

HDL & LDL Status in Untreated Newly Detected Type 2 Diabetic Patients

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Abstract

Objective: The study was conducted with a view to find out HDL & LDL status in newly detected untreated Type II diabetic patients. **Methods:** Study was carried out on 116 (66 male & 50 female) newly diagnosed untreated type 2 diabetes patients aged 40 - 65 years and were selected randomly for study. Fifty (25 male & 25 female) non diabetic subjects aged 40 - 65 years were randomly selected as control. **Results:** LDL - C was significantly higher ($P < .0001$) and HDL -C was significantly lower ($< .0001$) in study group in comparison to control group. **Conclusion:** Dyslipidemia is commonly found in type - 2 diabetic patients. It is a risk factor for microvascular complications. So it should be controlled effectively.

Key words: Diabetes Mellitus; Type-2 DM; HDL; LDL.

INTRODUCTION

Type-2 diabetes is often associated with dyslipidaemia. Type-2 diabetes is frequently associated with reduced concentration of HDL and increased concentration of LDL¹⁻⁵. They are at risk of coronary artery & peripheral vascular and cerebro vascular disease due to atherosclerosis and is a major cause of morbidity and mortality⁶. The Prevalence is 2 percent⁷.

So it is reasonable to study HDL and LDL status in type-2 diabetes, when morbidity and mortality from diabetes and its complication is rapidly increasing day by day. WHO describes above problems as global epidemic.

Current diagnostic value of LDL & HDL cholesterol.

Lipid panel	Range (mg/dl)	Interpretation
LDL	<100	Optimum
	100-129	Near or above optimum
	130-159	Border line high
	160-189	High
	>190	Very high
HDL	<40	Low
	≥60	High

Aims & Objectives

To measure HDL & LDL level in newly diagnosed untreated type 2 diabetics.

Place of Study

At BIRDEM, Dhaka during the period of January to December 2003 (1 year).

Study Population

Study was carried out on 116 (66 male & 50 female) newly diagnosed untreated type 2 diabetes patients aged 40 - 65 years and were selected randomly for study. Fifty (25 male & 25 female) non diabetic subjects aged 40 - 65 years were randomly selected as control.

MATERIALS AND METHODS

Clinical information relating to the diabetic subjects was obtained by detailed medical history and clinical examination at outpatient department of BIRDEM.

Inclusion criteria:

1) Newly detected type-II DM not receiving lipid lowering agents

Exclusion criteria:

- 1) Type II Diabetic who are on lipid lowering agents
- 2) Type II Diabetic who has other co-morbidity eg CKD, IHD etc

Collection of Blood Sample

Fasting blood sample was drawn from the antecubital vein with all aseptic precaution for the measurement of fasting serum total cholesterol, TG, HDL, LDL. Blood for plasma glucose was collected 2 hours after breakfast in all patients and controls serum glucose, TG, Total cholesterol serum high density lipoprotein were measured by auto analyzer and LDL was measured by formula :

$$\text{LDL cholesterol} = \text{Total cholesterol} - [(\text{TG}/5) + \text{HDL}].$$

RESULTS**a. Basic characteristics**

Total 65 diabetic patients. 34 (52%) male and 31 (48%) female with a mean age 50.51 ± 7.85 years. Total 50 control subjects, 25 (50%) male & 25 (50%) female. Mean age 51.82 ± 8.13 years.

Table 1 : Comparison of anthropometric data between control & Diabetic group

Parameters	Control n = 50	Diabetic n = 65	P value
Age (years)	51.82 ± 8.13	50.51 ± 7.85	.385
Weight (KG)	56.36 ± 5.34	59.16 ± 8.79	.045
Height (cm)	159.14 ± 7.28	156.55 ± 7.85	.073
BMI	22.25 ± 1.5	24.43 ± 2.4	.001

b. Biochemical characteristics :

Two hours post prandial blood glucose level and LDL, HDL are significantly higher among the diabetic group.

Table 2 : Biochemical parameters between control and diabetic group.

Parameters	Control n = 50	Diabetic n = 65	P value
Blood glucose (2HPP)	7.03 ± 0.41	17.12 ± 2.38	<.001
LDL (Fasting)	105.17 ± 27.09	164.75 ± 25.30	<.001
HDL (Fasting)	42.20 ± 7.43	37.82 ± 4.27	<.001

Unpaired t test was used in all cases.

DISCUSSION

Present study showed significant difference between case (Diabetic) and control group regarding different parameters like blood glucose level, LDL and HDL. In our study showed significantly higher LDL and lower HDL⁸⁻¹³. The finding of our study is consistent with the findings of them who found significantly higher concentration of LDL and low HDL ($P > 0.5$)¹³.

CONCLUSION

Dyslipidemia is commonly found in type - 2 diabetic patients. It is a risk factor for microvascular complications. So it should be controlled effectively.

DISCLOSURE

All the authors declared no competing interest.

REFERENCES

1. Uusitupa M, Siitonen O, Pyörälä K, Aro A, Herslo k, Penttilä I & Voutilainen E. The relationship of cardiovascular risk factors to the prevalence of coronary heart disease in newly diagnosed type II diabetes. *Diabetologia*. 1985; 28: 653-659.
2. Falko JM, Parr JH, Simpson NR & Wynn V. Lipoprotein analysis in varying degrees of glucose tolerance. Comparison between non-insulin-dependent diabetics, impaired glucose tolerance and control populations.
3. Kerredy AL, Lippis TRJ, Lavery TD, Haddes DR, Weaver JA & Montgomery DAD. Relation of high-density lipoprotein cholesterol concentration to type of diabetes and its control. *Br Med J*. 1978; 2: 1191-1194.
4. Schonfeld G, Birze C, Miller JP, Kessler G & Santiago J. Apolipoprotein B levels and altered lipoprotein composition in diabetes. *Diabetes*. 1974; 23: 827-834.
5. Davidson MB, Coulston AM, Herman W, Ipp E, Jovanovic L, Lebovitz HE, Levin SR, editors. American Diabetic Association: clinical practice Recommendations Diabetes care. 2003; 26(suppl 1): 55-520.
6. Garcia MJ, Namara PMM, Gordon T & Kannell WB. Morbidity and mortality in diabetics in the Framingham population: sixteen years follow-up study. *Diabetologia*. 1974; 23: 105-111.
7. Foster DW. Diabetes mellitus. *Harrison's principles of Internal Medicine* McGraw Hill company, USA. 1998; 2(14): 2061-2062.
8. Brines ER, Mao SJT, Palumbo PJ, Fallon WM. Analysis of plasma lipids and apolipoproteins in insulin dependent and non-insulin diabetes. *Metabolism*. 1984; 33: 42-49.
9. Dunn FL, Raskin P, Bilheriner DW & Grundy SM. The effect of diabetic control in very low density lipoprotein triglyceride metabolism in patients with type II diabetes mellitus and marked hypertriglyceridemia. *Metabolism*. 1984; 33: 117-123.
10. Taskinen MR, Beltz WF, Harper I, Fields RM, Schonfeld G. Effects of NIDDM on very low density lipoprotein triglyceride and apolipoprotein B metabolism: study before and after sulfonylurea therapy *Diabetes*. 1986; 35: 1268-1277.
11. Mahtab H, Khatun M, Rahman & Banik NG. Lipoprotein pattern in diabetics of Bangladesh. *Med Res Counc Bull*. 1985; 11: 75-80.
12. Uusitupa M, Siitonen O, Voutilainen E, Aro A, Hersio K. Serum lipids and lipoproteins in newly diagnosed non-insulin dependent (type II) diabetic patients with special reference to factors influencing HDL-cholesterol and triglycerides. *Diabetes care*. 1986; 9: 17-22.
13. Uddin FM & Miah AK. Lipid profile and its relation to fasting insulin level in non-insulin dependent diabetes mellitus (NIDDM). *Bangladesh Med Res Counc Bull*. 1995; 21: 64-72.