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The Incidence and Prevalence of Dyslipidemia in Diabetic Patient in OP & IP of Annapoorana Medical College and Hospital

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Abstract
Dyslipidemia contribute to major risk factor of atherosclerosis and consequent mortality in diabetic patients. It often seen after the onset of diabetes particularly type 2 DM and may persist inspite of adequate control of blood sugar. Diabetes Mellitus is the most common chronic disease present in the world. The leading causes of morbidity and mortality for such patients have been attributed to the rising incidences of Cardiovascular Diseases (CVD) as a complication of type 2 diabetes. A major proportion of CVDs are attributed to the occurrence of atherogenic dyslipidemia.
Objectives: *1, To know the incidence and prevalence of dyslipidemia in diabetic patient. 2, To know the incidence and prevalence of cardiovascular complication in dyslipidemic patient.*
Material and Methods: *This study is carried out among type 2 diabetic mellitus patients attending OP and IP of AMCH salem , spread over three month April –June 2019 .The total study of population is 200 which included known as well as newly diagnosed type 2 diabetic patients more than 30 years of age.*
Result: *Out of 200 patient who were included in the study 110 are female and 90 are male .ECG were taken to see any cardiovascular complication. In that , patient whose ECG were abnormal [ST elevation] had elevated total cholesterol 290.8 mgs/dl and triglycerides 339.8 mgs/dl .*
Conclusions: *Results suggest high (86%) prevalence of dyslipidemia among type 2 diabetes mellitus study subjects .From this study we have found out that dyslipidemia control in Indian T2DM patients is very poor. Dyslipidemia being one of the main risk factors for CVD in T2DM patients there it is mandatory to treat dyslipidemia aggressively to reduce risk of cardio vascular events.*

Introduction

Cardiovascular disease is the leading cause of premature morbidity and mortality worldwide. Diabetes mellitus (DM) has become major public health problem in India. It is a metabolic disorder caused by impaired insulin secretion, peripheral insulin resistance or both. It is characterised by raised blood glucose with diminished uptake and metabolism of cellular glucose as well as altered lipid and protein metabolism. Diabetes is not only increasing morbidity and mortality but also decreases the quality of life.

Diabetes mellitus was one of the leading causes of mortality, whereby 5.5 million people died from diabetes and its related complications. The complications of diabetes mainly macrovascular

contribute to the high morbidity and mortality. As many as 80% of patient die from some form of cardiovascular disease and it will be mainly related with some form of lipoprotien metabolism. Diabetic patient often has abnormal lipoprotien metabolism.

Dyslipidaemia in diabetic mellitus is one of the major risk factors for CVD. The most common pattern of dyslipidaemia is reduced HDL, hypertriglyceridaemia and an increased concentration of small dense low-density lipoprotein (LDL) particles. The precise pathogenesis of diabetic dyslipidaemia is not clearly known; however, evidence suggests that insulin resistance has a major role in the development of dyslipidemia. Insulin which is deficienct or its resistance activates intracellular hormone which in turn stimulate lipase which helps in the release of non-esterified fatty acids (NEFA) from triglycerides stored in metabolically active centrally distributed adipose tissue. High circulating levels of NEFA is main in increasing hepatic triglyceride production. Increased hepatic triglyceride synthesis is always associated with increased secretion of apolipoprotein B (apoB). Furthermore and due to this normal inhibitory effect of insulin on hepatic apoB production and triglyceride secretion in VLDL is lost, and the VLDL secreted is larger and more triglyceride-rich protien. The tendency to hypertriglyceridemia is further augmented by reduced VLDL catabolism .The main cause of the lipid changes associated with DM is attributed to increased free fatty acid flux secondary to insulin resistance

Dyslipidemia leads to considerable risk of atherosclerosis and consequent mortality in diabetic patients. It often precedes after the onset of diabetes particularly in type 2 DM patient and even occurs inspite of adequate control of blood sugar. Patients who are diabetics often have lipid particles that are more atherogenic when compared with non-diabetic people. Because of this additive there is increase cardiovascular risk of hyperglycemia and hyperlipidemia . Apart from risk factors such as dyslipidaemia, elevated HbA1C is regarded as an independent risk factor for CVD in subjects with or without diabetes. The estimated risk of CVD has shown to be increased by 17% for each 1% increase in absolute HbA1C value in the diabetic population.

Objectives

1) To know the incidence and prevalence of dyslipidemia in diabetic patient.
2) To know the incidence and prevalence of cardiovascular complication in dyslipidemic patient

Materials and Method

This study is carried out among type 2 diabetic mellitus patients attending OP and IP of AMCH salem. Study population included are known as well as newly diagnosed type 2 diabetic patients with age more than 30 years.

Inclusion Criteria: Patient with > 30 years of age, Known case of type 2 DM, Newly diagnosed case of type 2 diabetes diagnosed as per criteria of American diabetics association, Fasting plasma glucose level higher than 126 mg/dl, Plasma Glucose level exceeding 200 mg/dl at 2 hours in the 75 g oral glucose tolerance test Symptoms of Diabetes and Random Plasma Glucose > 200mg/dl, HbA1C > 6.5%.

Exclusion Criteria: Patients with following condition are excluded from our study: Acute metabolic complications – Diabetic ketoacidosis, hyperglycemic , hyperosmolar syndrome, Acute illnesses– Acute myocardial infarction, cerebrovascular disease, acute infections, Hypothyroidism ,Liver disorder , Renal diseases, Patients on beta blocker, diuretics, thiazides

Analysis and discussion

Table 1 shows age wise distribution of sugar and lipid profile

Age Distribution = 40 - 49

Descriptive Statistics[a]

	N	Minimum	Maximum	Mean	Std. Deviation
FBS	54	124.0	195.0	149.630	16.5874
PPBS	54	180.0	325.0	248.815	32.2403
TChol	54	169.0	369.0	247.648	38.8462
HDL	54	24.0	49.0	35.222	6.7283
LDL	54	96.0	195.0	151.815	23.4955
TRIGLY	54	136.0	365.0	226.759	53.8054
VLDL	54	23.0	69.0	44.981	13.4255
Valid N (listwise)	54				

Age Distribution = 50 - 59

Descriptive Statistics[a]

	N	Minimum	Maximum	Mean	Std. Deviation
FBS	80	123.0	180.0	146.150	12.7260
PPBS	80	210.0	369.0	260.875	30.7630
TChol	80	158.0	358.0	242.663	42.9748
HDL	80	21.0	49.0	36.263	7.5368
LDL	80	95.0	196.0	144.925	24.6688
TRIGLY	80	134.0	369.0	220.550	54.3654
VLDL	80	21.0	86.0	44.113	14.8247
Valid N (listwise)	80				

Age Distribution = 60 - 69

Descriptive Statistics[a]

	N	Minimum	Maximum	Mean	Std. Deviation
FBS	60	123.0	185.0	144.717	14.7017
PPBS	60	198.0	341.0	263.000	29.5090
TChol	60	188.0	398.0	262.450	37.3338
HDL	60	24.0	47.0	34.717	5.4744
LDL	60	85.0	210.0	156.817	21.1384
TRIGLY	60	142.0	358.0	245.183	39.5095
VLDL	60	25.0	75.0	50.383	12.4262
Valid N (listwise)	60				

Age Distribution = 70 And Above

Descriptive Statistics[a]

	N	Minimum	Maximum	Mean	Std. Deviation
FBS	6	123.0	174.0	148.833	22.1126
PPBS	6	240.0	285.0	262.000	19.2458
TChol	6	236.0	284.0	261.167	17.5888
HDL	6	28.0	36.0	31.833	3.6009
LDL	6	145.0	169.0	161.167	9.4956
TRIGLY	6	195.0	310.0	249.500	37.7505
VLDL	6	45.0	65.0	55.333	8.6410
Valid N (listwise)	6				

Table 1: shows age wise distribution of blood sugar and lipid profile from age 40yrs to 70 yrs. From this table we find out that patient whose are above 70yrs have ppbs and cholesterol are high

Table 2 shows gender wise distribution of sugar and lipid profile

Gender = Female

Descriptive Statistics[a]

	N	Minimum	Maximum	Mean	Std. Deviation
FBS	103	123.0	184.0	145.961	13.7420
PPBS	103	180.0	369.0	259.680	32.3992
TChol	103	158.0	398.0	249.184	40.4799
HDL	103	23.0	49.0	35.913	6.8615
LDL	103	96.0	196.0	151.184	23.4214
TRIGLY	103	134.0	369.0	231.427	55.3319
VLDL	103	21.0	86.0	47.495	14.8772
Valid N (listwise)	103				

Gender = Male

Descriptive Statistics[a]

	N	Minimum	Maximum	Mean	Std. Deviation
FBS	97	123.0	195.0	147.567	15.7896
PPBS	97	198.0	341.0	256.814	29.2967
TChol	97	169.0	369.0	251.897	40.4090
HDL	97	21.0	49.0	34.825	6.4743
LDL	97	85.0	210.0	150.474	23.6736
TRIGLY	97	135.0	320.0	229.485	45.3524
VLDL	97	21.0	75.0	45.577	12.7441
Valid N (listwise)	97				

Table 2: shows gender wise distribution of blood sugar and lipid profile. From this table we found out that female have high post prandial blood sugar, cholesterol and triglyerides.

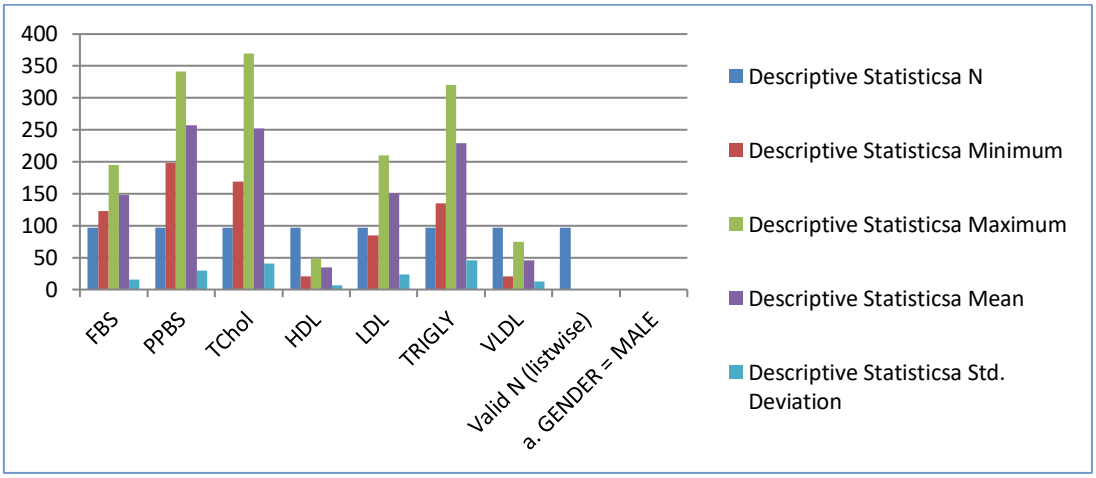

Table 3 shows distribution of FBS with lipid profile

Cholgrp = <200

Descriptive Statistics[a]

	N	Minimum	Maximum	Mean	Std. Deviation
FBS	32	123.0	174.0	143.500	13.5242
PPBS	32	214.0	369.0	264.531	32.2730
TChol	32	158.0	198.0	185.375	9.5942
HDL	32	42.0	49.0	45.969	2.2645
LDL	32	85.0	126.0	106.531	11.7966
TRIGLY	32	134.0	148.0	140.094	4.5886
VLDL	32	21.0	32.0	25.594	2.4998
Valid N (listwise)	32				

Chol grp = 200 and Above

Descriptive Statistics[a]

	N	Minimum	Maximum	Mean	Std. Deviation
FBS	168	123.0	195.0	147.357	14.9359
PPBS	168	180.0	341.0	257.101	30.5739
TChol	168	214.0	398.0	262.905	30.9373
HDL	168	21.0	43.0	33.369	5.1673
LDL	168	132.0	210.0	159.280	13.5531
TRIGLY	168	159.0	369.0	247.702	34.4344
VLDL	168	32.0	86.0	50.560	11.3210
Valid N (listwise)	168				

Table 3 shows that inspite of elevated blood sugar values lipid profiles were within normal limit

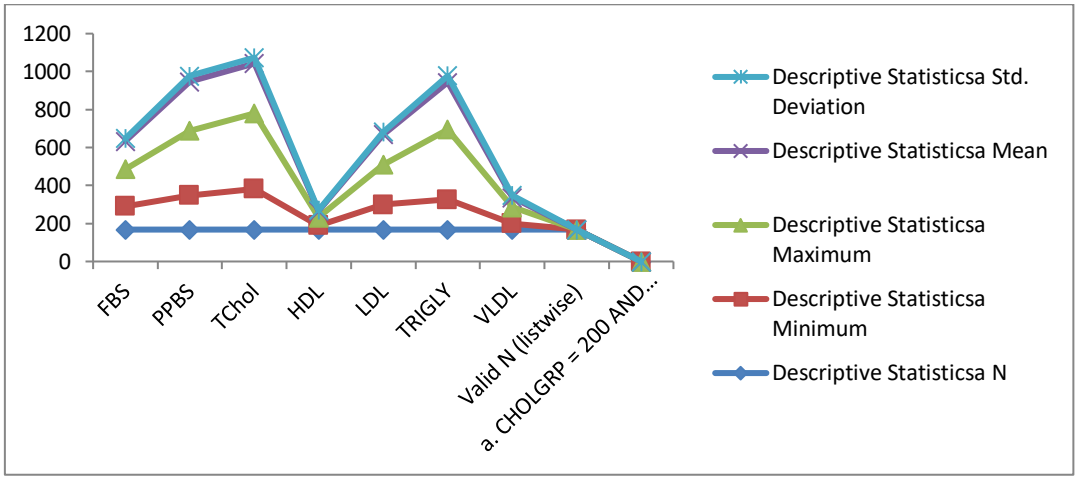

Table 4 shows distribution of blood sugar with lipid profile

FBSGRP * CHOLGRP Cross tabulation

			CHOLGRP		Total
			<200	200 AND ABOVE	
FBSGRP	110 - 130	Count	6	24	30
		% within FBSGRP	20.0%	80.0%	100.0%
	130 - 150	Count	17	76	93
		% within FBSGRP	18.3%	81.7%	100.0%
	150 - 170	Count	8	57	65
		% within FBSGRP	12.3%	87.7%	100.0%
	170 AND ABOVE	Count	1	11	12
		% within FBSGRP	8.3%	91.7%	100.0%
	Total	Count	32	168	200
		% within FBSGRP	16.0%	84.0%	100.0%

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.901[a]	3	.593
Likelihood Ratio	2.006	3	.571
Linear-by-Linear Association	1.744	1	.187
N of Valid Cases	200		

2 cells (25.0%) have expected count less than 5. The minimum expected count is 1.92.

Table 4 shows that the person who is fasting blood sugar value is 130 – 150 mg/dl has more number of people with total cholesterol more than 200 mg/dl. We calculated chi-square test for our finding.

Table 5 shows ECG wise distribution of blood sugar and lipid profile

Group Statistics

	ECG	N	Mean	Std. Deviation	Std. Error Mean
TRIGLY	NORMAL	194	227.103	47.4058	3.4035
	ABNORMAL	6	339.833	21.1605	8.6387

From the above table we can find that person whose ecg shows abnormal changes like elevated ST has elevated triglyerides

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
TRIGLY	Equal variances assumed	3.01	0.084	-5.8	198	0	-112.7302	19.4506	-151.0872	-74.3733
	Equal variances not assumed			-12.1	6.67	0	-112.7302	9.285	-134.909	-90.5515

Conclusion

From our study we found out in 200 patient we examined around 32 patients (16%) had normal lipid profile and also person whose ECG had ST elevation had increased triglyerides. Dyslipidemia is prevalent among T2DM patients who attend annapoorana medical college and hospital, salem. This study results will help in increasing the awareness regarding dyslipidemia in diabetic patients. To reduce cardiovascular complication, patients should have regular follow-up that will help them from preventing vascular complications. It is clear that aggressive dyslipidemia management is the need of the hour in patients with diabetes.

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