

Assessment of Hypertension and its Associated Factors among Type 2 Diabetes Mellitus Patients at Mirpur AJK

Hypertension
and its
Associated
Factors Among
Type 2 Diabetes

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ABSTRACT

Objective: The objective of this study assessment of hypertension and its Associated Factors among Type 2 Diabetes Mellitus Patients at Mirpur AJK.

Study Design: Cross-sectional study

Place and Duration of Study: This study was conducted at the Department Physiology, Biochemistry and Community Medicine of Mohtarma Benazir Bhutto Shaheed Medical College Mirpur, AJK from April 2018 to August 2019.

Materials and Methods: In this study we included those patients who have diabetes mellitus and hypertension. It was cross section study, we selected 200 control normal subject free from hypertension and diabetes mellitus and 300 patients of diabetes mellitus with hypertension. We were taken the blood sample of patients and control. We centrifuge the sample and analyzed for fasting blood sugar and lipid profile (LDL, HDL, Cholesterol, TG). We also estimate urea, uric acid for both groups.

Results: The BMI of the patients was higher than 25 kg/m² and above (78.5%). and the mean systolic and diastolic blood pressure of T2DM patients were 135.8 mmHg (SD ± 25.9) and 87.5 mmHg (SD± 13.8) respectively. The lipid profile was higher in patients group as compare to control. Fasting glucose was higher in patients groups as compare to control. 78.5%) patients relied on oral hypoglycemic treatment in patients groups.

Conclusion: The occurrence of hypertension was high. Only 27.8% of previously diagnosed hypertensive patients were normotensive. Age, BMI, and high lipid profile, cigarette smoking, residence and duration of T2DM were significantly associated with hypertension.

Key Words: Hypertension, Diabetes mellitus, Risk factors

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INTRODUCTION

Stroke is closely related with Type 2 diabetes mellitus is closely linked renal disease and hypertension. Morbidity and mortality among T2DM patients is due to Hypertension¹⁻³ Hypertension and diabetes mellitus is improved internationally⁴. Risk of mortality in developing countries, 7.2 times higher regarding death as compare other countries of the world.^{5,6} Retinopathy, nephropathy, neuropathy and atherosclerotic are produced with hypertension and also developed diabetes complication.⁷

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Brain, heart, eye, and kidney are main effected organs of cardiovascular mortality and morbidity. Heart attack, peripheral arterial disease, stroke, kidney failure, sexual dysfunction and vision loss are caused due to uncontrolled hypertension.⁸ Proteinuria is produced with organ damage due to Hypertension.⁹ Left ventricular strain pattern in ECG is affected and hypertrophy of left ventricular.¹⁰ Appearances of hypertension induced end organ damage are hemorrhagic brain or ischaemic brain imaging by computed tomography.^{11,12} Hypertension and stroke with diabetes patients caused eighty present death.^{13,14} Hypertension quickens the development of diabetic renal disease and CVD.¹⁵ The objective of this study assessment of hypertension and its Associated Factors among Type 2 Diabetes Mellitus Patients at Mirpur AJK.

MATERIALS AND METHODS

This study was conducted in the Department Physiology, Biochemistry and Community Medicine of Mohtarma Benazir Bhutto Shaheed Medical College Mirpur AJK, Mirpur, AJK from April 2018 to August 2019. In this study we included those patients

who have diabetes mellitus and hypertension. It was cross section study, we selected 200 control normal subject free from hypertension and diabetes mellitus and 300 patients of diabetes mellitus with hypertension. We were taken the blood sample of patients and control. We centrifuge the sample and analyzed for fasting blood sugar and lipid profile (LDL, HDL, Cholesterol, TG). We also estimate urea, uric acid for both groups. We micro Lab 300 for chemical pathology and Merk kits are used for analysis. SPSS for Windows version 20 was employed for all statistical analyses.

RESULTS

It was cross section study; we selected 200 control normal subjects free from hypertension and diabetes mellitus and 300 patients of diabetes mellitus with hypertension. Age was 45 to 55 year. The BMI of the patients was higher than 25 kg/m² and above (78.5%).

Table No.1: Participant characteristics

	Hypertension With Diabetes mellitus (n=300)	Control (n=200)
Age (years)	45.4 ± 10.2	45.7 ± 10.3
Male/Female(%)	100/100	50/50
Body weight(Kg)	69.9 ± 10.8	68.3 ± 11.2
BMI (kg/m ²)	26.8 ± 3.6	23.2 ± 2.5

Table No.2: Ambulatory blood pressure monitoring. Mean values of blood pressure

Hypertension With Diabetes mellitus (n=300)	Control (n=200)
Systolic BP - 24 hours (mmHg)	
135.8 ± 25.9	135.4 ± 8.3
Diastolic BP - 24 hours (mmHg)	
87.5 ± 13.8	85.7 ± 6.6

Table No.3: Fasting sugar and Lipid profile in patients and control

Hypertension With Diabetes mellitus (n=300)	Control (n=200)
Fasting Blood Glucose(mg/dl)	
138.8 ± 4.3	97.4 ± 4.9
Total Cholesterol (mg/dl)	
246.5 ± 12.8	193.6 ± 30.5
LDL (mg/dl)	
126.8 ± 22.5	117.5 ± 18.5
HDL (mg/dl)	
58.7 ± 8.5	41.5 ± 9.2
Triglycerides (mg/dl)	
178.2 ± 32.5	142.3 ± 31.2

and the mean systolic and diastolic blood pressure of T2DM patients were 135.8 mmHg (SD ± 25.9) and 87.5 mmHg (SD ± 13.8) respectively. The lipid profile was higher in patients group as compare to control. Fasting glucose was higher in patients groups as compare to

control. 78.5%) patients relied on oral hypoglycemic treatment in patients groups.

Table No.4: The Effects of Diabetes Mellitus with hypertension on Hearing

Hypertension With Diabetes mellitus (n=300)	Control (n=200)
Sensori- neural hearing	
83.72%	6.45%
Two sided hearing problem with SNHL	
80.09%	2.8%
Hearing Difficulty	
72.81%	0.9%

DISCUSSION

This study about pathology and associated factors of hypertension among T2DM patients at Mirpur AJK. The prevalence of hypertension in this study was 59.5% which is in line with studies in Hosanna (55)¹⁶ Adama, Ethiopia (56.3%). The prevalence reported is higher than Ethiopia (46.5%).¹⁷ the presence of age difference between the two study populations may affected study result. Stroke is closely related with Type 2 diabetes mellitus is closely linked renal disease and hypertension. This study was conducted in the Department Physiology, Biochemistry and Community Medicine of Mohtarma Benazir Bhutto Shaheed Medical College Mirpur AJK, Mirpur, AJK from April 2018 to August 2019. In this study we included those patients who have diabetes mellitus and hypertension. It was cross section study, we selected 200 control normal subject free from hypertension and diabetes mellitus and 300 patients of diabetes mellitus with hypertension. We were taken the blood sample of patients and control. We centrifuge the sample and analyzed for fasting blood sugar and lipid profile (LDL, HDL, Cholesterol, TG). We also estimate urea, uric acid for both groups. We micro Lab 300 for chemical pathology and Merk kits are used for analysis. Morbidity and mortality among T2DM patients is due to Hypertension: Hypertension and diabetes mellitus is improved internationally. Risk of mortality in developing countries, 7.2 times higher regarding death as compare other countries of the world. Retinopathy, nephropathy, neuropathy and atherosclerotic are produced with hypertension and also developed diabetes complication. Brain, heart, eye, and kidney are main effected organs of cardiovascular mortality and morbidity. Heart attack, peripheral arterial disease, stroke, kidney failure, sexual dysfunction and vision loss are caused due to uncontrolled hypertension. Proteinuria is produced with organ damage due to Hypertension. Left ventricular strain pattern in ECG is affected and hypertrophy of left ventricular. Appearances of hypertension induced end organ damage are hemorrhagic brain or ischaemic in brain

imaging by computed tomography. Hypertension and stroke with diabetes patients caused eighty present death.^{13,14} Hypertension quickens the development of diabetic renal disease and CVD. Higher prevalence of hypertension is associated with age increased.¹⁸ It was cross section study, we selected 200 control normal subject free from hypertension and diabetes mellitus and 300 patients of diabetes mellitus with hypertension. Age was 45 to 55 year. The BMI of the patients was higher than 25 kg/m² and above (78.5%), and the mean systolic and diastolic blood pressure of T2DM patients were 135.8 mmHg (SD ± 25.9) and 87.5 mmHg (SD± 13.8) respectively. The lipid profile was higher in patients group as compare to control. Fasting glucose was higher in patients groups as compare to control. 78.5%) patients relied on oral hypoglycemic treatment in patients groups. One reason of the hypertension is higher BMI, it means that higher the BMI more suspected hypertension risk factor.¹⁹⁻²² When nitric oxide is decreased which act as vasodilators and thickening of the intima compromises endothelium integrity which is caused by aging.²³ The normal blood flow is interrupts by Hardening of the arterial walls and facilitate deposition calcium and fatty on the inside of the arteries to narrow that caused hypertension.²⁴⁻²⁵ Hyperglycemia, dyslipidemia, and insulin resistance are more prominent with T2DM and increased.²⁶

CONCLUSION

The occurrence of hypertension was high. Only 27.8% of previously diagnosed hypertensive patients were normotensive. Age, BMI, and high lipid profile, cigarette smoking, residence and duration of T2DM were significantly associated with hypertension.

Author's Contribution:

Concept & Design of Study: Muhammad Shoaib
 Drafting: Muhammad Kamran
 Data Analysis: Sameer Hanif, Asnad
 Revisiting Critically: Muhammad Shoaib,
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 Final Approval of version: Muhammad Shoaib,

Conflict of Interest: The study has no conflict of interest to declare by any author.

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