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LIPID PROFILE IN RELATION TO ANTHROPOMETRIC INDICES IN PCOS WOMEN- A CROSS SECTIONAL STUDY

KEY WORDS: PCOS, dyslipidemia, BMI, Waist Circumference

Dr k. sharmila devi

MD OG, Assistant Professor, Institute Of Obstetrics And Gynaecology ,madras Medical College, Chennai

Dr. Usha Rani. S*

MD, DGO, DNB, Professor, Institute Of Obstetrics And Gynaecology ,madras Medical College, Chennai *Corresponding Author

S. Padmanaban

Scientist B Nirrh Field Unit HRRC, Kilpauk Medical College, Chennai.

Dr. Sindhu S

Post Graduate, Institute Of Obstetrics And Gynecology ,madras Medical College .

ABSTRACT

PCOS has been one of the major public health problem in women of reproductive age group in our country, which leads to various medical consequences. The present study is aimed at assessing the relationship of lipid profile with anthropometric indices in PCOS women. This is a cross sectional study where 500 PCOS women were chosen and serum Triglycerides, serum Total Cholesterol, serum LDL, serum HDL were measured. BMI and WC were measured for the same patients and the relationship were studied.
Results: It was found that the PCOS women with BMI >30 showed elevated sr.TGL, sr. Total cholesterol, sr.LDL and low HDL levels. Waist circumference was found to have significant influence on lipid profile. Hence PCOS patients should be screened for dyslipidemia for effective prevention of cardiovascular accidents.

Introduction

PCOS is the most common endocrine and metabolic disorder in adolescent and reproductive women, which is a predominant reason for infertility with the incidence of 5-10%(1,2). Although the causative factors for PCOS is not well known, previous studies have shown the close association with PCOS with lipid metabolism and Insulin resistance (3). Over 50% of patients with PCOS shows obesity, increases the risk of DM and CVD. (4).

Materials and methods

This is a cross sectional study carried at Institute of Obstetrics and Gynaecology from may 2016 to april 2017 . 500 PCOS women (as per revised Rotterdam criteria) were involved in the study, height, weight and waist circumference were measured. BMI was calculated and categorised into group 1(18.5-24.9), group 2 (25-29.9) and group 3 (>30) (according to WHO classification). Waist Circumference is measured at the approximate mid point between the lower margin of the last palpable rib and at the top of the iliac crest in the standing posture with arm at the sides and feet positioned together(WHO Criteria). Waist circumference of 80 cm and below were consider normal and WC of more than 80 cm were consider abnormal(WHO Criteria). Fasting blood samples were obtained to determine the levels of sr.TGL, sr.LDL, sr.HDL and sr. Total Cholesterol. These values were studied for their relationship with BMI and Waist Circumference.

Results

In the study population of 500 PCOS, 244 women were under group 1 (18.5-24.9), 185 women were under group 2 (25-29.9), 71 women were under group 3 (>30). The mean sr.TGL levels were 101.40,120.43,127.11 in the group 1,2,3 respectively. The mean sr.LDL were 87.16,97.23,123.41 in the group 1,2,3 respectively (table1). It was found that as the BMI of PCOS women increases, the level of Total Cholesterol, sr.LDL, sr.TGL increases and levels of HDL decreases with statistical significance (p<.001).(Figure 1,2,3,4). The relationship of WC with lipid profile is illustrated in Table 2 .

TABLE 1 : showing the distribution of lipid profile parameters in different categories of BMI.

		N	Mean	Std. Deviation	Std. Error
S.TGL (mg/dl)	18.5-24.9	244	101.40	8.393	.537
	25-29.9	185	120.43	17.275	1.270
	30 and above	71	127.11	28.446	3.376
	Total	500	112.09	19.277	.862
S.HDL (mg/dl)	18.5-24.9	244	56.22	2.496	.160
	25-29.9	185	52.23	5.186	.381

	30 and above	71	42.26	2.704	.321
	Total	500	52.76	5.968	.267
S.LDL (mg/dl)	18.5-24.9	244	87.16	3.465	.222
	25-29.9	185	97.23	11.894	.874
	30 and above	71	123.41	21.316	2.530
	Total	500	96.04	16.351	.731
T.CHOL (mg/dl)	18.5-24.9	244	158.20	8.754	.560
	25-29.9	185	161.28	14.380	1.057
	30 and above	71	182.20	31.100	3.691
	Total	500	162.75	17.720	.792

Figure 1 : The trend of increasing Sr. TGL in association with elevated BMI

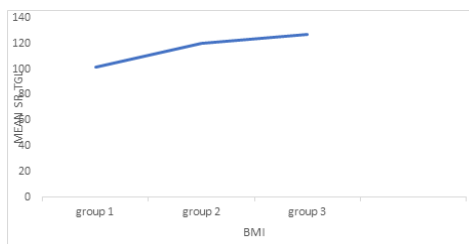


FIGURE 2 The trend of increasing Sr. LDL in association with elevated BMI

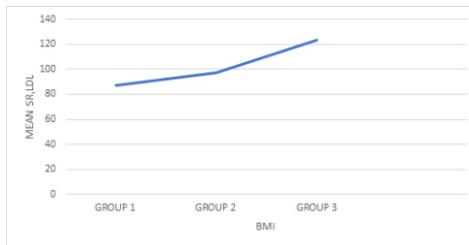


FIGURE 3 The trend of increasing Sr. TOTAL CHOLESTROL in association with elevated BMI



FIGURE 4 The trend of decreasing Sr. HDL in association with elevated BMI

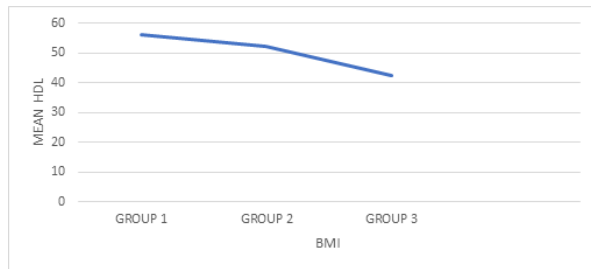


Table 2 : relationship between WC and lipid profile

	wc	N	Mean	Std. Deviation	Std. Error Mean
S.TGL (mg/dl)	Increased & above	216	120.28	22.658	1.542
	Normal	284	105.91	13.205	.784
S.HDL (mg/dl)	Increased & above	216	48.89	6.896	.469
	Normal	284	55.76	2.551	.151
S.LDL (mg/dl)	Increased & above	216	104.34	20.837	1.418
	Normal	284	89.74	6.986	.415
T.CHOL (mg/dl)	Increased & above	216	164.28	24.194	1.646
	Normal	284	161.58	10.284	.610

Discussion

This study was performed to assess the relationship of lipid profile with anthropometric indices in PCOS women. Dyslipidemia is an important risk factor associated with PCOS. Obesity and insulin resistance occurs frequently in association with PCOS (5). Out of 500 PCOS, 14.2 % were in BMI >30. This group showed elevated levels of sr. TGL, sr. LDL, sr Total Cholesterol and decreased sr.HDL(table1). Among the lipid profile parameters, serum LDL was significantly increased in BMI>30. The increase in triglycerides may be because of the accumulation of triglycerides which may occur owing to the increased lipogenesis, decreased clearance or reduced oxidation of fatty acids. Insulin resistance also contributes to catabolism of HDL and formation of LDL (6). Hyperandrogenism is associated with increased hepatic lipase activity and decrease in HDL particles. After removing the effects confounding factors, serum LDL showed stronger association with BMI (r-.75, p<.001) and Waist Circumference (r-.56, p<.001). Similar results were observed with privani et al (7). wilde et al also showed decreased HDL associated with PCOS which is similar to our observation. (8).

Conclusion

Our study suggests that the anthropometric characteristics (BMI and waist circumference) are more important parameter, correlated to lipid profile in PCOS patient .Hence, lipid profile evaluation should be compulsory for all PCOS patients and early treatment of obesity is necessary to prevent dyslipidemia and further cardiovascular complications.

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