IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 17, Issue 3 Ver.9 March. (2018), PP 42-47
www.iosrjournals.org

A Study of Clinical Profile of Patients with Dilated Cardiomyopathy in Correlation with ECG and Echocardiography In Age Less Than 40 Years.

Dr. Siddharth Kapoor[1], Dr. Bushra Amin[2], Dr. R. K. Jha[3]
[1]*Senior Resident, Department of General Medicine, Rajendra Institute of Medical Sciences, Ranchi.*
[2]*Medical Officer, Department of Medicine ,Orchid Medical Center, Ranchi.*
[3]*Professor, Department of Medicine, Rajendra Institute of Medical Sciences, Ranchi.*
Corresponding author: Dr. Siddharth Kapoor

Abstract: *There has been increasing incidence of Dilated Cardiomyopathy in India and especially in age less than 40 years and have been associated with serious complications and mortality. Because most of the cause under 40 years of age are reversible, thus arises the need for proper diagnosis and management. This study was taken to find out the most important etiology of Dilated cardiomyopathy in younger age group, using clinical symptoms, signs, ECG, echocardiography and blood investigations. This was a cross sectional study of 1 year, comprising of 60 patients of age group less than 40 years. The inclusion criteria was LVEF< 45%, LVED<3cm/body surface area, global hypokinesia and dilatation of all the chambers of the heart. The most important etiology was peripartum which included 33.3% of population followed by alcoholic myopathy. Rare causes included SLE and cardiomyopathy due to iron overload and compromised of 2 patients out of 60. 100% of the patients had dyspnea and 60 %had paroxysmal nocturnal dysnea. Basal crepitation was seen in 93.33%, followed by raised JVP in 73.3%. Ectopic beats were seen in 53.3 % and tachycardia in 46.6%. Chest radiography revealed 53.3% of patients with pulmonary plethora and pleural effusion in 20%. Echocardiography revealed valvular abnormalities with Mitral regurgitation in 73.3% of the patients. Most of the patients were in clinical failure with mainly in NYHA class IV. This study was compared with Rana et al and it was found that alcohol was the most common cause in 23.3% of patients followed by peripartum in 15% of the patients.*

Keywords: *dilated cardiomyopathy,Echocardiography,ECG, dyspnea.*

Date of Submission: 03-03-2018 Date of acceptance: 19-03-2018

I. Introduction

Cardiomyopathy is a primary disorder of the cardiac muscle that causes abnormal myocardial performance and is not the result of pericardial, valvular,hypertensive or congestive diseases1. Dilated cardiomyopathy is an important cause of heart failure and accounts for upto 25% of all causes of congestive heart failure. Incidence of dilated cardiomyopathy is reported to be 5 to 8 cases per 1,00,000 population per year. It occurs more frequently in males and common in blacks2.The most widely used functional classification of cardiomyopathy recognizes three disturbances of functions- dilatation, hypertrophy and restriction. Dilated cardiomyopathy is the most common variety comprising over 90% of cases. The most common dilated cardiomyopathy is ischemic dilated cardiomyopathy followed by idiopathic/familial and alcoholic3 but in age <40 years most common was idiopathic followed by alcoholic in a study done by Rana et al4. The initial insult to the myocardium is caused by ischemia, toxin, metabolic and immunological mechanism, which damages the heart muscle. The pathophysiology and clinical presentation is similar in all. The most common clinical presentation is congestive heart failure, usually left. The patient can also present with symptoms secondary to arrhythmia, stroke9embolic infarction)or sudden death5.The natural history of dilated cardiomyopathy is not well established. Many patients have minimal or no symptoms with unpredictable prognosis. In symptomatic patients course of the disease deteriorates progressively with 50% succumbing within a year.The annual mortality rate for typical patient of dilated cardiomyopathy with heart failure is about 11 to 13%.A minority of patients may improve spontaneously6. Exact epidemiological data on dilated cardiomyopathy in India is lacking. Given the high prevalence of congestive heart failure in the country and the increasing use of echocardiography ,the incidence of dilated cardiomyopathy is increasing. With rapid advancement in molecular genetics and uncovering of underlying etiologies, dilated cardiomyopathy is being recognized as a specific diagnosis and not one of exclusion. Dilated cardiomyopathy is the most common indicator for cardiac transplantation on the west7. In the view of high prevalence of chronic heart failure and underlying dilated

cardiomyopathy and lack of data in Dilated cardiomyopthy ,this study was undertaken. Usually patients present with previous history of myocardial infarction or angina. Some patients with Ischemic DCM have no history of Myocardial infarction. This subgroup may be confused with idiopathic DCM8. Other than history, the only potentially distinguishing feature between Idiopathic and alcoholic cardiomyopathy is that the latter may present with relatively high cardiac output failure9.

Objectives

1. To study the clinical profile of patients with dilated cardiomyopathy with age less than 40 years of age .
2. To study the electrocardiographic and echocardiographic profile of these patients.
3. Etiology of dilated cardiomyopathy in age <40 yrs in patients admitted to RIMS, Ranchi.

II. Materials And Methodology

In this study 60 subjects were those who were admitted with symptoms and signs of heart failure (clinically suspected and echocardiographically proven), in RIMS over a period of 1 year. Thus the study design chosen was one year cross sectional study. The inclusion criteria was 1) clinical criteria including symptoms of dysnea, palpitations, PND, orthopnea, pedal edema, chest pain, cough, easy fatigubility etc and signs of basal crepitations, raised VP, hepatamegaly, pedal edema, S3, murmurs etc.2) ECHO criteria- LVEF <45%, LVED>=3cm/body surface area, global hypokinesia and dilatation of all chambers of heart. This was based on the recommendation of the American Society of echocardiography and AHA. The exclusion criteria were patients with valvular heart disease, congestive heart disease, pericardial disease, cor pulmonale with congestive heart failure, hypertrophic cardiomyopathy, restrictive cardiomyopathy, hypertension. Diagnosis of ischemic cardiomyopathy was based on either past history of MI or a coronary angiography showing significant luminal occlusion (>70%). Peripartum cardiomyopathy was diagnosed based on the criteria laid down by Demakis10 and collegues which includes 1) development of cardiac failure in the last month of pregnancy or within 5 months of post partum. 2) Absence of recognizable heart disease prior to the last month of pregnancy. 3) Left ventricular systolic dysfunction demonstrated by classical echocardiographic criteria. 4) Absence of other causes of heart failure. Diabetic cardiomyopathy was made in patients with long standing (>=10 years) DM in whom no other cause was obvious. Similarly patients with echocardiography proven dilated cardiomyopathy with history of long term alcohol intake in whom no other cause was found were included as alcoholic cardiomyopathy. Patient in whom no other cause was found were categorised as Idiopathic dilated Cardiomyopathy.

III. Results

We had 60 patients of which males comprised 50% and females comprising 50%. Among males the majority of cases were between 30-40 years of age while females comprising 20-30 years of age.

Table - I: Symptom Profile

S. No.	Symptoms	N	%
1	Dyspnea	60	100
2	Palpitation	34	56.6
3	PND	36	60
4	Orthopnea	32	53.3
5	Chest Pain	24	40
6	Pedal edema	42	70
7	Cough	36	60
8	Abdominal pain	20	33.3
9	Easy fatigability	50	83.3
10	Syncope	10	16.6
11	Asymptomatic	None	0
12	Misc	14	23.3

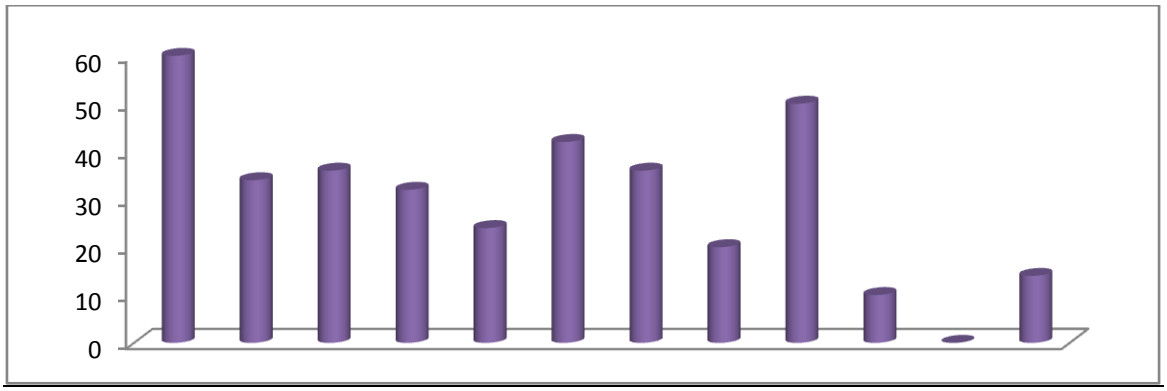


Table - II : Physical Signs

S. No	Signs	N	(%)
1	Basal crepitations	56	93.33
2	Raised JVP	44	73.3
3	Hepatomegaly	28	46.6
4	Pedal edema	46	76.6
5	LV S3	28	46.6
6	RV S3	12	20
7	Pan systolic murmur at apex (MR)	28	46.6
8	Pan systolic murmur in tricuspid area (TR)	6	10
9	SBP<100 mg Hg	16	26.6
10	Focal neurological deficit	2	3.3

Table – III : Abnormalities of Peripheral Pulse

S. No	Pulse	N	(%)
1	Tachycardia	28	46.6
2	Bradycardia	2	3.3
3	Atrial fibrillation	8	13.3
4	Ectopic beats	32	53.3
5	Pulsus alternans	2	3.3

Table – IV : Electrocardiographic Profile

Parameters		N	%
QRS axis	Normal	48	80
	Left axis deviation	8	13.3
	Right axis deviation	4	6.6
Arrhythmias	Sinus tachycardia	24	40
	Atrial ectopics	6	10
	Atrial fibrillation	8	13.3
	SVT	4	6.6
	Ventricular ectopics	28	46.6
	Ventricular tachycardia	2	3.3
	Complete heart block	2	3.3
	Left bundle branch block	24	40
	Right bundle branch block	8	13.3
ST-T changes		16	26.6
Atrial enlargement	LAE	8	13.3
	RAE	4	6.6
Ventricular hypertrophy	LVH	12	20
	RVH	4	6.6
	Both	2	3.3

Table – V : Chest Radiographic profile

S. No	Cardiothoracic ratio	n	(%)
1	50-60%	28	46.6
2	60-70%	24	40
3	>70%	4	13.3
4	Pleural effusion	6	20
5	Pulmonary plethora	16	53.3

Table - VI : Echocardiographic Profile

Parameter	Range	n	(%)
Ejection Fraction	40-45%	10	16.6
	30-39%	22	36.6
	20-29%	24	40
	<20%	4	6.6
LVEDD	4.5-4.9 cm	8	13.3
	5.0-5.9 cm	20	33.3
	> 6 cm	32	53.3
LVSD	3.5-4cm	12	20
	4- 4.9cm	20	33.3
	> 5 cm	28	46.6
Mitral regurgitation		42	73.3
Tricuspid regurgitation		6	10
Pericardial effusion		4	6.6

Table – VII : NYHA Class

S. No.	NYHA class	n	%
1	Class I	2	3.3%
2	Class II	10	16.6 %
3	Class III	20	33.3%
4	Class IV	28	46.6%

Majority of the patients were in NYHA class III (33%) and class IV (46%) group

Table – VIII : Heart failure

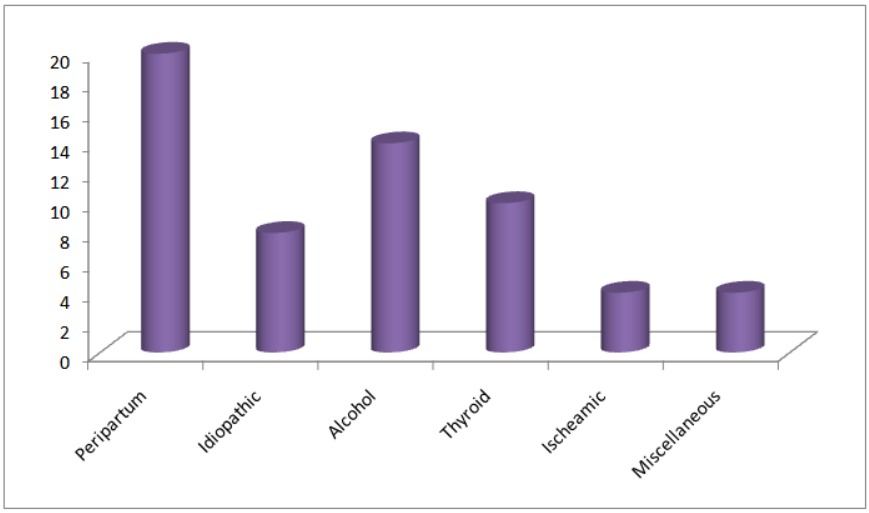
S. No	Chamber involved	n	(%)
1	LVF	10	16.6
2	RVF	2	3.3
3	Biventricular	48	80

Biventricular failure was seen in 80% of patients isolated LV failure was seen in 16.6% and RV failure in 3.3%

Table - IX : Etiological distribution

S. No.	Cardiomyopathy	n	%
1	Peripartum	20	33.3
2	Idiopathic	8	13.3
3	Alcohol	14	23.3
4	Thyroid	10	16.6
5	Ischeamic	4	6.6
6	Miscellaneous	4	6.6

The most common type of dilated cardiomyopathy was Peripartum dilated cardiomyopathy comprising 33.3% of all cardiomyopathies followed by Alcoholic cardiomyopathy (23.3%) and Thyroid cardiomyopathy (16.6%) .Idiopathic DCM was seen in 13.3% of subjects while Ischemic cardiomyopathy was seen in 6.6%. Miscellaneous group included 2 each of-SLE and chronic renal failure.



IV. Discussion

The present study aims to evaluate the clinical profile of patients with dilated cardiomyopathy in less than 40 years of age. Of the total 60 subjects, males comprised 50% and females 50%. In males, DCM was most commonly seen in the (mean age 28.88 ± 4.99 years). In females DCM was predominantly seen in age (22.15 ± 3.19 years). The underlying etiology varied with the age group.

Peripartum dilated cardiomyopathy and thyroid was the most common subtype in females while idiopathic and alcohol cardiomyopathy were the etiologies in males.

In one study 4 conducted by Rana and group in central Gujrat comprised of males 56.66% and females 43.33% and 2/3rd population was between the age group 20-30 years. The most common presentation in our study was biventricular failure which was seen in 80% of cases

Table – X: Showing clinical profile in different studies.

Symptomatology	Our study (%)	Rana and group 2014
Dyspnea	100	95
EF (Easy fatigability)	83.3	85
Pedal edema	70	78.33
PND	60	48.33
Cough	60	58
Palpitation	56.6	55
Orthopnea	53.3	48.33
Abdominal pain	33.3	18.33
Syncope	16.6	3.33

Clinical sign comaparison with rana et al.

	Our Study (%)	Rana et al (%) 2014
Basal crepitations	93.3	93.33
Pedal edama	76.6	66.6
Raised JVP	73.3	83.33
Hepatomegaly	46.6	80
LVS3	46.6	60
RVS3	20	0
FND	3.3	0

Electrocardiographic profile.

The QRS axis was normal in 80% of our subjects with left axis deviation in 13.6% and right axis deviation in 6.6% which were in concordance with all the other studies.

Sinus tachycardia was the most consistent finding in the Rana et al study being found in upto 63.33% of patients. Our study showed sinus tachycardia in 40% of patients. Other ECG parameters like ventricular ectopics, LBBB, Atrial fibrillation, atrial ectopics were comparable to those in all the other studies. **88**

However RBBB, complete heart block and SVT were more commonly present in our study as compared to other studies.

Echocardiographic profile

The mean LV ejection fraction in our study group was 30.87%. This was similar to that in all the other studies on DCM. The mean LV end diastolic diameter was 5.42 cm. The mean LV end systolic diameter was 4.47 cm. These 2 parameters were less compared to those in all the other studies. However fractional shortening was comparable to all the other groups.

Table – II : Showing comparison of chest radiography

Parameter	Present	Massumi et al11	Rana et al2014
Cardiomegaly	100%	100%	96.3%
Pleural effusion	20%	46%	10%
Pulmonary plethora	53.3%	72%	76.2%

In our study 33.3% of patients had anemia, most of the patients had mild anemia (i.e. Hb between 8.5 – 11 gm %). In a study done by A. Justin et al anemia was found in 27% of patients with congestive heart failure. The prevalence of anemia in our study is similar. Anemia is known to be associated with adverse outcome in patients with heart failure.

V. Conclusion

A study of 60 cases of dilated cardiomyopathy was done from Sept 2014 to Sept 2015 who were admitted to Rajendra Institute of medical sciences.

Dilated cardiomyopathy is equal in incidence in age groups 10-20, 20-30, 30-40 aged population and the etiology varies with age in the age group less than 40 years of age. Dilated cardiomyopathy 0f equal incidence in male and female. Biventricular failure was the most common clinical presentation (80%) followed by left heart failure (16.6%) and then right heart failure (3.3%). The most common type was peripartum variety followed by alcohol,thyroid, idiopathic and ischeamic cardiomyopathy. The electrocardiographic profile consisted of ventricular ectopics, sinus tachycardia, left bundle branch block, Atrial fibrillation, right bundle branch block, atrial ectopics, SVT, ventricular tachycardia and complete heart block. LVH was present in 20% of cases. Chest radiography revealed cardiomegaly in all the cases. Pulmonary plethora was seen in significant number of patients (53%).

Pleural effusion was seen less frequently (20%). Echocardiographic profile included reduced ejection fraction and global hypokinesia in all the patients. There was varying degree of left ventricular dilatation. Mitral regurgitation was seen in significant number of patients (73.3%). Pericardial effusion was seen 6% of our patients. Most of the patients were in NYHA class IV (46%) and class III (33%) .

VI. Summary

Dilated cardiomyopathy is the most common type of cardiomyopathy and an important cause of congestive heart failure. Dilated cardiomyopathy is common in the 30-40 years aged population in age group less than 40 years of age. It is equal in incidence in male and female. The most common clinical presentation is biventricular failure followed by left ventricular failure. The most common type is peripartum cardiomyopathy followed by alcoholic, thyroid, idiopathic and ischeamic cardiomyopathy. Chest radiograph showed cardiomegaly in most patients. The common abnormalities on ECG consist of sinus tachycardia, atrial fibrillation and left bundle branch block. Echocardiography revealed reduced ejection fraction and global hypokinesia universally. Mitral regurgitation and pericardial effusion were present in significant number of patients. Ejection fraction correlated well with NYHA class.

References

[1] Zipes D, Libby P, Bonow R, Braunwald E. A Braunwald's heart disease Textbook of Cardiovascular Medicine: The cardiomyopathies. 7th Ed. Philadelphia: Elsivier Saunders; 2005.
[2] Anderson KM, Kannel WB. Prevalence of congestive heart failure in Framingham Heart study subjects. Circulation 1994 ; 13 : S107-S112
[3] Richerdson. WHO Report on classification of cardiomyopathy.Br. Heart J. 1980 ; 44 : 680-682.
[4] Rana Chirag Rathore ,Parag Chavda study on clinical profile of dilated cordiomypathy in Central Gujrat ,2014.
[5] Vijayraghavan G. API Text book of medicine.Disorders of myocardium. 7th ed Chap X.25: 490-491
[6] McKenna CJ, Codd MB, McCann HA, et al: Idiopathic dilated cardiomyopathy: Familial prevalence and HLA distribution. Heart 77:549, 1997.
[7] Akhter WM, Shotan A, Hameed A, et al: Pregnancy associated cardiomyopathy: Clinical profile in 137 patients diagnosed in the U.S. J Am Coll Cardiol 2003 ; 41:1136.
[8] Mitchell GF, Lamas GA, Vaughan DE, Pfeffer MA. Left ventricular remodeling in the year after myocardial infarction. J Am Coll Cardiol 1992 ; 86 : 426-430.
[9] Rubin. Alcohol and the heart. N Engl J Med. 1979 ; 301 : 28-33.
[10] Ritchie. Pregnancy and the heart. AM J Med 2000 ; 1146-49.
[11] Massumi RA, Jorge CR. Primary myocardial disease. Report of 50 cases and review of the subject. Circulation 1965 ; 31 : 19-40.

Dr. Siddharth Kapoor "A Study of Clinical Profile of Patients with Dilated Cardiomyopathy in Correlation with ECG and Echocardiomyopathy In Age Less Than 40 Years.."IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 17, no. 3, 2018, pp 42-47.