6.0)

The mean left ventricular ejection fraction was found to be  $36.2 \pm 5.2\%$  (range: 22.0 - 45.0 %). The mean left ventricular end diastolic diameter and left ventricular end systolic diameter were  $5.9 \pm 0.5$  cm (range: 5.3 - 7.2 cm) and  $4.8 \pm 0.5$  cm (range: 4.0 - 6.0 cm) respectively.



**Figure 1: Distribution of patients on basis of clinical presentation**



**Figure 2: Outcome at Discharge**

## DISCUSSION

In our study, 68 (68.0%) were males and 32 (32.0%) were females. According to a study by Dr Kishore Teple et al., in 2016, patient group comprised of 38 (76%) males and 12 (24%) females.<sup>[10]</sup> Similarly according to a study by Mukul Kumar et al., in 2017 the patient group had 20 males (66.7%) and 10 (33.3%) females.<sup>[11]</sup> According to a study by Praful J Dudharejia et al., in 2016, patient group comprised of 33 (66%) males and 17 (34%) females.<sup>[12]</sup> In other studies also the preponderance of male patients over the female patients was significantly greater.

The Mean  $\pm$  SD age of the patients in our study was  $60 \pm 14$  years (Range: 21 - 94 years). The majority of the patients, 47 (47.0%) belonged to the age group 41 - 60 years followed by 39 (39.0%) patients of age group 61-80 years; 5 (5.0%) were > 80 years age and 9 (9.0%) were age group 21-40 years. According to a study by Mukulkumar et al., in 2017 the mean age of idiopathic DCM patients was:  $48.37 \pm 10.82$  years and controls were  $49.2 \pm 9.27$  (P=0.75).<sup>[11]</sup> According to a study by Praful J Dudharejia et al., in 2016 the distribution of patients was between the range of 1 -19yrs : 4 (8%), 20-39yrs : 8 (16 %), 40-59yrs : 19 (38 %), >60yrs : 19 (38 %).<sup>[12]</sup>

Our study revealed that the majority of the patients were in NYHA class II (57.0%) and class III (29%).

According to a study by Mukulkumar et al., in 2017, most of the patients were in NYHA class I (50%) and class II (46.7%) and only 1 (3.3%) was in class III and none in class IV.<sup>[11]</sup> In another study by Kishore Teple et al., in 2016, 29 and below: 6 (12%), 30-49: 25 (50%), 50 and above 19 (38%).<sup>[10]</sup> In our study, the most common symptom was dyspnea which was observed in all patients. Fatigue was observed in 73% of subjects constituting to be the next most common symptom, followed by Palpitations in 71% of patients. History of cough, paroxysmal nocturnal dyspnea and Orthopnea were seen in 63%, 55% and 47% of patients respectively followed by chest pain in 36% and abdominal pain was found in 29% of patients. In a study by Kishore Teple et al., in 2016, DOE: 22 (84.6%), PND: 10 (38.5%), orthopnea: 6 (23.1%), palpitation 11 (42.4%), chest pain 12 (46.2%), cough 7(26.9%), syncope 5 (19.2%), abdominal pain: 4(15.4%), asymptomatic: 0(0%).<sup>[10]</sup> According to a study by Praful J Dudharejia et al., in 2016, had revealed the symptomatology as Exertional dyspnoea : 50(100%), Easy fatigability 43(86%), Pedal oedema 34 (68%), PND 33 (66%), Orthopnea 33 (66%), Chest pain 23 (46%), Abdominal pain 18 (36), Cough 13 (26), Palpitation 9 (18), Syncope 8 (16), asymptomatic : 0(0%).<sup>[12]</sup>

In our study Basal crackles were seen in 82% of the subjects. Raised JVP was seen in 69%. Pedal edema was present in 67% of cases. Pericardial effusion was seen in 6% of patients and Hepatomegaly was noticed in 45% of the patients. According to a study by Praful J Dudharejia et al., in 2016, Basal crepitations: 39 (78%), Pedal edema 36 (72%), Raised JVP 33(66%), Hepatomegaly 21(42%), were observed in their study group.<sup>[12]</sup>

In our study, the mean left ventricular ejection fraction was found to be  $36.2 \pm 5.2\%$  (range: 22.0 - 45.0 %). The mean left ventricular end diastolic diameter and left ventricular end systolic diameter were  $5.9 \pm 0.5$  cm (range: 5.3 - 7.2 cm) and  $4.8 \pm 0.5$  cm (range: 4.0 - 6.0 cm) respectively. The mean heart rate was  $102.2 \pm 26.8$  (range: 54.0 - 174.0). In a study by Kishore Teple et al., in 2016, left ventricular ejection fraction was found to be  $26.3 \pm 10.3$ , The mean left ventricular end diastolic diameter and left ventricular end systolic diameter were  $6.6 \pm 0.4$  cm and  $5.5 \pm 0.4$  cm respectively.<sup>[10]</sup>

## CONCLUSION

We studied the Clinical profile of 100 patients with Dilated cardiomyopathy who attended Govt. Medical College and associated Dr Susheela Tiwari Hospital ,Haldwani ,Uttarakhand in a duration of 2 years (September 2017-2019)and concluded the study as follows:-

- Dilated cardiomyopathy was observed at all age groups but more common in middle aged [41-60years].
- It was more common in males [68%].

- The common presenting symptoms were exertional dyspnea(100%). [NYHAI>NYHA III] followed by easy fatigability [73%] and pedal edema [67%].In our study NYHA grading correlated well with LV ejection fraction.
- Mitral regurgitation [73%] was present in significant number of patients.
- Apex beat was found to be shifted in 60% of patients. Cardiomegaly was present in almost all the cases.
- 82% of patients were discharged with significant improvement by the judicious and proper use of beta blockers, ACEI, diuretics, anticoagulants and digoxin and other supportive measures as and when needed.
- On the basis of the above observations it could be postulated that DCM is a potentially serious condition, needs tight monitoring and regular sharp and precise watch over symptoms and signs of vital organ dysfunction, triggering factors for worsening of symptoms awareness and early detection of any adverse drug side effect, electrolyte imbalance and echocardiographically detected changes in the cardiac morphological and LV functional status. Awareness and early detection of above symptoms was responsible for the lower mortality in our study group and early amelioration of symptoms.

12. Dudharejia PJ et al: Clinical profile of Dilated Cardio Myopathy Journal of Research in Medical and Dental Science, 2016

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