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Research Article

An assessment of lipid profile in cases of Polycystic ovary syndrome

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ABSTRACT

Objective: To assess the lipid profile in cases of Polycystic ovary syndrome presenting at Lahore General Hospital Lahore.

Materials & Methods: This descriptive study was conducted at Department of Gynecology and Obstetrics, Lahore General Hospital Lahore from January 2018 to August 2018 over the period of 6 months. All diagnosed patients of PCOS of age group from18 to 35 years with BMI <25 was included in this study lipid profile of the selected patients was assessed.

Results: Mean age of the patients was 24.40 ± 5.367 and mean BMI was 21.01 ± 1.912. Out of 286 patients of polycystic ovarian syndrome (PCOS) dyslipidemia was found in 69 (24.13%) patients.

In age group 18-27 years, dyslipidemia was found in 4 (1.9%) patients and in age group 28-35 years dyslipidemia was found in 65 (85.53%) patients.

Conclusion: Dyslipidemia occurs in PCOS patients. It occur more frequently in high normal BMI patients than low normal BMI patients. Moreover it occurs more in age > 28 years as compare to younger ones.

Key Words: Polycystic ovary syndrome, lipid profile, BMI, dyslipidemia.

INTRODUCTION

Polycystic ovary syndrome is a multifactorial and polygenic condition.[1]It is a syndrome of ovarian dysfunction that is characterized by anovulation, hyperandrogenism and/or the presence of polycystic ovary (PCO) morphology. The polycystic ovary syndrome (PCOS) is one of the most common female endocrinopathies affecting 6-10% of women in reproductive age.[2]

PCOS is associated with long-term health risks including type II diabetes mellitus and coronary artery disease.[3] Insulin resistance, hyperandrogenism and dyslipidemia are likely to be the major risk factors for CVD in women with PCOS.[4,5]Insulin resistance and dyslipidemia seem to have an important role on the risk of cardiovascular pathology in women with PCOS. It is still not known to what degree dyslipidemia contributes to this risk.[6]

Generally, dyslipidemia of PCOS is characterized by increased triglycerides and low HDL-cholesterol, but some studies found although low HDL-cholesterol is common, hypertriglyceridemia to be relatively uncommon.[5] To the contrary, the most classic lipid alteration determining CV risk, increase of LDL- cholesterol, is not common in all populations with PCOS.Beyond total LDL-

cholesterol concentrations, the quality of LDL may exert a direct influence on the CV risk.[7]

Several reasons have been suggested for the atherogenicity of small dense LDL. In relation to larger, more buoyant LDL, small dense LDL are taken up more easily by arterial tissue, have decreased sialic acid content and receptor-mediated uptake, as well as increased oxidative susceptibility and reduced antioxidant concentrations. The predominance of small, dense LDL has been associated with an approximately 3-fold increased risk for coronary artery disease, and it has been accepted as an emerging cardiovascular risk factor by the National Cholesterol Education Program Adult Treatment Panel III. In particular, the association of increased small LDL with hypertriglyceridemia and low HDL-cholesterol, the so-called ALP (atherogenic lipid profile), seems to determine a particularly elevated CV risk.[7]Hyperinsulinemia and hyperandrogenemia cause adipocytes to undergo increased catecholamine-induced lipolysis and release of free fatty acids into the circulation. Increased free fatty acids in the liver stimulate secretion of very low-density lipoprotein (VLDL), which ultimately leads to hypertriglyceridemia. A fundamental element surrounding PCOS is insulin resistance. Insulin resistance leads to hepatic overproduction of apoB and VLDL and ultimately to hypertriglyceridemia. In the last few years several studies have suggested that, as well as plasma lipids, different alterations of Lp and apoB significantly increase the cardiovascular risk.[8]

MATERIALS & METHODS

This descriptive study was conducted at Department of Gynecology and Obstetrics, Lahore General Hospital Lahore from January 2018 to August 2018 over the period of 6 months. All diagnosed patients of PCOS of age group from18 to 35 years with BMI <25 was included in this study. Patients with dyslipidemia, diabetes mellitus, ischemic heart disease, taking lipid lowering drug were excluded from the study.Blood sample was taken

Fasting blood sample was taken and sent to laboratory for total cholesterol, LDL, HDL & Triglycerides.

Total chol> 200mg/dl, TG > 150 mg/dl, LDL – C > 130 mg/dl and HDL – C < 40 mg/dl were taken as normal values and abnormal values of anyone of above parameters were considered as dyslipidemia.

All the data was entered in SPSS version 17 and analyzed. Mean was calculated for numerical data and frequencies were calculated for categorical data. Chi-square/fisher exact test was applied to see the level of significance.

RESULTS

Total 286 patients were included in this study. Mean age of the patients was 24.40 ± 5.367 and mean BMI was 21.01 ± 1.912. Out of 286 patients of polycystic ovarian syndrome (PCOS) dyslipidemia was found in 69 (24.13%) patients. Shown in Figure.

As shown in table No.1, patients were divided in to two age groups 18-27 years and 28-35 years. In age group 18-27 years there were 210 (73.43%) patients and dyslipidemia was found in 4 (1.9%) patients. In age group 28-35 years there were 76 (26.57%) patients and dyslipidemia was found in 65 (85.53%) patients.

As shown in table No. 2, patients were divided in two BMI groups BMI 18-20 and BMI 21-23. In BMI group 18-20, there were 140 (49%) patients and in BMI group 21-23, there were 146 (51%) patients. In BMI group 18-20, dyslipidemia was found in 2 (1.43%) patients and in 21-23 BMI group dyslipidemia was found in 67 (46%) patients.

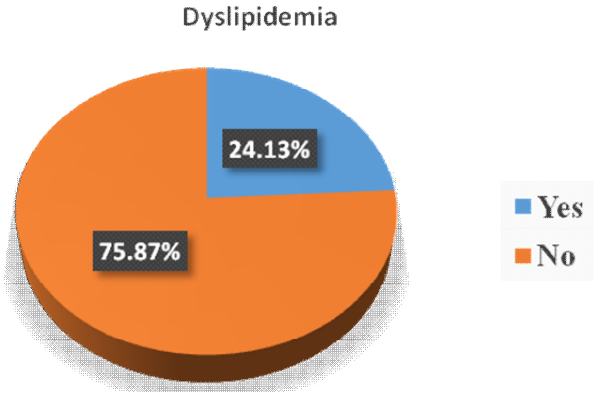

Table No.1: Age Distribution of patients

Age Group	Dyslipidemia			P. Value
	Yes (%)	No (%)	Total	
18-27	4 (1.9)	206 (98.1)	210 (73.43)	**0.000**
28-35	65 (85.53)	11 (14.47)	76 (26.57)	
Total	**69 (24.13)**	**217 (75.87)**	**286**	

Table No.2: BMI distribution of patients

BMI Group	Dyslipidemia			P. Value
	Yes (%)	No (%)	Total	
18-20	2 (1.43)	138 (98.57)	140 (49)	**0.000**
21-23	67 (46)	79 (54)	146 (51)	
Total	**69 (24.13)**	**217 (75.87)**	**286**	

DISCUSSION

Polycystic ovary syndrome is the most common endocrine disorder to affect women. It is a genetically complex disorder that is characterized by hyperandrogenemia and amenorrhoea or oligomenorrhoea resulting in infertility among reproductive age women.[9] Cardinal features of PCOS include chronic anovulation, clinical or biochemical hyperandrogenism, obesity and polycystic ovaries. Oligomenorrhoea or amenorrhoea is associated with hyperandrogenism and clinical manifestations of hirsutism or acne may be present. Although a number of underlying pathophysiological mechanisms have been proposed for the development of PCOS, insulin resistance is now accepted to be associated with the syndrome. IR in PCOS puts women at a higher risk for developing type-II diabetes mellitus and cardiovascular diseases.[10]

The etiology of PCOS remains unclear and abnormal ovarian steroidogenesis, hyperinsulinemia and neuroendocrine abnormalities have been proposed as a primary underlying abnormality.[11] PCOS also has a strong

genetic component but further studies in this field has to be done for the identification of genetic determinants of PCOS due to the convergence of several critical factors.

Obesity, insulin resistance and hyperinsulinemia are commonly associated with a recognized increased risk for the development of metabolic syndrome and diabetes mellitus. The metabolic syndrome is a cluster of risk factors for the development of CVD.[12]

Metabolic syndrome is characterized by central obesity, elevated levels of TG, LDL and VLDL cholesterol and insulin resistance.[13] A study done by Moini et al showed the frequency of MBS in reproductive age women with PCOS to be 22.7% which was similar to the prevalence of MBS in other ethinicities and races diagnosed with PCOS. Thus women with PCOS have a high prevalence of MBS and its individual components, particularly decreased HDL levels. Therefore, the management of these women as a high risk population for MBS is recommended.

In this study mean age and mean BMI of the patients was 24.4 ± 5.36 and 21.01 ± 1.19 respectively and dyslipidemia was found in 69 (24.13%) patients. Kim JJ et al[14] reported in his study, the mean age of the patients was 24.9 ±6.0 years, the mean BMI was 22.4 ±4.1 and the prevalence of dyslipidemia was 35.7% in 865 consecutive patients. These findings are in favourof my study. In one study by Chaeet al[15], reported the clinical and biochemical char-acteristics of PCOS in Korean women. In 166 women with PCOS and 277 controls, prevalence of elevated TG (≥150 mg/ dL) was 26.7%, whereas that of controls was 1.0% (P < 0.001); prevalence of low HDL-C (<50 mg/dL) was 30.0%, whereas that of controls was 3.0% (P = 0.004).

In one study of Hong Y et al,[16] the prevalence of dyslipidemia was 24.7 percent in PCOS patients and the prevalence of dyslipidemia was significantly higher in the IR group than in the NIR group (39.9 percent vs 15.3 percent, P<0.05).

In one study of Rocha MP et al,[17]the incidence of dyslipidemia in the PCOS group was twice that of the Control group (76.1% versus 32.25%). The most frequent abnormalities were low high-density lipoprotein cholesterol (HDL-C; 57.6%) and high triglyceride (TG) (28.3%). HDL-C was significantly lower in all subgroups of women with PCOS when compared to the subgroups of normal women.

CONCLUSION

Dyslipidemia occurs in PCOS patients. It occur more frequently in high normal BMI patients than low normal BMI patients. Moreover it occurs more in age > 28 years as compare to younger ones.

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