

An Observational Study to Evaluate Relative Prevalence of PCOS among Young Girls

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Abstract

Objective: Among women of reproductive age most common complex endocrine disorder is polycystic ovarian syndrome (PCOS). The main objective of this retrospective study was to evaluate relative prevalence and symptomatology of PCOS among young girls.

Materials and Methods: This was an observational retrospective study conducted in a tertiary care clinic at Cuttack, Odisha. Patients clinical record were used to fetch the clinical data. For making clinical diagnosis of PCOS no universally accepted validated tool available. If all three elements of Rotterdam criteria were present, final diagnosis of PCOS was made.

Results: A total 350 young girl with mean age 17.4 ± 1.3 years were finally eligible for this retrospective analysis. 7 (2%) patients were presented with hirsutism only and 15 (4.29%) of patients presented with irregular menses or oligo or anovulation. Whereas 20 (5.71%) of patients were presented with both. Among other endocrinological abnormalities hair loss or alopecia and acne were found in 76 (21.71%) and in 287 (82%) respectively. 8.57% were the prevalence of PCOS among the young girls (Table 3). Presence of PCOS were strongly associated with waist hip ratio ≥ 0.85 (< 0.0001) and BMI ≥ 25 (P value < 0.0001) among all the risk factors. 4% subjects were aware of PCOS (health seeking behavior).

Conclusion: Among the adolescent and young girls, Polycystic ovary syndrome is fast attaining epidemic proportion, which is related to the increasing stress and sedentary lifestyle and increasing trends of metabolic syndrome. From this study, it is concluded that only 24% of girls were aware of PCOS and 8.57% were the prevalence of PCOS among the young girls. To prevent long term consequences of metabolic syndrome timely intervention and Identifying women for PCOs is necessary.

Keywords: Endocrinopathy; PCOS; Menstrual Irregularity; Rotterdam Criteria

Introduction

Polycystic Ovary Syndrome (PCOS) is the most common endocrinopathy among women of reproductive age, the prevalence being 5 - 10% [1,2]. It is characterised by chronic an ovulation and androgen excess. Stein and Leventhal [3], in 1935 had first described an association between bilateral polycystic ovaries and amenorrhoea, oligomenorrhoea, infertility, hirsutism and obesity. They had referred to this as polycystic ovarian disease, since the primary defect was considered to be an ovarian pathology, in view of the reversal to normal menstrual cycles and conception after bilateral ovarian wedge resection in a significant number of patients [4].

Subsequent clinical, morphologic biochemical and endocrinological studies have recognised an array of underlying abnormalities, the term "Polycystic Ovarian Syndrome" (PCOS) was then introduced to reflect the heterogeneity of this disorder. The many features of this

syndrome can be broadly divided into three categories: clinical, endocrine and metabolic. The clinical features include menstrual abnormalities, hirsutism, acne, alopecia, anovulatory infertility and recurrent miscarriages. The endocrine features include elevated androgens, luteinising hormone, estrogen and prolactin levels. The metabolic aspects of this syndrome include insulin resistance, obesity, lipid abnormalities and an increased risk for impaired glucose tolerance and type 2 diabetes mellitus.

Rotterdam criteria for PCOS includes diagnosis requires 2 of 3 features among the followings (1) Oligo and/or anovulation, (2) Hyperandrogenism (Clinical or biochemical) and (3) Polycystic ovary morphology.

Objective of the Study

The main objective of this retrospective study was to evaluate relative prevalence and symptomatology of PCOS among young girls.

Materials and Methods

Study design: This was an observational retrospective study conducted in a tertiary care clinic at Cuttack, Odisha. Patients clinical record were used to fetch the clinical data. A structured pro forma including anthropometric assessment, clinical history (like BMI, Weight, waist circumference, hip circumference, menstrual onset; menstrual intervals, etc.), pathological history (like Prolactin level, TSH, Fasting and postprandial blood sugar, LH; FSH etc.), hirsutism/androgen production assessment (skin problems, hair distribution) and presence of oligomenorrhea after two years of menarche were used to organised data. Patients consent form were filled up by each participant at their follow-up visit.

Inclusion criteria: The main inclusion criteria for the study was young girls aged 14 - 24 years and had menarche more than 2 years before the study and were willing to participate in the study.

Exclusion criteria: Those who were known case of Cushing's syndrome, thyroid disorders, and who were not willing to participate were excluded from this study.

Data collection: Data were collected in MS excel for further analysis. With the aid of available evidences by the researchers a structured self-administrative questionnaire was developed for data collection to fully meet the demands of this research. For making clinical diagnosis of PCOS no universally accepted validated tool available. If all three elements of Rotterdam criteria were present, final diagnosis of PCOS was made.

Statistical analysis: SPSS software version 22.0 were used to analyse the data. For continuous variables, mean, median, and standard deviations were calculated. In the groups for categorical data, pearson's Chi-square test was used to assess differences. The $P < 0.05$ was considered statistically significant.

Result

A total 350 young girl with mean age 17.4 ± 1.3 years were finally eligible for this retrospective analysis. Among this whole population only 2% were married rest 98% were unmarried. Table 1 describes the distribution of respondents according to endocrinological abnormalities. 7 (2%) patients were presented with hirsutism only and 15 (4.29%) of patients presented with irregular mensus or oligo or anovulation. Whereas 20 (5.71%) of patients were presented with both. Among other endocrinological abnormalities hair loss or alopecia and acne were found in 76 (21.71%) and in 287 (82%) respectively. As per table 1, 42 probable cases were noticed.

Sl. No	Endocrinological abnormalities	Present No (%)	Absent No (%)	Total (%)
1	Irregular mensus/oligo/anovulation only	15 (4.29%)	335 (95.71%)	350 (100%)
2	Hirsutism only	7 (2%)	343 (98%)	350 (100%)
3	Irregular mensus/oligo/anovulation and hirsutism	20 (5.71%)	330 (94.29%)	350 (100%)
4	Acne	287 (82%)	63 (18%)	350 (100%)
5	Hair loss/alopecia	76 (21.71%)	274 (78.29%)	350 (100%)

Table 1: Distribution of respondents according to endocrinological abnormalities.

But as per Rotterdam criteria the number of cases were 29 (8.29%). 20 (5.711) sublets were presented with oligomenorrhoea and hirsutism, 5 (1.43%) subjects were presented with oligomenorrhoea and polycystic ovaries, whereas 5 (1.43%) were presented with hirsutism and polycystic ovaries.

Sl. No	PCOS variables	PCOS present (according Rotterdam criteria) (%)
1	Irregular mensus/oligo/anovulation and hirsutism	20 (5.71%)
2	Irregular mensus/oligo/anovulation and multiple cyst in ovary	5 (1.43%)
3	Hirsutism and multiple cyst in ovary	4 (1.14%)

Table 2: Prevalence of PCOS according to Rotterdam criteria.

8.57% were the prevalence of PCOS among the young girls (Table 3). Presence of PCOS were strongly associated with waist hip ratio ≥ 0.85 ($P < 0.0001$) and BMI ≥ 25 (P value < 0.0001) among all the risk factors (Table 3).

Variables		PCOS present (%)	PCOS absent (%)	Total (%)	P Value
Age (in years)	< 20	27	285	312	0.985
	> 20	3	35	38	
BMI	< 25	4	282	286	$P < 0.0001$
	≥ 25	26	38	64	
Waist/Hip ratio	< 0.85	3	294	297	$P < 0.0001$
	≥ 0.85	27	26	53	

Table 3: Association between PCOS and other variables.

Normal levels of prolactin and serum TSH were observed in the study population which ruling out hypothyroidism and hyperprolactinemia as cause of anovulation.

Parameter	Normal (%)	Abnormal (%)
Serum TSH	350 (100%)	0
Prolactin	350 (100%)	0
FSH/LH ratio	112 (32%)	238 (68%)
FSH	350 (100%)	0
USG	105 (30%)	245 (70%)

Table 4: Pathological investigations.

Figure 1 demonstrated that among 350 of total studied population only 24% subjects were aware of PCOS (health seeking behavior).

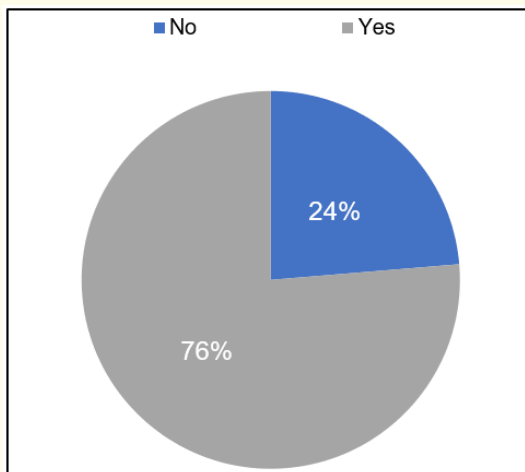


Figure 1: Knowledge about PCOS.

Discussion

In the age group of 17 - 24 years among young female population the prevalence of PCOS and the phenotype profile were investigated in this study. 8.57% were the prevalence of PCOS among the young girls. Nidhi., *et al.* [1] and Gupta., *et al.* [2] were previously were also reported the prevalence of PCOS of 9.13% and 8.2% respectively. This also accordance with some other previous studies by Vaidya., *et al.* (3.4% of women) [3], Choudhary., *et al.* (9.13%.) [4] and Shetty., *et al.* (10%) [5]. There were several studies across the globe which were also in line with the current findings [6-12].

In line with the few previously conducted studies, the current studies demonstrated the presence of PCOS were strongly associated with waist hip ratio ≥ 0.85 (< 0.0001) and BMI ≥ 25 (P value < 0.0001) among all the risk factors [13-17]. Obesity is increasingly associated with PCOS worldwide and the prevalence was continuously increasing all across the globe [17]. Due to hyperandrogenism which also causes hyperandrogenism and obesity PCOS can cause obesity with male type of fat distribution and on the other hand due to peripheral conversion of estrogen to androgens causing anovulation and PCOS. 8.2%, 9.8%, 9.9%, and 9.0% were prevalence rates of PCOS in underweight, normal-weight, overweight, and obese women respectively which confirms the impact of obesity on incidence of PCOS [17]. Even in the current study we observed that risk of PCOS were increased by obesity.

Male type obesity, oily skin acne, hirsutism and alopecia were mainly occur due to hyper androgenism which also consider as a main feature of PCOS. In current study, author found that endocrinological abnormalities. 7 (2%) patients were presented with hirsutism only and 15 (4.29%) of patients presented with irregular menses or oligo or anovulation. Whereas 20 (5.71%) of patients were presented with both. Among other endocrinological abnormalities hair loss or alopecia and acne were found in 76 (21.71%) and in 287 (82%) respectively. Androgen excess in majority of women (80%) as per Andrea Hsu Roe., *et al.* [21], plays a major role in the pathophysiology of the condition. Though is a diagnostic criterion according to Rotterdam criteria, ultra-sonographic appearance of ovaries sometime confirms that all women may not have typical polycystic ovaries.

All women may not have typical polycystic ovaries according to diagnostic criterion of Rotterdam criteria as the ovaries were appears in ultra-sonography. In current study out of 350 cases only 245 women had Ultrasonographic appearance of polycystic ovaries were found as a screened for PCOS.

Increasing trend of metabolic syndrome like dyslipidemia, insulin resistance and diabetes also effects the prevalence of PCOS. Not only in adolescents but also in young women type II diabetes mellitus (DM) along with other component of metabolic syndrome are at increased risk of PCOS. To prevent long term consequences of metabolic syndrome timely intervention and Identifying women for PCOs is necessary.

Awareness regarding the health seeking behavior of PCOS was found to be only 24% in current study and these findings are in agreement with other previous study [18-20].

There were several limitation of the study, like small sample size, randomisation of people, no medication history etc. But this clinical real world observation will lead clinicians with better understanding of the situation and help them to take necessary action. Further randomised study with large population is required to strengthen the study conclusion.

Conclusion

Among the adolescent and young girls, Polycystic ovary syndrome is fast attaining epidemic proportion, which is related to the increasing stress and sedentary lifestyle and increasing trends of metabolic syndrome. From this study, it is concluded that only 24% of girls were aware of PCOS and 8.57% were the prevalence of PCOS among the young girls. To prevent long term consequences of metabolic syndrome timely intervention and Identifying women for PCOs is necessary.

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