



CODEN [USA]: IAJ PBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.3228871>Available online at: <http://www.iajps.com>

Research Article

**OCCURRENCE OF MICROVASCULAR ANOMALIES IN THE
RECENTLY IDENTIFIED PATIENTS TYPE-2 DIABETES**¹Dr Muhammad Naeem Yousaf, ²Dr. Saba Asghar, ³Dr Adeen Ahmed¹Muhammad Medical College, ²DHQ Hospital Skp, ³WMO Adil Hospital Lahore.**Article Received:** March 2019**Accepted:** April 2019**Published:** May 2019**Abstract:**

Objective: Microvascular problems are very important consequence of progression of type-2 diabetes which is the cause of the adverse QoL (Quality of Life), put high economic weight to the system of health care and increase the rate of mortality because of diabetes. The purpose of this case work was to evaluate the occurrence of microvascular anomalies in the recently identified patients of type-2 diabetes and to analyze the relationship between adverse glycaemic management and such anomalies.

Methodology: This transverse case work conducted in the clinic of diabetes located in Allama Iqbal Medical Institute, Lahore Pakistan. This case work started in December 2017 and lasted up to December 2018 among the patients suffering from type-2 diabetes. Related data of all the patients gathered with the help of special arranged Performa. The investigation of the patients for the retinopathy, nephropathy & neuropathy carried out.

Results: The division of the patients carried out into two groups. Group-1 was available with proper glycaemic control as HbA1c lower than 6.50 and Group-2 was available with the adverse glycaemic control of HbA1c greater than 6.50. In Group-2, microvascular anomalies were present in 89.80%. Neuropathy, nephropathy & retinopathy were available in 68.50%, 56.20% & 31.40% correspondingly. Those same rates in the Group-1 were 50.0%, 0.0% and 31.0% correspondingly and these values were lower in comparison with the values of Group-2.

Conclusion: The results of this case work showed that in recently identified type-2 diabetes patients who were available with adverse glycaemic control, percentages of the microvascular anomalies in very high in comparison with those who were available with normal glycaemic control. So, proper glycaemic control was necessary in the currently identified patients of type-2 diabetes for the prevention and reduction of the prevalence of such problems.

Keywords: Microvascular, diabetes, percentage, prevention, correspondingly, HbA1c, glycaemic, reduction, methodology, Performa, adverse.

Corresponding author:

Dr. Muhammad Naeem Yousaf,
Muhammad Medical College.

QR code



Please cite this article in press Muhammad Naeem Yousaf et al., **Occurrence of Microvascular Anomalies in the Recently Identified Patients Type-2 Diabetes.**, Indo Am. J. P. Sci, 2019; 06(05).

INTRODUCTION:

Diabetes mellitus is affecting more than one hundred and fifty million people in the whole world [1]. There is an estimation that in the year of 2030 the amount of the adults suffering from this disease will touch the four hundred and thirty nine million in the world and most of them will be the patients of type-2 diabetes mellitus [2, 3]. An important reason of morbidity and mortality is diabetes mellitus. The information from various case works shows the fact that there is propensity of the development of the macro vascular abnormalities in the patients of diabetes [4, 5]. These complications are very frequent in diabetes patients containing retinopathy causing different visual abnormalities including the fully blindness and it is also a vital reason of the blindness in the whole world [1, 6]; neuropathy is the cause of severe numbness and pain, chronic & recurring ulcers due to infections in the severity which is the reason of amputation; & characterization of the nephropathy carried out by proteinuria finally causing to the kidney diseases of final stages [3, 7].

These complications have the ability to decrease the QoL of the patients, place heavy economic weight on the services of health care departments and increase the mortality of the patients with diabetes [8, 9]. Various medical trials have concluded that tight control of the glucose of blood associates with a decrease in the microvascular problems of the patients with diabetes [10]. Level of HbA1c less than 7% is the aim for the optimal control of glucose of blood according to ADA [11] and an American organization concluded the levels of HbA1c less than 6.50% [12] whereas it is not still obvious that tight control of glucose can decrease the problems of end-organ among the patients with diabetes [13]. The proofs showed that tight control of the blood glucose in the type-2 diabetic patients has an association with a 25.0% less occurrence of these complications [14, 15]. More than seventy percent diabetic patients live in the countries with middle income [16].

METHODOLOGY:

A sum of 113 recently identified patients of diabetes who visited the clinic of diabetes of Allama Iqbal Medical Institute were the participants of this case work. Newly identified patients of type-2 diabetes are those patients of type-2 diabetes who appeared in front of us within six months after the diagnosis of this very disease. The standard methods were in utilization for

the identification of diabetes mellitus fulfilling the criteria of ADA. This research work started in December 2017 and finished in 2018. The range of the age of patients was thirty to seventy years. Each patient gave his consent to participate in the case work. A questionnaire was in use for the collection of the information about gender, age, diabetes duration, body mass index.

BP, cigarette smoking, history of family for diabetes and hypertension among every patient was in record. The patients with diabetes suffering from any other serious health issue were not the part of this case work. Standard formula of BMI was in use for the calculation of the BMI of patients. The gathering of the samples of blood carried out for the HbA1c test. The patients suffering from bilateral cataracts were separated for retinopathy. Ophthalmoscope was in use for the assessment of the retinopathy [17]. The history of numbness, paralysis in the past etc. were in use for the diagnosis of the neuropathy. The diagnosis of the neuropathy of pain carried out at the time of night with increased pain state. The urine sample at the time of morning was in use for nephropathy features. Patients with the history of severe diseases were not the part of this case work. SPSS V. 20 was in use for the statistical analysis of the collected information.

RESULTS:

Total 113 newly identified patients with diabetes were the part of this case work. This study covered a period of complete one year. The division of these patients carried out in two groups.

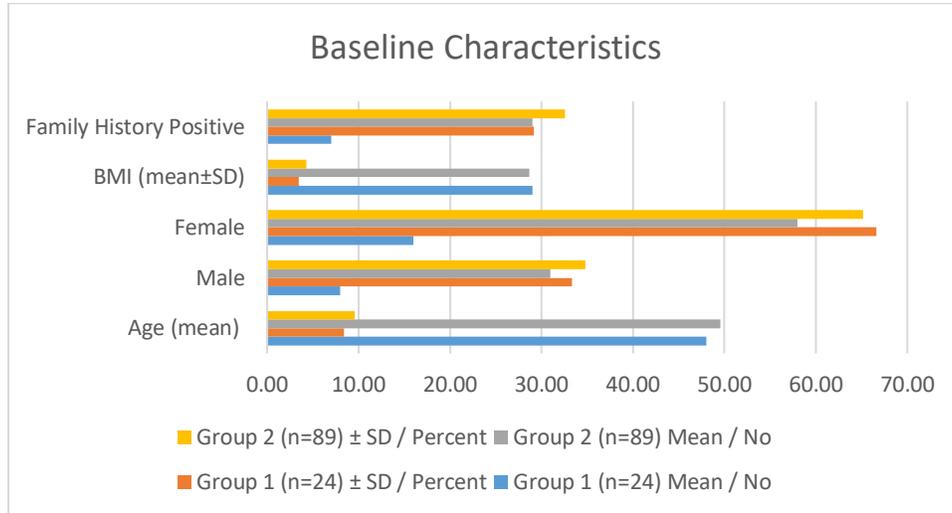
Group-1: (24 patients) this group contains the patients with optimal control of glucose (average HbA1c less than 6.50).

Group-2: (89 patients) this group contains the patients with adverse control (average HbA1c greater than 6.50).

The average age of the patients in group-1 was 48.04 ± 8.38 years whereas in the group-2 it was 49.55 ± 9.60 years. There were eight males and sixteen females in group-1 & thirty one males and fifty eight females in group-2. The average body mass index in group-1 was 29.042 ± 3.44 whereas it was 28.702 ± 4.3 in group-2. The findings displayed that no important statistical disparity between the baseline traits of two groups as mentioned in Table-1.

Table-I: Baseline Characteristics of Two Groups.

Characteristics	Group 1 (n=24)		Group 2 (n=89)		Remarks
	Mean / No	± SD / Percent	Mean / No	± SD / Percent	
Age (mean)	48.04	8.380	49.55	9.600	P=0.4800
Male	8.00	33.330	31.00	34.830	p=0.5470
Female	16.00	66.660	58.00	65.170	
BMI (mean±SD)	29.04	3.440	28.70	4.300	p=0.7000
Family History Positive	7.00	29.170	29.00	32.580	p=0.8000

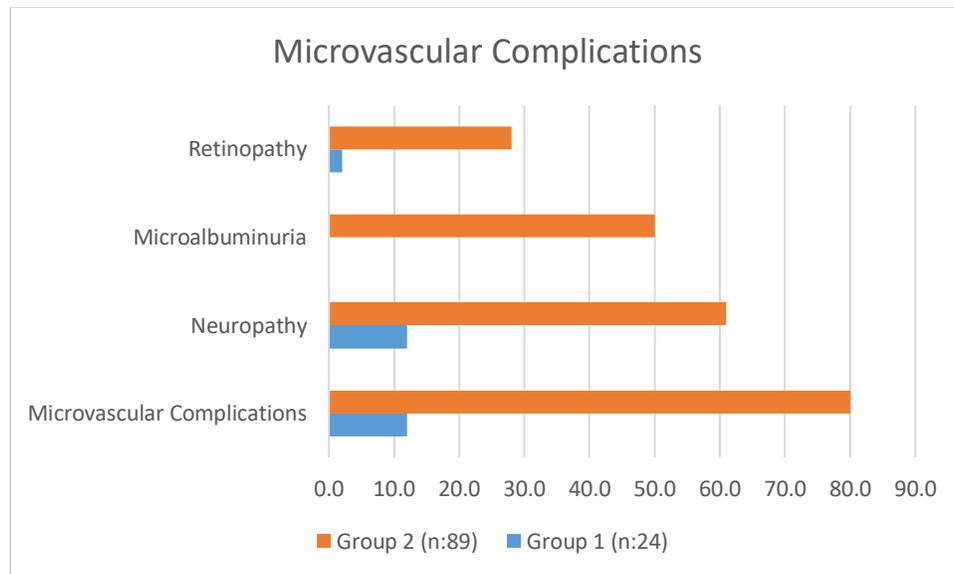


The assessment of the microvascular anomalies for the both groups carried out for both groups like neuropathy, nephropathy & retinopathy as mentioned in Table-2. Any of the microvascular anomaly in the group-1 was 50.0% whereas in group-2 were 89.80%.

The results showed important disparity. The patients of group-2 displayed very high rate of microvascular problems in combination as well as alone with important statistical disparity in comparison with the patients of group-1 as available in Table-2.

Table-II: Comparison between two groups regarding microvascular complications.

Complications	Group 1 (n:24)	Group 2 (n:89)	p value
Microvascular Complications	12.0	80.0	<0.0010
Neuropathy	12.0	61.0	0.0760
Microalbuminuria	0.0	50.0	<0.0010
Retinopathy	2.0	28.0	0.0170



DISCUSSION:

Diabetes is very common disorder of metabolism. It is increasing day by day in the whole world and there is very high occurrence of this disease in our population of Pakistan. Being the residents of this country which is under development, we are at high danger to acquire this disease [18]. This disease is the cause of high morbidity as well as mortality rate and it decreases the QoL of patients. Hyperglycemia is very vital factor of risk for the promotion of the microvascular disorders among patients suffering from diabetes with type-2 as it is available in type-1 diabetes mellitus. This is also available in many other case works [19, 20]. A study in UK displayed that danger for incidence of these complications was to increase at levels of HbA1c of 6.50% or more [21]. Adverse glyceemic control of diabetes mellitus has severe impacts on the health and it is major danger feature for the development of the complications due to diabetes [22].

There was poor glyceemic control in 78.76% patients of this case work. This rate very much high in this case work in comparison with other case works [23-25]. Amazingly, no patient was available with nephropathy with better glyceemic control [25]. Gupta [25] in his case work in India discovered that glycosylated Hb was very high in the microalbuminuria patients of type-2 diabetes. In the same manner, we observed the adverse glyceemic control has an association with high occurrence of retinopathy of diabetes and same findings are consistent with the results of Rema [23], Klein R [24] & Knuiman [26]. We concluded that adverse control in diabetic patients was very vital factor associated to neuropathy of diabetes as available in other case works [23, 24]. Shera [27] in his case work stated that microvascular anomalies have a

strong relation with the period of diabetes. Agarwal concluded that diabetes duration has an impact of the retinopathy, neuropathy & nephropathy [28].

CONCLUSION:

The findings of this case work concluded that the poor control to the blood glucose among the recently identified patients is accountable for high rate of microvascular problem. Effective method for screening and proper diabetes control should be in action for the prevention of such issues. There should be an encouragement for tight control of blood glucose among recently identified type-2 patients of diabetes for the prevention of the microvascular problems which can lead to the high rate of morbidity as well as mortality.

REFERENCES:

1. Lee ET, Keen H, Bennett PH, Fuller JH, Lu M. Follow up of the WHO multinational study of vascular disease in Diabetes: General description and morbidity Diabetologia. 2001;44(Suppl 2):S3-13.
2. Turner RC, Holman RR. Lessons from UKPDS Diabetes Res Clin Pract. 1995;28(Suppl 7):S151-157.
3. Vishwanath K, McGavin DD. Diabetic retinopathy: clinical findings and management. Community Eye Health. 2003;16:21-24.
4. Ahmedani MY, Hydrie MZ, Iqbal A, Gul A, Mirza WB, Basit A. Prevalence of microalbuminuria in type 2 diabetic patients in Karachi: Pakistan: a multicenter study. J Pak Med Assoc. 2005;55(9):382-386.
5. Wang W, Fu CW, Pan CY, Chen W, Zhan S, Luan R, et al. How do type 2 Diabetes Mellitus related

- chronic complications impact direct medical cost four major cities of urban China? *Value Health*. 2009;12(6):923-929.
6. Solli O, Stavem K, Kristiansen IS. Health related quality of life in diabetes associations of complications with EQ-ED Scores. *Health Qual Life Outcomes*. 2010;8:18.
 7. The Diabetes control and complications trial Research group, 1993, UKPDS Group, 1998.
 8. American Diabetes Association. Implications of the United Kingdom Prospective Diabetes Study. *Diabetes Care*. 2003;26:28-32.
 9. The American Association of clinical endocrinologist medical guidelines for the management of Diabetes Mellitus 2002.
 10. University group diabetes program effects of hyperglycemia agents on vascular complications in patients with adult – onset diabetes, VIII. *Diabetes*. 1982;31(Suppl 5):1-81.
 11. Prospective diabetes study group – Intensive blood glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes (UKPDS 33). *Lancet*. 1998;352:837-853.
 12. Turner RC. The UKPDS, a review. *Diabetes Care*. 1998;21(Suppl 3):35-38.
 13. The prevalence of diabetes has reached epidemic proportions IDF, *Diabetes Atlas 4th edition*. Last updated 2-5-2010 by bisl.wdf. Accessed May 2010.
 14. Arello LP, Gardner TW, King GL, Blankenship G, and Klein R. Diabetic retinopathy. *Diabetes Care*. 1998;21:143-156.
 15. Narayan KM, Gregg EW, Fagot-Campagna A, Engelgau MM, Vinicor F. Diabetes –A common, growing, serious, costly and potentially preventable public health problem. *Diabetes Res Clin Pract*. 2000;50(Suppl 2):S77-84.
 16. Klein R, Klein BC, Moss SE, Relationship of hyperglycemia to the long term incidence and progression of diabetic retinopathy. *Arch Intern Med*. 1994;154:2169.
 17. Bash LD, Selvin E, Steffes M, Coresh J, Astor BC. Poor glycemic control in diabetes and the risk of incident chronic kidney disease even in the absence of albuminuria and retinopathy: Atherosclerosis risk in Communities (ARIC) study. *Arch Intern Med*. 2008;168(22):2440-2447.
 18. United Kingdom Prospective Diabetic study group. Tight blood pressure control and risk of macro vascular and microvascular complications in type 2 diabetes. *BMJ*. 1998;317:703-713.
 19. Stevens VJ, Vlassara H, Abat A. A non-enzymatic glycosylation of Hb. *J Biol Chem*. 1977;252:2998-3002.
 20. Rema M, Ponnaiya M, Mohan V. Prevalence of retinopathy in non insulin dependent diabetes mellitus at a diabetes centre in Southern India. *Diab Res Clin Pract*. 1996;34:29-36.
 21. Klein R. Hyperglycemia and microvascular and macro vascular disease in diabetes. *Diabetes Care*. 1995;18:258-268.
 22. Gupta DK, Verma LK, Khosla PK, Dash SC. The prevalence of microalbuminuria in diabetes: a study from North India. *Diab Res Clin Pract*. 1991;12:125-128.
 23. Knuiman MW, Welborn TA, McCann VJ, Stanton KG, Constable IJ. Prevalence of diabetic complications in relation to risk factors. *Diabetes*. 1986;35:1332-1339.
 24. Shera AS, Jawad F, Maqsood A, Jamal S, Azfar M, Ahmad U. Prevalence of chronic complications and associated factors in Type 2 diabetes. *J Pak Med Assoc*. 2004;54:54-59.
 25. Agarwal PR, Ranka M, Beniwal R. Prevalence of Micro and Macro vascular complications in Type 2 Diabetes and their risk factors. *Int J Diab Dev Countries*. 2004;Vol.24.
 26. International diabetes Federation *Diabetes Atlas*. Accessed Sept. 2001- *Atlas, 2nd Edition Brussels: Grand, Ed. Belgium; 2003*.
 27. Shaw JE, Sicree RA, Zimmet PZ. Global estimation of the prevalence of diabetes for 2030. *Diabetes Res Clin Pract*. 2010;87(1):4-14.
 28. King H, Aubert RE, Herman WH. Global burden of diabetes, 1995 –2005: Prevalence, Numerical estimates, and projections. *Diabetes Care*. 1998;21(9):1414-1431.