



STUDY TO EVALUATE ECHO CARDIOGRAPHIC FINDINGS IN PATIENT OF TYPE II DIABETES MELLITUS WITH SPECIAL REFERENCE TO ALBUMINURIA.

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INTRODUCTION

Diabetes mellitus is the most common metabolic disorder. Currently the number of cases of diabetes worldwide is estimate to be around 150 million. This number is predicted to double by 2025 (a prevalence rate of about 5.4%) with the greatest number of cases being expected in China and India. A 34-fold excess in cardiovascular mortality was found in patients of diabetes with proteinuria whereas non-proteinuria patients has only 4 folds excess mortality compared with general population.

Keywords: Echocardiography, Diabetes

AIMS & OBJECTIVES

Main aims of study were to find out the degree of albuminuria in patient of type II diabetes mellitus, to correlate the abnormality in left ventricular function, if any, to the degree of albuminuria in type II diabetes mellitus.

MATERIAL AND METHODS

Study was conducted in Department of Medicine, J.L.N. Medical College and Associated Group of Hospital, Ajmer (Raj.). Consecutive randomly selected 50 patients of diabetes mellitus with 10 healthy age and sex matched control were included and divided into 4 categories.

- * Non diabetes controls having urinary albumin level of less than 30 mg/day (mean normal range 10 patients).
- * Diabetes mellitus patients having urinary albumin level of less than 30 mg/day mean normal range (10 patients).
- * Diabetes mellitus cases with urinary albumin levels of more than 30 mg/day to less than 300 mg/day (mean microalbuminuria 20 patients).
- * Diabetes mellitus with urinary albumin > 300 mg/day mean macroalbuminuria 10 patients.

OBSERVATIONS

Study group I had IVS (D) values higher as compared to control but differences were insignificant ($p>0.1$). Study group II had significantly ($p<0.05$) higher IVS (D) values as compared to control group.

Study group III had significantly higher IVS (D) measurement, as compared to control group ($p<0.001$), study group I ($p<0.05$) and study group II ($p<0.05$). Difference of IVS (D) values was significant (<0.05) between study group II & III.

LVPW (D) thickness was significantly high in study group III ($p<0.05$) & II ($p<0.01$) as compared to control group while insignificantly high in study group I as compared to control group ($p>0.01$).

Difference of LVPW (D) thickness were insignificant amongst all the study groups ($p>0.1$).

Study group III had highest IVS (S) measurements as compared to study group II ($p<0.1$), study group I ($p<0.01$) and control group ($p<0.001$). Study group II also had high IVS measurements as compared to study group I ($p<0.1$) and control group ($p<0.01$).

In study group I IVS (S) measurement were significantly high as compared to control group ($p<0.05$).

Highest values were seen in study group III as compared to study group II ($p>0.01$) but insignificant, but significant as compared to I ($p<0.05$) and control group ($p<0.01$). Study group II also had significantly high values as compared to study I ($p,0.1$) and control group I ($p<0.001$).

Study I had significantly high measurement as compared to control group ($p<0.05$).

DISCUSSION

In present study IVS thickness (diastole) in study group III had significantly higher values as compared to control study group I and study group II.

Mean interventricular septum thickness (systole) in study group III had significantly higher values as compared to control, study group I and group II.

Sampson MK et al found that IVS thickness was significantly high in type I Diabetics with renal impairment ($p<0.001$). Macroalbuminuria ($p<0.05$) and with microalbuminuria ($p<0.02$) as compared to controls and type I diabetics with normoalbuminuria. Agarwal BV et al found that IVS width (S&D) and LV mass were significantly increased in diabetes with proteinuria but it was maximum in diabetes with microalbuminuria ($p<0.01$). Patel TM *et al* found that IVS thickness was increased in diabetes. Schmidt A *et al* also found moderate increase interventricular septum thickness in type I diabetes.

Mean LVPW thickness (diastole) in study group III had significantly higher values as compared to controls but it was insignificant with study group I and II.

Also mean LVPW thickness (systole) in study group III had significantly higher values as compared to control and study group I, but difference was insignificant with study group II.

Similar observations were found by Agarwal Bv *et al*, Patel TM *et al* and Schmidt A *et al*. Uusitupa MI *et al* found that in diabetes mellitus, several mechanism might contribute to the increased thickness of left ventricular posterior wall including disturbed myocardial energy metabolism. Microvascular changes, structural changes in collagen, increased myocardial fibrosis and cardiac autonomic neuropathy. According to Das AK albuminuria was predictor of malignant angiopathy in non-insulin dependent diabetes mellitus.

CONCLUSION

Interventricular septum thickness (diastole and systole both) and left ventricular posterior wall thickness (diastole and systole both) were increased in type II diabetes mellitus patients as compared to control and these values were proportional to the degree of albuminuria. Possible albuminuria in type II diabetes mellitus patients is an indicator of vascular damage in general that is microangiopathy and increased cardiovascular risk. However, larger studies are required to establish the predictive effects of urinary albumin level and future microvascular complications.

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