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Research Article

Analysis of lipid profile in cases of diabetic patients in local population of Pakistan

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ABSTRACT

Introduction: Diabetes mellitus (DM) has been emerging as a major healthcare problem in Pakistan with 7.0 million people suffering from it and the number of diabetic patients is estimated to rise to a staggering figure of 14.4 million by the year 2040 making Pakistan the 8th highest country in the world in terms of burden of diabetic patients. **Aims and Objectives:** The basic aim of the study is to find the total lipid profile and levels of TG in diabetic patients.**Methodology of the study:** The study was conducted at Mayo hospital Lahore, Pakistan during 2017. The data was collected from 100 diabetic patients who was suffering from diabetes from last one year. Patients from both genders, age range 35 to 65 was selected for this study. Fasting plasma glucose, serum TC, HDL-C, LDL-C and TG was measured by using Randox kit.**Results:**We found strong positive correlation between severity of DR with BSF, HbA1c, serum LDL-C, TC and TG, whereas, age and duration of DM showed moderately positive correlation with severity of diabetes. **Conclusion:** In our study, strong positive correlation was found between serum TC, TG, LDL-C with both BSF and HbA1c, while HDL-C showed weak negative correlation with both BSF and HbA1c.

Key words: Diabetes, Fasting, Glucose, Lipids, Cholestrol

INTRODUCTION

Diabetes mellitus (DM) has been emerging as a major healthcare problem in Pakistan with 7.0 million people suffering from it and the number of diabetic patients is estimated to rise to a staggering figure of 14.4 million by the year 2040 making Pakistan the 8th highest country in the world in terms of burden of diabetic patients[1].The morbidity and mortality related to DM is mainly attributed to its microvascular complications including retinopathy, nephropathy and neuropathy. Chronic hyperglycaemia, increased reactive oxygen species, decreased nitric oxides and increased fatty acids are responsible for these chronic vascular complications by altering the vascular response[2]. The major ocular complication of DM is diabetic retinopathy (DR) which is the leading cause of irreversible blindness worldwide with prevalence of DR in newly diagnosed type II diabetics up to 40%[3]. Known risk factors for development and progression of DR include type and duration, age, gender, body-mass index (BMI), glycaemic control, hypertension,

nephropathy, smoking, pregnancy and serum lipid levels[4].

Role of serum lipids in development and progression of DR has been evaluated worldwide with variable results. Diabetic dyslipidaemia characterized by elevated serum total cholesterol (TC), triglycerides (TG), low density lipoproteins cholesterol (LDL-C) and high density lipoproteins cholesterol (HDL-C) has been proposed as possible risk factors for DR[5]. Hyperlipidaemia causes endothelial dysfunction due to reduced bioavailability of nitric oxide and breakdown of blood retinal barrier leading to exudation of serum lipids and lipoproteins which results in DR changes and diabetic macular odema (DME) formation[6].

Aims and Objectives

The basic aim of the study is to find the total lipid profile and levels of TG in diabetic patients.

Methodology of the study

The study was conducted at Mayo hospital Lahore, Pakistan during 2017. The data was collected from 100 diabetic patients who was suffering from diabetes from last one year. After approval by the hospital ethical review committee, informed written consent was taken from the patients prior to inclusion in the study. Patients from both genders, age range 35 to 65 was selected for this study. The pre devised proforma was completed by single researcher endorsing subject's demography, and clinical profile. Fasting plasma glucose, serum TC, HDL-C, LDL-C and TG was measured by using Randox kit.

SPSS 17.0 for windows was used for statistical analysis. Descriptive statistics i.e. mean ± standard deviation for quantitative values (age, duration of DM, BMI, BSF, lipid sub fraction levels and HbA1C) and frequencies along with percentages for qualitative variables (gender, smoking status) were used to describe the data. Independent sample 't' test and One way analysis of variance (ANOVA) with post hoc analysis was used to compare quantitative data between groups, while chi square test for independence was used to compare qualitative data. Pearson's correlation coefficient test was performed to find association of different study variables. A p value < 0.05 was considered statistically significant.

RESULTS

The demographic values shows that there is a significant relation between diabetes and hyperlipidemia in a local population of Pakistan. The value of HbA1C is 5.77 ± 0.50 in diabetic patients as compared to normal group. (Table 01)

Table 01: Clinical and biochemical profile of study population**.**

Variable	Diseased group	P value
Age (years)	48.04 ± 4.83	0.018
Male, n (%)	71 (50.71%)	0.285
Smoker, n (%)	32 (22.85%)	< 0.01
Duration (years)	4.60 ± 3.03	0.067
BMI (kg/m^2)	26.31 ± 2.71	0.418
Plasma Glucose (F) mg/dl	117.34 ± 7.93	< 0.01
HbA1C (%)	5.77 ± 0.50	< 0.01

We found strong positive correlation between severity of DR with BSF, HbA1c, serum LDL-C, TC and TG, whereas, age and duration of DM showed moderately positive correlation with severity of diabetes. (Table 2)

Table 02: Lipid sub fraction values among subgroups.

Lipid Profile	Diseased group	P value
Serum Cholesterol (mg/dl)	187.26 ± 17.46	< 0.01
Serum LDL-C (mg/dl)	92.59 ± 11.53	< 0.01
Serum HDL-C (mg/dl)	45.63 ± 4.44	< 0.01
Serum TG (mg/dl)	169.28 ± 9.83	< 0.01

DISCUSSION

The current study investigate the relationship of diabetes with lipid profile. Diabetes is a common issue now a days so that we investigate its effect and one prospect is lipid profile. Diabetes is a major cause of mortality globally, and it has been estimated that 400 million people worldwide will suffer from it by 2030[7]. Despite the fact that hereditary qualities seems to assume an essential part in the advancement of diabetes, examine recommends that dietary decisions driven by natural and financial components are of critical significance. Amazing eating regimens assume an essential part in diabetes avoidance[8]. Suitable dietary adherence can enhance insulin affectability

and glycemic control, and consequently add to way of life change and general personal satisfaction. Nonetheless, past research recommends that dietary adherence is seemingly among the most troublesome foundations of diabetes administration[9]. Higher HEI scores demonstrate nearer adherence to current dietary rules for singular food and supplement gatherings. For the sufficiency segments, for example, vegetables and natural product, a higher score demonstrates higher utilization. Dietary proposals depend on the useful effects of devouring products of the soil and expressly stress their constructive outcomes of decreasing corpulence and certain sorts of growths. The last three segments of the HEI incorporate refined grains, sodium, and discharge (calories from strong fats, liquor, and included sugars) and a higher score demonstrates bring down utilization[10].

We found strong positive correlation between severity of DR with BSF, HbA1c, serum LDL-C, TC and TG, whereas, age and duration of DM showed moderately positive correlation with severity of DR. Smoking and serum HDL-C levels showed moderate inverse correlation with severity of DR[11]. Correlation between DR with gender or BMI was not statistically significant. Ahsan et al in their study reported male gender (3.5 times), increased duration of diabetes (≥10 years, 5.46 times) and poor glycemic control (HbA1c ≥7%, 1.39 times) as significant factors for developing retinopathy[12].

CONCLUSION

In our study, strong positive correlation was found between serum TC, TG, LDL-C with both BSF and HbA1c, while HDL-C showed weak negative correlation with both BSF and HbA1c. Serum cholesterol, LDL-C and TG levels were significantly elevated and serum HDL-C level was decreased in patients with diabetes.

REFERENCES

1. Kiran PU, Srinivas B. Study of glycatedhaemoglobin, lipid profile and uric acid levels in diabetic retinopathy. Sch J App Med Sci. 2015;3(7A):2480–2484.
2. Kanski JJ, Bowling B. Retinal Vascular Disease. In: Kanski JJ, editor. Clinical Ophthalmology – A Systematic Approach. 7th Ed. London: Elsevier, Saunders; 2011. pp. 533–591.
3. Rahman MR, Arslan MI, Hoque MM, Mollah FH, Shermin S. Serum lipids and diabetic retinopathy in newly diagnosed type 2 diabetic subjects. J Enam Med Coll. 2011;1(2):63–66.
4. Cetin EN, Bulgu Y, Ozdemir S, Topsakal S, Akin F, Aybek H, et al. Association of serum lipid levels with diabetic retinopathy. Intl J Ophthalmol. 2013;6(3):346–349. doi:10.3980/j.issn.2222-3959.2013.03.17.
5. Muluke M, Gold T, Kiefhaber K, Al-Sahli A, Celenti R, Jiang H, Cremers S, Van Dyke T, Schulze-Spate U. Diet-Induced Obesity and Its Differential Impact on Periodontal Bone Loss. J Dent Res. 2016 Feb;95(2):223-9.
6. Khader YS, Bawadi HA, Haroun TF, Alomari M, Tayyem RF. The association between periodontal disease and obesity among adults in Jordan. J ClinPeriodontol. 2009 Jan;36(1):18- 24.
7. Zimmermann GS, Bastos MF, Dias Goncalves TE, Chambrone L, Duarte PM. Local and circulating levels of adipocytokines in obese and normal weight individuals with chronic periodontitis. J Periodontol. 2013 May;84(5):624-33.
8. Wheeler ML, Dunbar SA, Jaacks LM, Karmally W, Mayer-Davis EJ, Wylie-Rosett J, Yancy WS Jr.Macronutrients, food groups, and eating patterns in the management of diabetes: a systematic review of the literature, 2010. Diabetes Care. 2012;35(2):434–445.
9. A jala O, English P, Pinkney J. Systematic review and meta-analysis of different dietary approaches to the management of type 2 diabetes. Am J ClinNutr. 2013;97(3):505–516.

10. Newby PK, Tucker KL. Empirically derived eating patterns using factor or cluster analysis: a review. Nutr Rev. 2004;62(5):177–203.
11. Ocké MC. Evaluation of methodologies for assessing the overall diet: dietary quality scores and dietary pattern analysis. ProcNutr Soc. 2013;72(2):191–199.
12. Viana LV, Gross JL, Camargo JL, Zelmanovitz T, da Costa Rocha EP, Azevedo MJ. Prediction of cardiovascular events, diabetic nephropathy, and mortality by albumin concentration in a spot urine sample in patients with type 2 diabetes. J Diabetes Complications. 2012;26(5):407–412.