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Research Article

DIASTOLIC DYSFUNCTION IN CASES OF DM
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Objective:

To determine the frequency of diastolic dysfunction in cases of diabetes mellitus.

Methodology: This was a cross sectional study that was conducted at Jinnah hospital, Lahore during January 2019 to July 2019. In the present study the cases of either gender with age range of 30 years or more with history of DM of at least 1 years were included. The cases with ischemic heart disease, end stage renal or liver disease were excluded. Diastolic dysfunction was labelled as yes when on trans thoracic echocardiography the E/A ratio was less than 0.8.

Results: In the present study there were total 100 cases of DM. Out of these 53 (53%) were males and 47 (47%) were females. The mean age of the cases was 51.35 ± 8.67 and mean duration of DM was 5.15 ± 2.23 years. Diastolic dysfunction was seen in 54 (54%) of the cases. Diastolic dysfunction was seen in 22 (73.33%) of cases with $p = 0.01$. This was also seen significantly high in cases that had BMI more than 30 where it was seen in 26 (68.42%) of cases with $p = 0.04$.

Conclusion: Diastolic dysfunction is common in cases of DM and it is significantly associated with HTN and obesity.

Key words: DM, Diastolic dysfunction.

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INTRODUCTION:

Diabetes Mellitus (DM) is one of the chronic diseases and its number is increasing specially in the developing countries in the recent times. It is defined as syndrome of metabolic disorders resulting in the phenotype of hyperglycemia. It has two sub types i.e. Type I and type II DM.[1]

The underlying pathophysiology to lead towards various complications especially the cardiac is diverse and it includes chronic hyperglycemia, atherosclerosis and ongoing narrowing to the coronary vessels leading to ischemia. The data has shown that there is increased risk of congestive heart failure in such cases which can either be systolic or diastolic. According to a study more than 70% of the cases with diabetes mellitus due to a cardiovascular disease. [2-3]

Echocardiography is considered as the diagnostic modality which is most widely used and is the investigation of choice to label systolic and diastolic dysfunction. [4-5]

According to a study by Sharavanan TKV et al the diastolic dysfunction in cases of DM was seen in only 55% of cases. [6] According to another study by Dikshit NM et al the diastolic dysfunction in cases of DM was seen in 66% of the cases. [7] While study by Sridevi et al the left ventricular diastolic dysfunction was seen in as high as 79% of the cases. [5]

Objective:

To determine the frequency of diastolic dysfunction in cases of DM.

MATERIALS AND METHODS:

This was a cross sectional study that was conducted at Jinnah hospital, Lahore during January 2019 to July 2019. In the present study the cases of either gender with age range of 30 years or more with history of DM of at least 1 year were included. The cases with ischemic heart disease, end stage renal or liver disease were excluded. Diastolic dysfunction was labeled as yes when on trans thoracic echocardiography the E/A ratio was less than 0.8.

Statistical analysis:

The data was entered and analysed by using SPSS version 22. Effect modifiers were controlled through stratification and Post stratification chi square test was applied taking p value < 0.05 as significant.

RESULTS:

In the present study there were total 100 cases of DM. Out of these 53 (53%) were males and 47 (47%) were females. The mean age of the cases was 51.35 ± 8.67 and mean duration of DM was 5.15 ± 2.23 years. Diastolic dysfunction was seen in 54 (54%) of the cases. Diastolic dysfunction was seen in 22 (73.33%) of cases with p= 0.01 as in table 1. This was also seen significantly high in cases that had BMI more than 30 where it was seen in 26 (68.42%) of cases with p=0.04 as in table 02.

Table 1. Diastolic dysfunction with respect to HTN

HTN	Diastolic dysfunction		Total	p value
	Yes	No		
Yes	22 (73.33%)	08 (26.67%)	30 (100%)	0.01
No	32 (45.71%)	38 (54.29%)	70 (100%)	
Total	54 (54%)	46 (46%)	100 (100%)	

Table 2. Diastolic dysfunction with respect to obesity

BMI	Diastolic dysfunction		Total	p value
	Yes	No		
> 30	26 (68.42%)	12 (31.58%)	38 (100%)	0.04
30 or less	28 (45.16%)	24 (54.86%)	62 (100%)	
Total	54 (54%)	46 (46%)	100 (100%)	

DISCUSSION:

Diabetes mellitus is a clinical syndrome and can result in various cardiovascular diseases. A part from the systolic dysfunctions, diastolic dysfunctions are under extensive discussion in the recent times and have shown variable correlation with DM.

In the present study the diastolic dysfunction was observed in 54 (54%) of cases. In a study by Sharanavan et al this dysfunction was seen in 66 (55%) of the cases. [6] While in another study done by Patil et al, this finding was seen in 54.33% of the cases in their study. [8]

Diastolic dysfunction was seen significantly high in cases that had BMI more than 30 where it was seen in 26 (68.42%) of cases with $p=0.04$. This result was similar to the previous studies where it was seen that the obesity was single independent variable to prone for diastolic dysfunction as compared to non diabetics. According to a study done by Alfried et al, the diastolic dysfunction was significantly high in cases that were observes with p value less than 0.05. [9-10]

In another study by Russo, et al, they checked the association of obesity and left ventricular diastolic dysfunction and it was seen that there was a strong correlation between these two. [10]

Diastolic dysfunction was seen in 22 (73.33%) of cases with $p=0.01$. These findings were similar to the studies done in the past, according to a study done by Abhay Kumar et al there was significant association of HTN with diastolic dysfunction with p value of 0.03. [11]

CONCLUSION:

Diastolic dysfunction is common in cases of DM and it is significantly associated with HTN and obesity.

REFERENCES:

1. Fontes-Carvalho R, Ladeiras-Lopes R, Bettencourt P, Leite-Moreira A, Azevedo A. Diastolic dysfunction in the diabetic continuum:

association with insulin resistance, metabolic syndrome and type 2 diabetes. *Cardiovasc Diabetol*. 2015;14:4.

- Chaudhary AK, Aneja GK, Shukla S, Razi SM. Study on diastolic dysfunction in newly diagnosed Type 2 diabetes mellitus and its correlation with glycosylated haemoglobin (HbA1C). *J Clin Diag Res*. 2015;9(8):OC20-OC22.
- Patil MB, Burji NP. Echocardiographic evaluation of diastolic dysfunction in asymptomatic type 2 diabetes mellitus. *J Assoc Physicians Ind*. 2012;60:23-26.
- Rubler S, Deluges J, Yuceoglu YZ, Kumar T, Branwood AW, Grishman A. New type of cardiomyopathy associated with diabetic glomerulosclerosis. *Am J Cardiol*. 1972;30:595-602.
- Sridevi, Jain R, Patil R. Assessment of left ventricular diastolic dysfunction by doppler echocardiography in patients of diabetes mellitus. *Ind J Basic Applied Med Res*. 2015;4(2):568-70.
- Sharavanan TKV, Prasanna KB, Ekanthalingam S, Sundaram A, Premalatha E, Arumugam B. A study on the prevalence of diastolic dysfunction in type 2 diabetes mellitus in a tertiary care hospital. *Int Arch Integ Med*. 2016;3(7):216-21.
- Dikshit NM, Wadia PZ, Shukla DK. Diastolic dysfunction in diabetes mellitus. *Nat J Med Res*. 2013;3(3):249-52.
- Virendra C. Patil, Harsha V. Patil, Kuldeep B. Shah, Jay D. Vasani, Pruthvi
- Shetty. Diastolic dysfunction in asymptomatic type 2 diabetes mellitus with normal systolic function. *J Cardiovasc Dis Res*, 2011;2(4):213–222.
- Germing A, Gotzmann M, Schikowski S, Vierkotter A. Diastolic dysfunction without abnormalities in left atrial and left ventricular geometry does not affect quality of life in elderly women. *Exp Clin Cardiol*, 2011;16(2):37–39.
- Russo C, Jin Z, Homma S, Rundek T, Elkind MS, Sacco RL et al. Effect of obesity and overweight on left ventricular diastolic function:

- a community-based study in an elderly cohort. *J Am Coll Cardiol.*, 2011; 57:1368-76.
12. Kumar A, Girish Kumar, Aneja, ShubhraShukla, Syed Mohd Razi. Study On Diastolic Dysfunction in Newly Diagnosed Type 2 Diabetes Mellitus and its Correlation with Glycosylated Haemoglobin (HbA1C). *Journal of Clinical and Diagnostic Research*, 2015;9(8): OC20-OC22.