

Tertiary care centre based study of clinical profile of patients with non-ischaemic dilated cardiomyopathy

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Abstract

Introduction: Non ischaemic DCMP is defined as depressed systolic function in the absence of significant coronary artery disease.

Objective: To study the clinical profile patients with non-ischaemic dilated cardiomyopathy in tertiary care hospital.

Design: Observational cross-sectional study where cases are selected randomly from department of General Medicine and Cardiology in tertiary care hospital.

Setting: B. J. Medical College and Sassoon General Hospital, Pune, Maharashtra.

Sample: 30 cases by random selection, fulfilling inclusion criteria (Age > 12 yr.; LVEF <45%; normal coronary angiography report) and exclusion criteria (Age < 12 yr.; ischaemic DCMP)

Methods: Patients admitted with signs and symptoms of cardiac failure, satisfying inclusion criteria of the study were evaluated in detail to find out the cause of non-ischaemic DCMP.

Results: In this study, majority (56.7%) of the participants were from age group 40 to 60 years followed by less than 40 years (23.3%), (70%) participants were male and (30%) participants were female. (33.3%) of the participants had grade III & IV exertional dyspnea followed by (30%) had grade II exertional dyspnea. Majority (96.7%) participants had easy fatigability followed by orthopnea (86.7%), PND(83%), Palpitation (50%) and abdominal pain (50%).

Conclusions: Dilated cardiomyopathy was observed at all age groups but more common in middle and elderly

population. It is more common in males. The common presenting symptoms include exertional dyspnea, easy fatigability and pedal edema. The most common etiology observed was alcoholic followed by idiopathic, diabetic, peripartum and miscellaneous.

Keywords: ECG, 2-D Echo, NIDCM.

Introduction

Cardiomyopathies are disorders of the cardiac muscle that cause mechanical and/or electrical dysfunction that result in dilated, hypertrophic, or restrictive pathophysiology. (1) Among the cardiomyopathies, hypertrophic, restrictive, dilated, arrhythmogenic right ventricular cardiomyopathy, dilated cardiomyopathy is most common. (2) Dilated cardiomyopathy is a heterogeneous disease entity, characterized by enlargement of both ventricles of heart, accompanied by diminished myocardial contraction. Consequently, the diagnosis of dilated cardiomyopathy is based on functional and morphological cardiac abnormalities, but the etiology of the underlying disorders is diverse in origin and mechanism. Underlying etiologies vary from genetic, infectious, autoimmune and toxic causes(3). Non ischemic dilated cardiomyopathy (NIDCM) is defined as depressed systolic function (left ventricular ejection fraction (LVEF<45%) in the absence of significant coronary artery disease (defined as >50% luminal stenosis on coronary angiography and/or a history of coronary revascularization or myocardial infarction.(4)As per literature, there is no age limit to DCM occurrence, but it is most common in patients aged 40 to 59 years, while age is considered a critical risk factor for mortality in patients with DCM [5,6,7]. Majority of studies in DCMP revolve around ischaemic DCMP with little literature regarding non ischaemic DCMP. Also, the prognosis is poor for patients with

dilated cardiomyopathy with an LVEF <35%, right ventricular involvement and NYHA functional class III. (8) Hence this study is undertaken to know about the varied clinical presentations and etiologies of non-ischemic dilated cardiomyopathy.

Aim And Objectives

To evaluate the cases of non-ischaemic dilated cardiomyopathy in terms of clinical profile including ECG, 2 D echo and complications during hospital stay.

Materials And Method

The study was conducted in a government multispecialty tertiary care hospital and medical college. The study was performed according to protocol mentioned below and it was approved by institutional Ethics committee, vide reference no 0221100-100

This is the observational cross-sectional study wherein 30 study participants were included by random sampling method; fulfilling inclusion and exclusion criteria as follow:

Inclusion Criteria

- 1 Age > 12 years.
- 2 Patient with 2D echo findings suggestive of dilated cardiomyopathy (LVEF < 45%)
- 3 Normal coronary angiography.

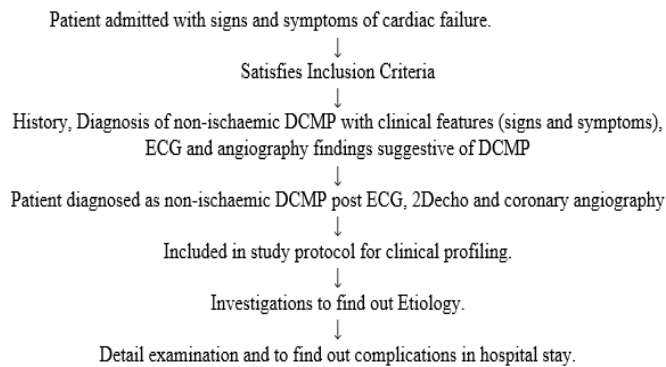
Exclusion criteria

1. Age < 12 years.
2. Patients with dilated cardiomyopathy showing significant coronary artery disease on coronary angiography.

Once the patients were selected according to the inclusion and exclusion criteria, after taking a written informed consent, a detailed history with respect to their demographic features and general examination was done according to a standardized protocol with due

importance to the clinical features. This data was collected in a predesigned, pretested proforma.

Study Protocol



Tables

As in table 01 and 02, Dilated cardiomyopathy was observed in all age groups but more common in elderly and middle age population and it is also more common in male gender.

Table 1: Frequency distribution according to age.

Age in Years	Frequency (n=30)	Percentage (%)
<40	7	23.3
40 to 60	17	56.7
>60	6	20.0
Total	30	100.0

Table 2: Frequency distribution according to Gender.

Gender	Frequency (n=30)	Percentage (%)
Male	21	70.0
Female	9	30.0
Total	30	100.0

Table no 3 and 4 depicts that majority (96.7%) participants had easy fatigability followed by orthopnea (86.7%), PND (83.3%), Palpitation (50%) and abdominal pain (50%). 33.3% of the participants had grade III & IV exertional dyspnea followed by 30% had grade II exertional dyspnea.

Table 3: Frequency distribution according to Exertional Dyspnoea grading.

Exertional Dyspnoea grading	Frequency (n=30)	Percentage (%)
I	1	3.3
II	9	30.0
III	10	33.3
IV	10	33.3
Total	30	100.0

Table 4: Frequency distribution according to symptoms.

Symptoms	Frequency (N=30)	Percentage (%)
Easy Fatigability	29	96.7
PND	25	83.3
Orthopnea	26	86.7
Chest Pain	11	36.7
Palpitation	15	50.0
Pedal Oedema	16	53.3
Abdominal Pain	15	50.0
Cough	9	30.0
Syncope	2	6.7

As per table no 5, 20% of the participants had icterus, 13.3% participants had pallor on general examination, raise JVP was seen in 50% patients.

Table 5: Frequency distribution according to General Examination findings.

On General Examination	Frequency (n=30)	Percentage (%)
Pallor	4	13.3
Icterus	6	20.0
Cyanosis	0	0.0
Lymphadenopathy	0	0.0
Raised JVP	15	50

As per table no 6, 76.7% of the participants had bilateral crepts and 24.3% participants had normal respiratory system.

Table 6: Frequency distribution according Respiratory System findings.

Respiratory System	Frequency (n=30)	Percentage (%)
Bilateral Crepts	23	76.7
Within normal limits	07	24.3
Total	30	100.0

As per table no 7, 33.3% of the participants had hepatomegaly and 23.3% had moderate ascites while 43.3% participants had normal abdominal system.

Table 7: Frequency distribution according Abdominal System findings.

Abdominal System	Frequency (n=30)	Percentage (%)
Hepatomegaly	10	33.3
Moderate Ascites	7	23.3
Within normal limits	13	43.33
Total	30	100.0

Table 8: Frequency distribution according to ECG Findings.

Parameters		Frequency	Percentage
Axis	Normal	26	87
	LAD	4	13
Rhythm			
	Sinus tachycardia	12	40
LVH		2	7
Non-specific ST-T changes		2	6.6
Arrhythmias	AF	1	3.3
	Atrial flutter	1	3.3
	Ectopics	1	3.3
LBBB		6	20
RBBB		1	3.3

From table no 08, the QRS axis was normal in 87% of our patients with left axis deviation in 13% which were similar with all other studies. Sinus tachycardia was most common finding seen in both. Other ECG parameters like low voltage complex, LBBB, RBBB, atrial fibrillation, atrial flutter, ventricular ectopics and non-significant ST T changes were seen as shown in the table no. 8.

Table 9: Frequency distribution according to Echocardiographic Findings

Echocardiographic Findings	Frequency (n=30)	Percentage (%)	
Ejection Fraction	30-39	12	40.0
	20-29	14	46.7
	<20	4	13.3
LVEDD	4.5-4.9 cm	5	16.7
	5 - 5.9 cm	11	36.7
	> 6 cm	14	46.7
LVSD	3.5 - 4 cm	6	20.0
	4 - 4.9 cm	9	30.0
	>5 cm	15	50.0
Mitral Regurgitation	21	70.0	
Tricuspid Regurgitation	3	10.0	
Pericardial Effusion	2	6.7	

As in table no 9, global hypokinesia and dilatation of all four chambers were seen in all the patients. The mean LV ejection fraction was 30.87%. The LV ejection fraction was <20% in 6% of patients. The mean LV end diastolic diameter was 5.86cm with majority, i.e.,53% of subjects having LV end-diastolic diameter more than 6cm. The mean LV end-diastolic diameter was 4.75cm with majority of patients (66%) having end systolic diameter more than 5cm.

Discussion

33.3% of the participants had grade III & IV exertional dyspnea followed by 30% had grade II exertional dyspnea. Majority (96.7%) participants had easy

fatigability followed by orthopnea (86.7%), PND (83.3%), Palpitation (50%) and abdominal pain (50%). This presentation is similar to the clinical profile seen in other studies. In the Hoskatti et al. study (9) 76.7% of patients had basal crepitations, 50% participants had raised JVP and 33.3% had hepatomegaly. 20% participants had hepatomegaly.

Physical findings	Our Study (%)	S. Ahmad et al (%) ¹⁰
Basal crepitations	76.7	90
Pedal edema	77	67.2
Raised JVP	50	83
Hepatomegaly	20	54

Electrocardiographic profile

The QRS axis was normal in 87% of our patients with left axis deviation in 13% which were similar with all other studies. Sinus tachycardia was most common finding seen in both S. Ahmad el al study as well as in Rangabashyam SR et al.

Other ECG parameters like low voltage complex, LBBB, RBBB, atrial fibrillation, atrial flutter, ventricular ectopics and non-significant ST T changes were seen.

Parameters		Our study	S. Ahmad et al ⁶⁷	Rangabashyam SR et al ⁷²
Axis	Normal	87	70.9	72.92
	LAD	13	20	18.75
Rhythm				
	Sinus tachycard	40	69.1	31.85

	ia			
LVH		7	40	20.83
Non-specific ST-T changes		6.6	10	
Arrythmias	AF	3.3	9.1	16.67
	Atrial flutter	3.3	5.4	6.25
	Ectopics	3.3	0	22.92
LBBB		20	32	6.25
RBBB		3.3	-	4.175

Echocardiographic Profile

Global hypokinesia and dilatation of all four chambers were seen in all the patients. The mean LV ejection fraction was 30.87%. The LV ejection fraction was 30.87%. Similar findings were seen in Ahmad el al ¹⁰ studies.

Summary

The present study was observational cross-sectional study to look for various etiology of non-ischemic dilated cardiomyopathy. To study its clinical profile, electrocardiographic and echocardiographic profile and complications during hospital stay. A total sample size of 30 was studied out of which 70% study population was male group.

1. Dilated cardiomyopathy was observed in all age groups but more common in elderly and middle age population.
2. Dilated cardiomyopathy is more common in males (70%).
3. Majority (96.7%) participants had easy fatigability followed by orthopnea (86.7%), PND (83.3%), Palpitation (50%) and abdominal pain (50%).

4. 33.3% of the participants had grade III & IV exertional dyspnea followed by 30% had grade II exertional dyspnea.

5. 70% participants had no co-morbidities while 20% participants had one co-morbidity and 10% had two co-morbidities. 16.7% participants had hypertension and 13.3% had diabetes mellitus. 40% participants had alcohol history and 10 % participants had smoking history.

6. The most common type was alcoholic DCMP (33.3%), second most common was Idiopathic (30%) followed by diabetic DCMP (13.4%), peripartum DCMP (6.7%), HIV infection (6.7%). Less common causes were anthracycline induced cardiomyopathy, valvular heart disease, cocaine drug abuse. Coronary angiography was done in all patients to exclude ischemia related dilated cardiomyopathy.

7. Biventricular failure seen in 73.3% cases while exclusively LVF seen in 20% and RVF seen in 6.7%. Arrhythmias in the form of atrial fibrillation, atrial flutter and ectopics accounted for 10.2% of the study patients.

8. Chest radiography revealed cardiomegaly in majority of cases.

9. The electrocardiographic profile consisted of sinus tachycardia, atrial fibrillation, atrial flutter, ectopics, LBBB and RBBB pattern. Low voltage complex was seen in 30% and LVH was seen in 7%.

10. Echocardiographic profile revealed reduced ejection fraction in all case and global hypokinesia. Mitral regurgitation was in 70% patients and pericardial effusion was seen in 6.7%.

Conclusion

From the study findings, it can be concluded that dilated cardiomyopathy was observed at all age groups but more

common in middle age and elderly population. Majority of patients were males (70%). The most common symptom of DCM was exertional dyspnoea, easy fatigability and pedal oedema. Other findings observed were hepatomegaly, raised JVP, global hypokinesia and reduced ejection fraction. Oedema is presentation of renal, cardiac and liver diseases but if a patient presents with dyspnoea, easy fatigability and pedal oedema in a middle age group then DCMP should be suspected and early treatment will be beneficial.

The most common aetiology observed was alcoholic followed by diabetic, peripartum dilated cardiomyopathy and HIV.

Future dilated cardiomyopathy studies should include a larger sample size, follow ups to obtain more precise data on the symptomatology and the impact of comorbidities resulting in dilated cardiomyopathy.

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Ethical Approval: The study was approved by the Institutional Ethics Committee

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