

CORONARY ANGIOGRAPHY IN DILATED CARDIOMYOPATHY PATIENTS PRESENTING TO CARDIAC HOSPITAL AT LUMBINI PROVINCE NEPAL

Samir Gautam,¹ Sachin Dhungel,¹ Bishal KC,¹ Rajesh Panjiyar¹

ABSTRACT

INTRODUCTION

Dilated cardiomyopathy is one of the common cause of patients presenting with symptoms of heart failure. It is often treated as respiratory disease in the absence of specific evaluation. We wanted to evaluate the presence of coronary artery disease in dilated cardiomyopathy patients.

MATERIAL AND METHODS

It was a prospective observational study conducted at Gautam Buddha Community Heart Hospital. One hundred sixty patients with the diagnosis of dilated cardiomyopathy were evaluated with coronary angiography.

RESULTS

Distribution of patients was males 68.1% and females 31.9%. Most patients (61.2%) were in the age group 45 to 65 years. Dyspnea (80.6%), fatigue (25%), cough (20%), chest discomfort (16.9%), edema (15%) and palpitation (11.9%) were common symptoms. Majority of patients were smoker 41.9%. Coronary artery disease was found in 44.4% with significant stenosis in 36.3%. Among the patients with significant coronary artery stenosis two vessel disease was present in 54%, one vessel disease in 32% and three vessel disease in 14%.

CONCLUSION

Coronary artery disease was frequently present in dilated cardiomyopathy patients. Optimization of management becomes easier with thorough evaluation of DCM patients including coronary angiography.

KEYWORDS

Dilated cardiomyopathy, Coronary angiography, Lumbini Province, Nepal

1. Gautam Buddha Community Heart Hospital, Butwal, Lumbini Province, Nepal

<https://doi.org/10.3126/jucms.v11i02.57988>

For Correspondence

Dr. Samir Gautam
Department of Cardiology
Gautam Buddha Community Heart Hospital,
Butwal, Rupandehi, Nepal
Email: samirgautam22@gmail.com

INTRODUCTION

Dilated cardiomyopathy is commonly present in patients presenting with symptoms of heart failure. While diagnosing dilated cardiomyopathy, it is important to rule out secondary causes of heart failure such as coronary artery disease (CAD).¹ Ischemic cardiomyopathy patients frequently do not complain of angina but display dyspnea as the only primary presenting feature. Such patients are usually managed without any revascularization procedures.^{2,3} It is highly likely that LVEF can improve if timely angiography followed by revascularization is performed in such patients.⁴ Studies have observed beneficial cardiovascular outcomes with coronary angiography and intervention as per need when hibernating myocardium is partially responsible for a decrease in LVEF.^{3,5,6}

In central Nepal dilated cardiomyopathy was found to be one of important cause of presentation of heart failure.⁷ Ischemic cardiomyopathy was found to have important cause of dilated cardiomyopathy based on history of coronary artery disease in western Nepal.⁸ But in these subset of patients coronary artery evaluation was not done. Ischemic heart disease being one of the common cause of heart failure and dilated cardiomyopathy being one of the common cause of heart failure presentation^{9,10} we wanted to evaluate dilated cardiomyopathy patients with coronary angiography.

MATERIAL AND METHODS

This study was conducted at Gautam Buddha Community Heart Hospital, Rupandehi, Nepal from March 2021 to February 2023 after getting approval from institutional review committee. Patients diagnosed as a case of dilated cardiomyopathy were discussed regarding study. Those patients who gave informed consent for further evaluation with coronary angiography were included in study. Known coronary artery disease cases were excluded. Total of 160 patients giving consent were included in the study for evaluation. Demographic data and patient profile were recorded.

Investigations results of renal function test, lipid profile, uric acid, hemoglobin level, random blood sugar were recorded. Electrocardiography and echocardiography findings were noted and recorded in proforma. Coronary angiography was performed and findings noted. Observed findings tabulated and percentage calculation done. SPSS 22 software used for calculation and analysis of data.

RESULTS

Out of total 160 patients. 109 (68.1%) were male and (31.9%) were female. Most patients were of age group 45 to 65 years. (Table 1). Dyspnea, Fatigue and cough were common symptoms. (Table 2). Other uncommon symptoms noted were abdominal distension, dizziness, myalgia, nausea, warm feeling and reduced appetite.

Table 1. Age distribution

Age years	Number (Percentage)
Less than 45	20 (12.5%)
45 to 65	98 (61.2%)
More than 65	42 (26.3%)

Table 2. Presenting Symptoms

Symptoms	Percentage
Dyspnea	129 (80.6%)
Fatigue	40 (25%)
Cough	32 (20%)
Chest discomfort	27 (16.9%)
Edema	24 (15%)
Palpitation	19 (11.9%)

Smoking habit was present in 67 (41.9%) and alcohol intake in 51 (31.9%). Hypertension was present in 44 (27.5%) and diabetes in 25 (15.6%). Clinical evaluation revealed tachycardia in 51 (31.9%), bradycardia in 13 (8.1%) and irregular pulse in 27 (16.9%). Electrocardiography findings included Left ventricular hypertrophy 61 (38.1%), Left bundle branch block 46 (28.7%), ST depression 26 (16.2%), T wave inversion 22 (13.7%), Left atrial abnormality 17 (10.6%), Ventricular premature complex 11 (6.8%), Right ventricular hypertrophy 9 (5.6%) and Right bundle branch block 5 (3.1%). Majority of patients had ejection fraction in the range of 30 to 40%. (Figure 1). Valvular regurgitation and dilatation of left atrium was commonly encountered. (Table 3)

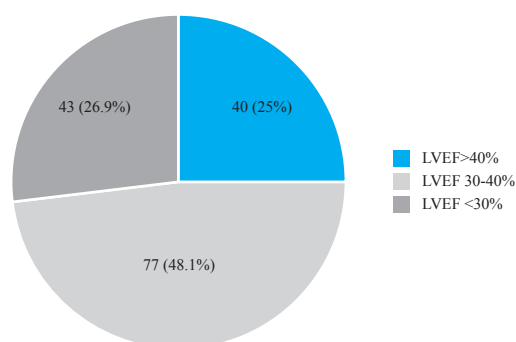


Figure 1. Left Ventricular Ejection Fraction

Table 3. Echocardiographic findings

Echocardiographic findings	Number of patients	Percentage
Mitral regurgitation	124	77.5
Tricuspid regurgitation	89	55.6
Aortic regurgitation	28	17.5
Dilated Left atrium	134	83.7

Coronary angiography revealed presence of coronary artery disease in 71 (44.4%) patients. (Table 4). Out of patients having obstructive coronary artery disease two vessel disease was found in 54%, one vessel disease in 32% and three vessel disease in 14%.

Table 4. Coronary angiography findings

Angiography finding	Number of patients	Percentage
Normal coronaries	89	55.6
Nonconstructive CAD	13	8.1
Obstructive CAD	58	36.3

Dyslipidemia was found in 61 (38.1%) and hyperglycemia in 26 (16.2%) patients. Anemia was present in 44 (27.5%), raised urea in 35 (21.8%), raised creatinine in 21 (13.1%), and hyponatremia in 9 (5.6%).

DISCUSSION

We found that dilated cardiomyopathy was more common in male. Majority of patients were under the age of 65 years. In a study from western Nepal Kafle et al found male preponderance in dilated cardiomyopathy patients which was similar to our findings. But in contrast to our study they found majority of patients at age more than 60 years 54%.¹¹ Aryal M et al found dyspnea as predominant symptom (88.5%) and cough (34.4%) in dilated cardiomyopathy patients.¹² In that study palpitation was found in 50.8% which was more frequent than our finding. Chandra S et al found higher prevalence of diabetes mellitus 44.5% compared to our study. Smoking was found in 44%.¹³

Study from Africa by N'Guetta R et al¹⁴ found abnormal coronary angiogram in 34.3% of dilated cardiomyopathy patients. In that study nonobtrusive coronary artery disease was found in 13% and obstructive coronary artery disease in 21.3%. They found one vessel disease in 52.2%, two vessel disease in 21.7% and three vessel disease in 26.1%. Presence of coronary involvement was similar to our findings. We found two vessel disease more prevalent in our patients. In a study from Brazil by Pessoa de Melo EF et al¹⁵ 20.8% patients had coronary obstructions consistent with ischemic cardiomyopathy and 79.2% patients had no major coronary lesions.

So our study marks the significant presence of coronary artery disease in dilated cardiomyopathy patients. These subset of patients with significant coronary artery disease have opportunity to further management with coronary intervention to improve symptoms or complications.

LIMITATIONS

This was observational study which lacks follow up of patients to know whether prognosis differs between dilated cardiomyopathy patients with significant coronary artery disease with those without significant coronary artery disease. If proper intervention and well-structured follow up show better prognosis with patients undergoing coronary intervention than those without intervention, routine evaluation of dilated cardiomyopathy patients with coronary angiography may become advisable.

CONCLUSION

In this single hospital study from Lumbini province Nepal we found that there is significant involvement of coronary arteries in almost one third of dilated cardiomyopathy patients. So based on clinical judgement of treating physician dilated cardiomyopathy patients may undergo coronary angiography evaluation. If similar study is conducted at different cardiac centers over the country, it will be more representative of Nepalese population.

CONFLICT OF INTEREST

None

REFERENCES

- Schultheiss HP, Fairweather D, Caforio AL, Escher F, Hershberger RE, Lipshultz SE, Liu PP, Matsumori A, Mazzanti A and McMurray J. Dilated cardiomyopathy. *Nat Rev Dis Primers*. 2019;5:1-19.
- Gutterman DD. Silent myocardial ischemia. *Circ J*. 2009;73:785-797.
- Stern S. Symptoms other than chest pain may be important in the diagnosis of "silent ischemia," or "the sounds of silence". *Circulation* 2005; 111 (24): e435-437.
- Bhandari B and Masood W. Ischemic Cardiomyopathy. *StatPearls [Internet]*. StatPearls Publishing; 2019.
- Kloner RA. Stunned and hibernating myocardium: where are we nearly 4 decades later? *J Am Heart Assoc*. 2020;9:e015502.
- Pasini E, Ferrari G, Cremona G and Ferrari M. Revascularization of severe hibernating myocardium in the beating heart: early hemodynamic and metabolic features. *Ann Thorac Surg*. 2001;71:176-179.
- Bhattarai M, Shah RK, Sainju NK, et al. Etiological spectrum of Heart Failure in a tertiary health care facility of Central Nepal. *Nepalese Heart Journal* 2019;Vol 16 (2), 23-28.
- Khanal J, Pandey T, Godar K. Echocardiographic profile of patients with cardiomyopathy. *Journal of Lumbini Medical College*. 2018;6(2).
- Monib AK, Dhungana SP, Nepal R, Ghimire R. Clinical Profile of Patients with Heart Failure in Eastern Part of Nepal: A Hospital based study. *Journal of Nobel Medical College*; 2019;08(1):48-52.
- Shareef M, KC MB, Raut R, Hirachan A, KC B, Agarwal AK, Shah RK, Adhikari CM. Etiology of heart failure in the emergency department of a tertiary cardiac centre of Nepal. *Nepalese Heart Journal* 2017. Vol 14(2):1-4.
- Kafle RC, Paudel N, Sharma D, Alurkar VM. Electrocardiographic profile of dilated cardiomyopathy in patients attending a tertiary care hospital of Western Nepal. *Journal of Universal College of Medical Sciences*. 2018 Nov 20;6(1):40-5.
- Aryal M. Clinical and Echocardiographic Assessment of Patients with Dilated Cardiomyopathy. *JNGMC* 2021; Vol 19(1).
- Chandra S, Saraf S, Chaudhary G, Dwivedi SK, Narain VS, Sethi R, Sharma A, Pradhan A, Vishwakarma P, Bhandari M. Prevalence and trends of occult coronary artery disease in patients with dilated cardiomyopathy. *Am J Cardiovasc Dis*. 2020;10(5):557-563.
- N'Guetta R, Yao H, Ehouman E, Ekou A, Anzouan-Kacou JB, Coulibaly I, Marie-Laure Hauhouot-Attoungbre ML et al. Coronary angiographic findings in dilated cardiomyopathy in a sub-Saharan African population. *Cardiovasc J Afr* 2019; 3.
- Pessoa de Melo EF, Cintra RA, Biselli B, Vieira de Melo RM, Ribeiro HB, Ávila LF et al. Clinical Use of Coronary Angiography and Magnetic Nuclear Resonance Imaging in the Diagnosis of Ischemic Cardiomyopathy. *Rev Bras Cardiol Invasiva*. 2013;21(3):276-80.