COMPARISON OF PARAMETERS OF METABOLIC SYNDROME BETWEEN MALE AND FEMALE TYPE II DIABETIC PATIENTS

Abdul Samad[1], Muhammad Amin Memon[2], Partab Puri[3]

[1]MBBS, Dip in Diabetes, DMJ, Assistant Professor, Department of Forensic Medicine & Toxicology, Jinnah Medical College Peshawar, Email.drmemonmpk1970@hotmail.com, Cell No. 03142613782

[2]MBBS, DTCD, M. Phil (Physiology), Assistant Professor, Department of Physiology, Muhammad Medical College, Mirpurkhas, Sindh

[3]MBBS, MPH,Assistant Professor,Department of Community Medicine,Muhammad Medical College,Mirpurkhas , Sindh

Abstract:

The objective of the current Cross Sectional Clinical survey was to measure and compare the risk factors of metabolic syndrome in type II diabetic patients in Mir Pur Khas district of Sindh Province in a medical camp for diabetic patients on 14/11/2017. There were 248 type II diabetic patients 124 from male and female genders were included through purposive sampling and type I diabetics and non-willing patients were excluded. Consent was taken before obtaining any sort of data. Blood pressure, weight, height, body fat , serum uric acid, RBS and serum cholesterol was measured though devise method. Collected data was analyzed on ANOVA using SPSS version22.

There was no significant difference in between male and female genders in weight, blood pressure, cholesterol, uric acid and visceral fat and all these parameters were with in normal range. However there was significant variation between the two sexes in terms of age51.15+10.02 in males 46.97+10.94 in females (P=0.000) ,BMI 24.99+4.12 in male and 26.90+4.82 in females (P=0.002), plasma glucose184.31+84.69mg/dl in male and 219.27+95.75mg/dl (P=0.007) and total body fat 24.69+8.97 in males37.43+9.22 in females (P=0.000).The diabetic population under study was not at risk of metabolic syndrome as all the parameters search for were found with in normal range. There is no significant difference between the two genders except BMI, body fat and random blood sugar which was found high in female group.

Key Words: *Diabetes Mellitus, Metabolic Syndrome, RBS, Uric Acid, BMI*

Corresponding author:

Dr. Abdul Samad,
MBBS, Dip in Diabetes, DMJ,
Assistant Professor,
Department of Forensic Medicine & Toxicology,
Jinnah Medical College Peshawar,
Address H.No. 73, 4th Street Gulshan Masjid,
Near Habib General Store   Mohala Thomas abad,
Mirpurkhas 69000 Sindh.
Email.drmemonmpk1970@hotmail.com,Cell No. 03142613782

QR code

INTRODUCTION:

The history of Diabetes Mellitus seems to be as old as human as the term jual bakar (cow's hunger) is mentioned in old literature for an overeating disease[1]. Diabetes is characterized with hyperglycemia as a consequence of either partial or absolute deficiency of insulin. Persistent hyperglycemia affects eyes (retinopathy), kidneys (nephropathy), brain (CVA and dementia), heart (cardiomyopathy) and skin (peripheral neuropathy). Despite of availability of scientific approaches the disease is still on rise with 25.8 million patients in USA and 347 million around the globe [2].1. ADA (American Diabetes Association) divides the diabetes into Type I, Type II , Gestational, and drug induced categories. DM is ranked as 5th major cause of death worldwide [3].Type-1 is less common (5%-10%) and termed as insulin dependent due to complete absence of insulin in the body with insulin as the only solution[4]. While in Type-2 is more common (90%-95%) there is relative deficiency of insulin or insulin receptors to do not respond to insulin properly (insulin resistance) so drugs that either increase the pancreatic secretion of insulin or enhance the sensitivity of the insulin at receptor level are best suitable termed as Oral hypoglycemic agents. Sulfonylureas (Glipizide, glimepiride), bigunides (Metformin), α-glucosidase inhibitors (Acarbose), thiazolidinediones (Pioglitazone, Rosiglitazone) Glinides (Repaglinide, Nateglinide) and Dipeptidyl peptidase-4 inhibitors (Sitagliptan, Saxagliptan)[5]. Treatment failure is 25% - 30% Primary where patients do not respond to oral therapy while 5% is the Secondary failure where patient initially respond to these agents but gradually lose the responsiveness[6]. Diabetes increases the risk of depression and other co-morbidities like HTN, and dyslipidemia (10%-20%) further complicating into retinopathy, IHD (47%) and stroke (54%)[7,8]. Diabetic patients are prone to metabolic syndrome that consists of hyperglycemia, HTN, hyperuricemia, dyslipidemia along with the obesity further worsening the patient's condition and putting extra socioeconomic burden on the society. Current survey was planes to evaluated and compare the risk factors for the development of metabolic syndrome in the male and female type II diabetic patients in distric Mir Pur Khas of Sindh , Province so that treatment may be provided as required while other diabetic community may be given health education.

METHODOLOGY:

This survey was conducted in a medical camp for diabetic patients held in the Mirpur Khas City on14/11/2017. Total 248 type II diabetes patients with 124 from each male and female were included through purposive sampling while patients of type I diabetes were excluded. Blood pressure was measured using sphygmomanometer, blood glucose was checked by Accu Check Active (Roche) and cholesterol was measure through Accutrend Plus (Roche) while serum uric acid was measured by device UA Sure Uric Acid Meter. BMI was calculated from height and weight while body fat distribution was assessed by machine Omron Model HBF 516 B through bioelectrical Impedance Analysis according to published procedure[9]. Consent was obtained from all participants prior to examination, data measurement and sample collection. Treatment was provided as required according to the health status of the patient in terms of glucose levels, serum uric acid, cholesterol, blood pressure and BMI.

Statistical Analysis: Mean of the age, weight, BMI, systolic and diastolic blood pressure, serum cholesterol, uric acid, RBS, body and visceral fat were compared between the two genders using ANOVA on SPSS version 22.

RESULTS:

Diabetic population for this survey (248 Patients) has mean age 46.97 ± 10.94 in female and 51.15 ± 10.02 in male component with statistical difference 0.000. There was no statistically significant difference in mean weight between the two genders 70.85+12.82 and 71.18+17.51 for male and female respectively (P-value .847). BMI was significantly different 24.99+4.12 Kg/m^2 in male while 26.90+4.82 Kg/m^2 in females (P-Value .002). Both the systolic (133.90 ± 19.53 mmHg, 138.87 ± 20.11mmHg) and diastolic (85.73 ± 12.00 mmHg in Male and 86.03 ±11.82 mmHg in Female) blood pressure were with in normal range with no significant difference in-between the two sexes (P-values 0.104 and 0.169). Plasm post prandial glucose levels showed high significance 184.31 ± 84.69mg/dl 219.27 ± 95.75 mg/dl (p-value 0.007). Serum Uric Acid level measured normal in both groups5.46+1.86 mg/dl and 5.44+1.62 mg/dl (P-Value 0.901). Serum total Cholesterol was found167.63+37.24 mg/dl in males 169.19+36.03 mg/dl in females with non-significant p-value 0.735. Body fat ratio was significantly different 24.69 ± 8.97male and 37.43 ± 9.22 females (P-Value 0.000). Visceral Fat distribution was non-significant between male9.65+10.14 and female 7.98+2.93 p-vale 0.167.

Table # 01 ANOVA of the study variables

Parameters	Male(124)	Female(124)	F-Value	P-Value
Age	51.15±10.02	46.97±10.94	8.899	0.000
Weight in Kgs	70.85±12.82	71.18±17.52	.167	0.847
Body Mass Index	24.99±4.12	26.90±4.82	6.633	0.002
Systolic Pressure mmHg	133.90±19.53	138.87±20.11	2.283	0.104
Diastolic Pressure mmHg	85.73±12.00	86.03 ±11.82	1.791	0 .169
Post prandial plasma Glucose mg/dl	184.31±84.69	219.27±95.75	5.139	0.007
Uric Acid mg/dl	5.46±1.86	5.44±1.62	.105	0.901
Cholesterol mg/dl	167.63±37.24	169.19±36.03	.308	0.735
Body fat percentage	24.69±8.97	37.43±9.22	62.293	0.000
Visceral Fat level	9.65±10.14	7.98±2.93	1.803	0.167
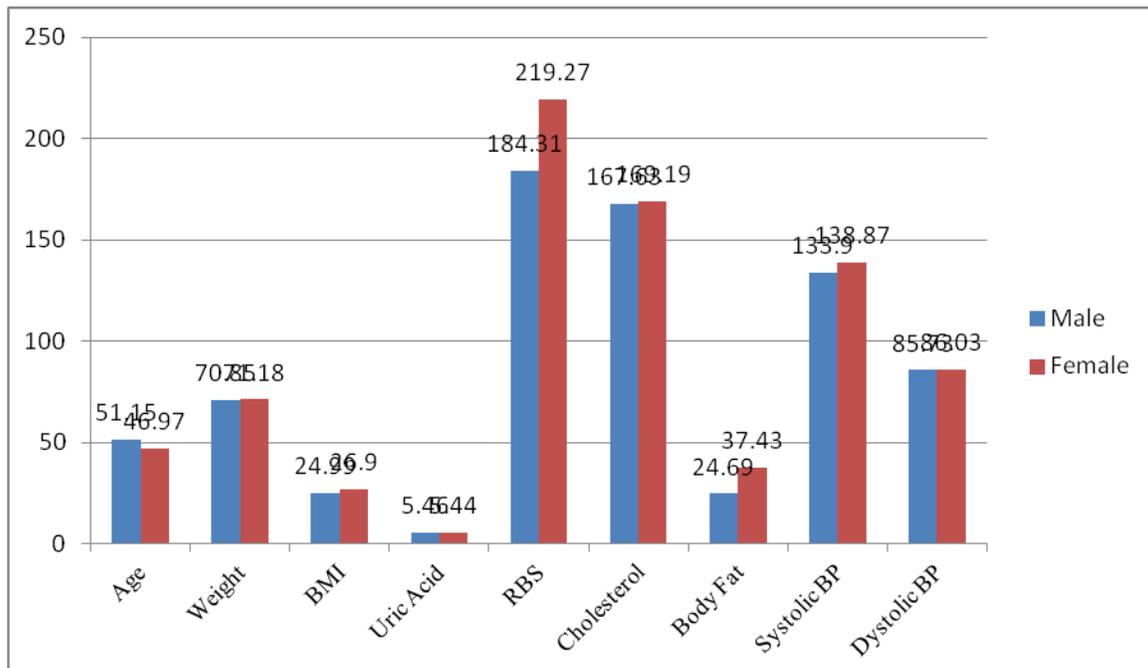
DISCUSSION:

Our results are consistent with the results of (Nsiah K et al 2015) how also found few risk factors of metabolic syndrome more in female patients of type II diabetes than males specially the central obesity[11]. Similarly (Felix-Val et al 2008) also reported higher prevalence of metabolic syndrome in diabetic patients[12]. An Egyptian study by (Khalid M A E et al 2015) also reported very high prevalence (85.5%) of metabolic syndrome in the diabetic population that was inconsistent to our results possibly the life style changes between the two countries might have an impact [13]. These studies worked on multiple parameters which we could not cover due to lack of financial assistance. Study results by an Indian author (G. K. Mini et al2018) also suggested that females at more risk of metabolic syndrome as compared to males [14]. Our results are accordance with findings (Nilupher et al 2018) reporting maximum % of diabetic females for BMI in overweight category in comparison to males suffering from DM type II[15]. Female diabetics were also reported to have more body fat and BMI in previous study from Lahore Pakistan[9]. Our results are supported by (Ismaa G Kiani et al2016) who also concluded more risk of metabolic syndrome in female diabetic[16]. Her study was based on 300 patients while we had 248 patients ,her patients were having diabetes since 7years as mean while our population was suffering from diabetes since 5 years as a mean duration. Diabetic population should be educated for the proper life style with suitable exercises and healthy and safe eating habits especially the female gender is less aware about the risks of this disorder. We could not evaluate the lipids in detail like triglycerides, HDL and LDL that was a weakness in our study due to financial limitations.

CONCLUSION:

The population of diabetes Mellitus under our study was found not be suffering from metabolic syndrome. Study parameters showed no significant difference among the two genders with the exception of RBS, BMI and body fat being higher in female gender.

REFERENCES:

1. Mashkoor A A, Ashique A A, Qumar Z P, Abdul R M(2018). Effects of S-Allyl Cysteine on Insulin Secretion: A Proposed Mechanism for its Anti-Hyperglycemic Effects. Biomed J Sci&Tech Res 6(3). BJSTR. MS.ID.001352. DOI: 10.26717/ BJSTR.2018.06.001352.
2. Ashique Ali Arain., et al(2017). Antihypertensive/Glycemic Effects of Escitalopram: A Selective Serotonin Reuptake Inhibitor Opens a New Window for Researcher". EC Cardiology 3.2: 57-61.
3. Shukl N, Joshi A, Dubey B.K. (2012) Antidiabetic Activity of Ethenolic Extract Albizzia Leebeck In Alloxan- Induced Diabetic Rats. WJPharmac Res. 1(5):1350-60.
4. Rajashree R, Bhat P P, Ravishshankar M V(2011). Effects of a Mixture of Salacia reticulata W. and Catharanthus roseus L. Extracts in Streptozotocin-Induced Juvenile Diabetic Rats. J Physiol Biomed Sci.;24(1):5-8.
5. Karen Whalen. (2015).Drugs for Diabetes, In Lipponcott Illustrated Reviews Pharmacology, Richard A.Harvey, Wolters Kluwer, USA, 6th edition:335-350.
6. Ansari MA, Phull QZ, Arain AA, Memon AR, Kazi S, Abbasi P(2017). Comparison between S-Allyl Cysteine and Gliclazide in Lowering the Blood Glucose Levels in Diabetic Rats. J Liaquat Uni Med Health Sci. 16(02):99-102.doi: 10.22442/jlumhs.171620514
7. Ashique A A, Abdul R M, Humayion K, Barkat A M(2017). Reduction of Serum Lipid Profile by Escitalopram in Depressive Patients: A Cardio Protective Aspect of SSRI Use. J Cardiol & Cardiovasc Ther 4(4): 555642. DOI: 10.19080/JOCCT.2017.04.555642.
8. Mushtaq A Jadoon., et al1 (2017). "Assessment of hypertension among the patients from district Peshawar with reference to their awareness level and education". Isra Medical Journal 9: 15-19.
9. Kaur J. A(2014). Comprehensive Review on Metabolic Syndrome. Cardiology Research and Practice. 2014:943162. doi:10.1155/2014/943162.
10 . Aijaz ZK Chachar, Nazeefa J, Arvinda F, Kashif S, Saleema Q (2016). High body fat and Visceral fat in Type IIdiabetes Mellitus: Areview of one hundred patients at Fatima Memorial Hospital. PJMHS ;10(3):722-729.
11 . Nsiah K, Shang VO, Boateng KA, Mensah F(2015). Prevalence of metabolic syndrome in type 2 diabetes mellitus patients. International Journal of Applied and Basic Medical Research.;5(2):133-138. doi:10.4103/2229-516X.157170.
12 . Felix-Val K, Titty WK, Owiredu WK, Agyei-Frimpong MT(2008). Prevalence of metabolic syndrome and its components among diabetes patients in Ghana. J Biol Sci. ;8:1057–61
13 .Khaled M Abd E, Mohamed Salah G, Ola A A, Hasnaa Abdel-A A S, Mohamed F A(2015). Prevalence of metabolic syndrome and cardiovascular risk factors among voluntary screened middle-aged and elderly Egyptians. Journal of Public Health, 37(4):612–617.

14 . G. K. Mini, P. S. Sarma , K.R(2018). Thankappan Overweight, the major determinant of metabolic syndrome among industrial workers in Kerala, India: Results of a cross-sectional study. doi.org/10.1016/j.dsx.2018.07.009.

15 Nilupher, Meenal Dhall, Satwanti Kapoor(2018). Lifestyle and diabetes among Muslim population of Manipur. Diabetes & Metabolic Syndrome: Clinical Research & Reviews https://doi.org/10.1016/j.dsx.2018.07.006

16 .Ismaa Ghazanfar Kiani, Adil Naseer Khan, Saadia Yasir, Urooj Taheed Baluch(2016). Frequency of metabolic syndrome in type II diabetes Mellitus. J Ayub Med Coll Abbottabad 28(1):59–62