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Original Research Article

A Hospital Based Study to Assess the Clinical Profile of Patients with Cardiomyopathy at a Tertiary Health Care Centre: An Observational Study

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Abstract:

Aim: The aim of the present study was to assess the clinical profile of patients with cardiomyopathy at a tertiary health care centre.

Methods: The present study was a prospective study carried out in the Department of Cardiology, Study population was patients admitted with symptoms and signs of heart failure (Clinically suspected and echo cardiography proven) in Department of Medicine. After considering inclusion and exclusion criteria we studied 100 patients.

Results: In our study, majority of the patients were from the age group of above 60 years (45%) followed by 40-59 years (31%). Patients in the age group of 20-39 years were 15%. Patients below 20 years were 9% of study population. Males pedominated female in our study (60%). Most common risk factor for development of cardiomyopathy was coronary artery disease (32%). Diabetes mellitus was seen in 24% patients. Other risk factors observed were alcoholism (21%), hypertension (16%), peripartum period (12%), HIV infection (5%), thyroid disease (5%), connective tissue disorder (5%) and neuromuscular disorder (4%). Dyspnoea was complained by all patients. Pedal oedema was seen in 85% of dilated cardiomyopathy patients and all patients of hypertrophic cardiomyopathy. Syncope and abdominal pain were seen in 3% and 25% patients with dilated cardiomyopathy. 95% of the study population had cardiomegaly. Pulmonary congestion was seen in 83% patients with cardiomegaly. Pleural effusion was seen in 17% patients.

Conclusion: Most common type of cardiomyoipathy is Dilated cardiomyopathy followed by Hypertrophic cardiomyopathy and Restrictive cardiomyopathy. Biventricular failure was the most common clinical presentation followed by left heart failure and then right heart failure.

Keywords: Clinical Profile, Dilated Cardiomyopathy, Heart Failure.

Introduction

Dilated Cardiomyopathy (DCM) is a progressive and usually irreversible myocardial disorder characterized by left ventricular (LV) or biventricular (BV) dilatation and global systolic (contractile) dysfunction. [1] The clinical picture at the time of diagnosis can vary widely from patient to patient; some have no symptoms, whereas others have progressive refractory heart failure. Depending on the diagnostic criteria used, the reported annual incidence varies between 5 and 8 cases per 100,000 population. [2] Males have a 2.5-fold increase in risk, as compared with females. [3]

It is characterized by ventricular and sometimes atrial dilatation, with normal or reduced wall thickness, eventually leading to varying degrees of impaired systolic function in the absence of abnormal loading conditions (such as hypertension or valvular disease) or ischemic heart disease sufficient to cause global systolic impairment. [4,5] Sporadically development of other rhythm disturbances such as supraventricular Tachycardia, atrioventricular block, and atrial fibrillation creates with or without preexcitation, including Wolf-Parkinson-White syndrome. Patients affected severely present with signs and symptoms of heart failure - breathlessness at rest or with exertion, orthopnoea, early-onset fatigue, diaphoresis, exercise intolerance, abdominal pain, and pallor. Occurrence of Peripheral edema and cachexia is observed late in the course of the disease. [6]

The most common cause of dilated Cardiomyopathy is idiopathic (≈50%). About 20% to 35% of patients with idiopathic cardiomyopathy while the most commonly known causes of dilated Cardiomyopathy are myocarditis (46%) and neuromuscular diseases (25%) followed by familial cardiomyopathy. [7,8]

Heart failure, thromboembolism, or sudden death are the presenting manifestations of DCM. [9] Majorly (70 %) of heart failure caused by DCM are observed from the loss of the pump due to dilatation. In contrast, there is an occurrence of 30% of sudden cardiac death from arrhythmias. [10,11,12] HF is a type of clinical syndrome which is found to occur in individuals with acquired or inherited abnormality of cardiac structure and/or function, form a sequence of clinical symptoms (fatigue and dyspnoea) and signs (edema and rales) that cause recurrent hospital stays, quality of life becomes poor, and life expectancy is shortened. [13]

Detailed clinical examination, electrocardiogram and chest roentgenogram and a two-dimensional echocardiogram with Doppler flow studies is of importance in determining the underlying causes and in assessing the severity of ventricular systolic and/or diastolic dysfunction, as well as valvular dysfunction in patients with cardiomyopathy. Cardiomyopathies are treated according to cause and symptoms of the patients. [14]

The aim of the present study was to assess the clinical profile of patients with cardiomyopathy at a tertiary health care centre.

Materials and methods

The present study was a prospective study carried out in the Department of Cardiology, Ruban Memorial Hospital, Patna, Bihar, India for one year . Study population was patients admitted with symptoms and signs of heart failure (Clinically suspected and echo cardiography proven) in Department of Medicine. After considering inclusion and exclusion criteria we studied 100 patients.

Inclusion criteria: 1. Patients with symptoms and signs of heart failure 2. Patients with ECHO findings Left ventricular ejection fraction <45%, Left ventricular end diastolic dimension > 3 cm / body surface area, Globalhyokinesia and Dilatation of all the chambers of heart.

Exclusion criteria: 1. Patients with Valvular heart disease, Pericardial disease and Congenital heart disease 2. Patients with Cor. pulmonale with CHF. 3. Patients with h/o Hypertension.

A valid written consent was taken from the patients after explaining study to them. Data was collected with pre tested questionnaire. Data included sociodemographic data like age, sex. Detailed clinical history and examination was carried out. Signs and symptoms of heart failure included dyspnea, palpitation, PND, orthopnea, pedal edema, chest pain, cough, easy fatigability, etc. Cardiac examination included basal crepitations, JVP, hepatomegaly, pedal edema, S3, murmurs, etc. These patients were subjected to echocardiography, ECG and chest radiography. The echocardiographic criteria were based on the recommendations of the American society of echocardiography and American heart association. The diagnosis of ischemic cardiomyopathy was based on either past history of myocardial infarction or coronary angiography showing significant luminal occlusion (>70%). Peripartum cardiomyopathy was diagnosed based on the criteria laid down by Demakis and colleagues which includes (1) Development of cardiac failure in the last month of pregnancy or within 5 months of delivery. The diagnosis of diabetic cardiomyopathy was made in patients with long standing (>10 years) diabetes mellitus and history of long term (> 10 years) alcohol intake in whom no other causes were found were included as alcoholic cardiomyopathy. Cardiomyopathy with no obvious cause was included in idiopathic cardiomyopathy. Data was entered in excel sheet and analysed with SPSS version 23.0

Results

Table 1: Distribution of patients according to age groups and gender

Age groups in years	N	%
< 20	9	9
20 to 39	15	15
40 to 59	31	31
> 60	45	45
Gender		
Male	60	60
Female	40	40

In our study, majority of the patients were from the age group of above 60 years (45%) followed by 40-59 years (31%). Patients in the age group of 20-39 years were 15%. Patients below 20 years were 9% of study population. Males pedominated female in our study (60%).

Table 2: Distribution of patients according to presence of risk factor

Risk factor/Past history	N	%
CAD	32	32
DM	24	24
Hypertension	17	17
Alcoholism	21	21
HIV	5	5
Peripartum	12	12
Thyroid Diseases	5	5
CTD	5	5
NMD	4	4
No risk	7	7

Most common risk factor for development of cardiomyopathy was coronary artery disease (32%). Diabetes mellitus was seen in 24% patients. Other risk factors observed were alcoholism (21%), hypertension (16%), peripartum period (12%), HIV infection (5%), thyroid disease (5%), connective tissue disorder (5%) and neuromuscular disorder (4%).

Table 3: Distribution of patients according to symptoms

Symptoms	DCM	HOCM	RCM
Dyspnoea	90	6	4
Palpitation	70	6	4
Chest pain	32	6	4
Pedal swelling	85	5	0
Syncope	3	0	0
Abdominal Pain	25	0	0

Dyspnoea was complained by all patients. Palpitation was seen in 70% of dilated cardiomyopathy and in all patients of hypertrophic and restrictive cardiomyopathy. Chest pain was complained by 32% of the dilated cardiomyopathy patients and all patients of hypertrophic and restrictive cardiomyopathy. Pedal oedema was seen in 85% of dilated cardiomyopathy patients and all patients of hypertrophic cardiomyopathy. Syncope and abdominal pain were seen in 3% and 25% patients with dilated cardiomyopathy.

Table 4: Distribution of patients according to Chest X ray findings

Chest X Ray Findings	N	%
Cardiomegaly	95	95
Pulmonary Congestion	83	83
Pleural Effusion	17	17

95% of the study population had cardiomegaly. Pulmonary congestion was seen in 83% patients with cardiomegaly. Pleural effusion was seen in 17% patients.

Table 5: ECG changes in patients with cardiomyopathy

	ECG		DCM	HCM	RCM	P value
		Regular	76	4	0	0.052
RHYTHM		irregular	14	2	4	
AXIS		Normal	56	2	4	0.634
		RAD	4	0	0	
		LAD	40	4	0	
ST-T- CHANGES		14		4	0	0.110
ARRYTHMIA		AF	20	2	2	0.48
		AFL	2	0	0	1
Others		VPCs	22	0	0	1
		LVH	22	6	0	
		1st Degree HB	4	0	0	1
		2nd Degree HB	2	0	0	1
Bundle branch block		3rdDegree HB	2	0	0	1
		LBBB	34	2	0	0.789
		RBBB	10	0	0	

The electrocardiographic profile included abnormalities of rate, rhythm, axis and chamber enlargement. The most common abnormality in Dilated cardiomyopathy patients was left bundle branch blocks followed by VPC's. Right bundle branch block was observed in 10 subjects. Non-specific ST-T changes were seen in 18 subjects whereas atrial fibrillation was present in 24 subjects. LVH was seen in 28 subjects.

Table 6: ECHO findings in patients with dilated cardiomyopathy

ECHO findings	N	%
Diastolic dysfunction	43	43
MR	96	96
TR	78	78
AR	5	5
Clots	5	5
Pericardial effusion	21	21
Pulmonary Hypertension	21	21
Global hypokinesia	100	100

Global hypokinesia and dilatation of all 4 chambers were seen in all the patients.

Discussion

The incidence and prevalence of heart failure related to cardiomyopathy is increasing. [15] The incidence of DCM is reported to be 5 to 8 cases per 1,00,000 population per year. Males are affected 3 times more than females. [16] Cardiomyopathies have multiple etiologies. The classification of cardiomyopathy has varied over the past century. Cardiomyopathies may be simply divided into dilated or non-dilated categories. Within each of these groups, the myocardium may be hypertrophic or non-hypertrophic, and it may be accompanied by a restrictive (diastolic ventricular dysfunction) and/or congestive (systolic ventricular dysfunction) physiology. [17-19] Dilated cardiomyopathy is the most common variety of cardiomyopathy. [20]

In our study, majority of the patients were from the age group of above 60 years (45%) followed by 40-59 years (31%). Patients in the age group of 20-39 years were 15%. Patients below 20 years were 9% of study population. Similar findings were seen in Hoskatti et al [21] where mean age of the patient was 56.88 ± 15.99 years. Males pedominated female in our study (60%). Most common risk factor for development of cardiomyopathy was coronary artery disease (32%). Diabetes mellitus was seen in 24% patients. Other risk factors observed were alcoholism (21%), hypertension (16%), peripartum period (12%), HIV infection (5%), thyroid disease (5%), connective tissue disorder (5%) and neuromuscular disorder (4%). In Teple et al [22] study 52% patients were of DCM, 42% of HCM and 4% of RCM. Coronary artery disease (30%)and Diabetes mellitus (22%) were commonly seen risk factors. Parale et al [23] found that 7.5% patients had diabetes, 5% were alcoholics, 12.5% were in peripartum period and 75% patients had no risk.

Dyspnoea was complained by all patients. Palpitation was seen in 70% of dilated cardiomyopathy and in all patients of hypertrophic and restrictive cardiomyopathy. Chest pain was complained by 32% of the dilated cardiomyopathy patients and all patients of hypertrophic and restrictive cardiomyopathy. Pedal oedema was seen in 85% of dilated cardiomyopathy patients and all patients of hypertrophic cardiomyopathy. Syncope and abdominal pain were seen in 3% and 25% patients with dilated cardiomyopathy. This result was similar to the clinical profile seen in other studies. [24-26] 95% of the study population had cardiomegaly. Pulmonary congestion was seen in 83% patients with cardiomegaly. Pleural effusion was seen in 17% patients. Pulmonary congestion was seen in 72% and 76.3% patients in Massumi et al [27] and Ahmed et al respectively. [28] The electocardiographic profile included abnormalities of rate, rhythm, axis and chamber enlargement. The most common abnormality in Dilated cardiomyopathy patients was left bundle branch blocks followed by VPC's. Right bundle branch block was observed in 10 subjects. Non specific ST-T changes were seen in 18 subjects whereas atrial fibrillation was present in 24 subjects. LVH was seen in 28 subjects. Global hypokinesia and dilatation of all 4 chambers were seen in all the patients. Other ECG parameters like ventricular ectopics, LBBB, Atrial fibrillation, were comparable to those in all the other studies. [24,29]

Conclusion

Most common type of cardiomyoipathy is Dilated cardiomyopathy followed by Hypertrophic cardiomyopathy and Restrictive cardiomyopathy. Biventricular failure was the most common clinical presentation followed by left heart failure and then right heart failure.

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