



A STUDY OF DIASTOLIC DYSFUNCTION IN NORMOTENSIVE DIABETIC PATIENTS

Dr. Rajan Patel*

3rd year resident doctor, Department of medicine, PMCH, udaipur
*Corresponding Author

Dr. Hiren Dangar

3rd year Resident doctor, Department of medicine, PMCH, udaipur

KEYWORDS :

INTRODUCTION :-

There are estimated 72.96 million cases of diabetes in adult population of India. It causes a number of complications including cardiovascular morbidity. These may lead to atherosclerotic coronary artery disease and diabetic cardiomyopathy. The latter may lead to spectrum of abnormalities such as diastolic dysfunction to overt cardiac failure. 2D Echocardiography with tissue doppler provides an excellent tool for early diagnosis as well as grading of diastolic dysfunction. Diabetic patients are at increased risk of symptomatic heart failure as compared to non-diabetics and is related to glycemic control. Early diagnosis and intervention to treat diastolic dysfunction is a desirable goal which saves individual from long term cardiovascular complication. Hence, we conducted a study on patients of Type 2 Diabetes Mellitus to evaluate the prevalence of diastolic dysfunction and study its association with other factors such as age, duration of diabetes, glycemic control, body mass index and dyslipidemia. This helps determining factors other than diabetes which contribute to diastolic dysfunction; thereby ensuring the institution of appropriate management.

AIMS:

1. To determine the prevalence of diastolic dysfunction in type 2 Diabetes Mellitus patients.
2. To quantify the relation of diastolic dysfunction with duration of diabetes mellitus
3. To correlate diastolic dysfunction in patients of diabetes mellitus with glycemic control

METHOD:

Prospective Observational Study was conducted in patients having Type 2 diabetes mellitus admitted to the medical wards at Pacific Medical college and hospital or patients presenting to outpatient department.

RESULTS:

1. This study reveals a significant burden of diastolic dysfunction in type 2 DM patients. Prevalence of diastolic dysfunction in our study was found to be 63%
2. In our study, Diastolic dysfunction was found to increase with rising age. The maximum prevalence of diastolic dysfunction was seen in patients > 70 years (88.24%) while the prevalence was found to be least in age group 41-50 years (34.48%). Thus, age was significant risk factor for diastolic dysfunction ($p < 0.001$).
3. Females are at higher risk of diastolic dysfunction. In our study, prevalence of diastolic dysfunction was higher in females (72.2%) compared to males (57.8%) ($p = 0.223$).
4. In our study, prevalence of diastolic dysfunction was maximum in patients with diabetes > 15 years (100%) and minimum in patients with duration < 5 years (28%). The prevalence of diastolic dysfunction significantly increased with age ($p < 0.001$).
5. Patients having diastolic dysfunction were found to have a higher mean HbA1c (7.76) while those without diastolic dysfunction had a lower mean value (7.09). Out of total

patients having HbA1c < 7.5, 41.3% had diastolic dysfunction; while among those having HbA1c \geq 7.5, 81.5% had diastolic dysfunction. This difference was highly significant ($p < 0.001$)

6. Obesity contributes to diastolic dysfunction independently of diabetes. This is evident by the findings i.e. 93.7% of the obese patients had diastolic dysfunction, while only 34.6% non-obese had diastolic dysfunction ($p < 0.001$).

CONCLUSION

Myocardial involvement in diabetes may occur early in the course of disease, initially impairing early diastolic relaxation and when more extensive, it causes decreased myocardial contraction. HbA1c was found to be a good indicator of diastolic dysfunction in diabetic patients. Aging individuals, female population, duration of diabetes, obesity were determinants for the occurrence of diastolic dysfunction.

Considering the long asymptomatic period of type 2 diabetes as well as the high proportion of patients having asymptomatic diastolic dysfunction, early diagnosis 2D echocardiography is recommended for all newly detected type 2 diabetic patients. Given timely, appropriate treatment may improve systolic and diastolic functions of heart.

REFERENCES

- [1] Anjana RM, Deepa M, Pradeepa R, Mahanta J, Narain K, Das HK, et al. Prevalence of diabetes and prediabetes in 15 states of India: results from the ICMR-INDIAB population-based cross-sectional study. *The Lancet Diabetes & Endocrinology* 2017;5:585-96. [https://doi.org/10.1016/S22138587\(17\)301742](https://doi.org/10.1016/S22138587(17)301742).
- [2] Jameson, Fauci, Kasper, Hauser, Longo, Loscalzo. *Harrisons Principles of internal medicine*. vol. 2. 20th ed. McGraw Hill Medical; 2018.
- [3] SD S, ARR, MPL, VC S, JG, NA, et al. Baseline Characteristics of Patients With Heart Failure and Preserved Ejection Fraction in the PARAGON-HF Trial. *Circulation Heart Failure* 2018;11. <https://doi.org/10.1161/CIRCHEARTFAILURE.118.004962>.
- [4] Patil V, Patil H, Shah K, Vasani J, Shetty P Diastolic dysfunction in asymptomatic type 2 diabetes mellitus with normal systolic function. *Journal of Cardiovascular Disease Research* 2011;2:213. <https://doi.org/10.4103/09753583.89805>.
- [5] Cioffi G, Faggiano P, Lucci D, Maggioni AP, Manicardi V, Travagliani A, et al. Left ventricular dysfunction and outcome at two-year follow-up in patients with type 2 diabetes: The DYDA study. *Diabetes Research and Clinical Practice* 2013; 101:236-42. <https://doi.org/10.1016/j.diabres.2013.05.010>.