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Research Article

**FREQUENCY OF DIASTOLIC DYSFUNCTION IN CASES OF
DIABETES MELLITUS**¹Dr. Samar Nawaz, ²Dr. Anmol Javaid, ³Dr. Aqsa Younas¹Lahore General Hospital, Lahore. samar25nawaz@gmail.com²Lahore General Hospital, Lahore. anmoljvd@gmail.com³Lahore General Hospital, Lahore. aqsasheikh3@gmail.com**Abstract:****Objective:** To determine the frequency of diastolic dysfunction in patients suffering from Diabetes Mellitus.**Methodology:** This was cross sectional study carried out during March 2017 to November 2017 at Lahore General Hospital, Lahore. In this study the cases of age 30 to 70 years of both genders suffering from DM of any duration of time were included. The cases with type I DM, or those having end stage renal, liver failure or electrolyte imbalance were excluded from this study. Diastolic dysfunction was defined on the basis of Echo where E/A ratio was <0.8.**Results:** In the present study, 100 cases of DM were included and out of these 67 (67%) were males and the mean age of the study subjects was 57.41±10.12 years. Diastolic dysfunction was seen in 55 (55%) of the cases and there was no significant difference in terms of gender with p value of 0.87. DD was significantly high in cases that had raised BMI where it was seen in 28 (68.29%) of cases with p value of 0.03. Diastolic dysfunction was also significantly high in cases that had duration of DM more than 5 years affecting 46 (63.88%) of cases with p= 0.02.**Conclusion:** Diastolic dysfunction is common in cases of DM and it is significantly high in cases that had raised BMI and duration of DM more than 5 years.**Key words:** Diastolic dysfunction, DM, BMI.**Corresponding author:****Dr. Samar Nawaz,**

Lahore General Hospital,

Lahore.

samar25nawaz@gmail.com

QR code



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INTRODUCTION:

Diabetes Mellitus (DM) is a metabolic syndrome that comprises a wide range of clinical spectrum and virtually can affect any part of the body. It is subdivided into two major sub types type I and type II DM where the former is solely dependent from external insulin. Its number was highest in the developed countries but now is increasing in the developing ones as well due to change in the life style [1]. Diabetes Mellitus can lead to unlimited changes in the body and that can present as various phenotypical changes and majority through its microvascular and macrovascular changes. The underlying pathophysiology is complex and the major components are exposure of the cells to chronic hyperglycemia and atherosclerotic of the vessels [2-3].

Cardiovascular system is one of the most commonly suffered system and can add to overall morbidity and mortality in such cases. Cardiac dysfunction especially diastolic dysfunction is one of the extensive discussions in the present times and is thought to impact the quality of life. According to a survey more than 2/3rd of the cases having DM die due to cardio-vascular disease. Electrocardiogram (ECG) is done to look for electrical changes while the echo-cardiography is the investigation of choice for documentation of diastolic dysfunction [4-5].

In a study done by Sharavanan *et al*, 55% of cases were found to suffer from diastolic dysfunction having concomitant DM.6 Sridevi & Dikshit *et al*, in other studies found this prevalence in around 65 to 80% of the cases.4

Objective:

To determine the frequency of diastolic dysfunction in patients suffering from Diabetes Mellitus.

MATERIALS AND METHODS:**Study settings;**

It was a cross sectional study

Study place;

Department of Cardiology, Lahore General Hospital, Lahore.

Study duration;

March 2017 to November 2017

Sampling technique;

Non probability consecutive sampling

In this study the cases of age 30 to 70 years of both genders suffering from DM of any duration of time were included. The cases with type I DM, or those having end stage renal, liver failure or electrolyte imbalance were excluded from this study. Diastolic dysfunction was defined on the basis of Echo where E/A ratio was <0.8.

Statistical analysis;

The data was entered and analyzed using SPSS version 23. Post stratification chi square test was applied and p value < 0.05 was considered as significant.

RESULTS:

In the present study, 100 cases of DM were included and out of these 67 (67%) were males and the mean age of the study subjects was 57.41 ± 10.12 years. Diastolic dysfunction was seen in 55 (55%) of the cases and there was no significant difference in terms of gender as shown in table 01 with p value of 0.87. DD was significantly high in cases that had raised BMI where it was seen in 28 (68.29%) of cases with p value of 0.03 as in table 02. Diastolic dysfunction was also significantly high in cases that had duration of DM more than 5 years affecting 46 (63.88%) of cases (table 3) with p= 0.02.

Table 1: DD and Gender

Gender	Diastolic dysfunction		Total	p value
	Yes	No		
Male	40 (52.46%)	27 (47.54%)	67 (100%)	0.87
Female	15 (43.59%)	18 (56.41%)	33 (100%)	
Total	55 (55%)	45 (45%)	100 (100%)	

Table 2: DD and raised BMI

Raised BMI	Diastolic dysfunction		Total	p value
	Yes	No		
Yes	28 (68.29%)	13 (31.71%)	41 (100%)	0.03
No	27 (45.76%)	32 (54.24%)	59 (100%)	
Total	55 (55%)	45 (45%)	100 (100%)	

Table 3: DD and Duration of DM

Duration of DM	Diastolic dysfunction		Total	p value
	Yes	No		
>5 years	46 (63.88%)	26 (36.12%)	72 (100%)	0.02
5 or less	9 (32.14%)	19 (67.86%)	28 (100%)	
Total	55 (55%)	45 (45%)	100 (100%)	

DISCUSSION:

Life style is changing gradually and steadily in the under developed countries as well and the westernization of the life style also led to emergence of different complications. DM is one of the newly rise entity in developing countries like Pakistan. Cardiovascular system is most commonly involved in it due to its atherosclerotic changes and other mechanical defects like systolic and diastolic dysfunctions are also not uncommon.

Diastolic dysfunction (DD) was observed in 55 (55%) out of 100 cases suffering from Diabetes mellitus. The finding of the present study was exactly same as that of Sharanavan et al, where the total number of cases were different but the prevalence of DD was also seen in 66 (55%) of cases in their study.⁶ This findings of the present study was also enforced by the results of the study by Patil et al, where DM affected 54.33% of cases to suffer from the Diastolic dysfunction.⁸

Diastolic dysfunction was seen statistically significantly high in cases that had raised BMI as compared to normal or pre obese cases where it was observed in 28 (68.29%) of cases with a p value of 0.03. This finding was consistent with the results of the previous studies as well where it was also found significantly high in high BMI cases. 9-10 In a case control trial carried out by Germing A et al . Diastolic dysfunction was significantly high in case having DM with p value of <0.05.⁹In another study by Russo, et al they found statistical positive correlation between DM and diastolic dysfunction.¹⁰

Diastolic dysfunction was also seen significantly high in cases that had duration of DM of more than 5 years affecting 46 (63.88%) cases (p= 0.02). This was also seen by the study by Kumar et al where they also found this statistically significant with p=0.03.¹¹ This can be explained by the factor that longer the duration of the disease; and longer was the time to affect the myocardium and lead to this dysfunction.

CONCLUSION:

Diastolic dysfunction is common in cases of DM and it is significantly high in cases that had raised BMI and duration of DM more than 5 years.

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