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Presentation of women with polycystic ovary syndrome

Neha Singh, Devendra Kumar Benwal, Nupur Hooja *, Monika, Krupa Verma and Babita Panwar

Obstetrics and Gynecology Department SMS, Medical College, Affiliated to Rajasthan University of Health Sciences, Jaipur, Rajasthan, India.

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Abstract

Women with polycystic ovary syndrome (PCOS) experience a variety of symptoms, based on their age, endocrinal and metabolic disturbances. The women seek medical help chiefly due to cosmetic or reproductive reasons. The study was undertaken to study the phenotypes and presentations of women with PCOS. This cross-sectional study was conducted on 110 women with PCOS fulfilling Rotterdam criteria. Detailed history pertaining to symptoms was taken. General physical examination and complete systemic examination was done. Body mass index [BMI] was calculated. Observations were recorded and inferences drawn. P value <0.05 was taken as significant. The commonest phenotype in the study was type D,most women were between 22-26 years age,66% of these were unmarried. The chief complaint which made the patient seek medical help was oligomenorrhoea, infertility, hirsutism and acne. Since women are not aware of the syndrome and its long term effects – diabetes mellitus, hypertension, there is a need to sensitize women regarding their health, which will help them seek medical help sooner.

Keywords: Hyperandrogenism; Obesity; Polycystic Ovary Syndrome; Rotterdam

1 Introduction

Polycystic ovary syndrome (PCOS), an endocrine disorder affects approximately 14-19% of women in reproductive age and represents one of the major causes of infertility in women [1].These women experience a constellation of endocrine and metabolic dysfunctions. The disorder itself and its associated comorbidities increase healthcare costs and contribute to reduced quality of life [2].

PCOS increases the risk for various dermatologic, metabolic, reproductive, and psychological aberrations. Management of PCOS varies due to different goals based on symptom presentation and changes at various life stages. Although patients are at a high long-term risk of developing a multitude of disorders, PCOS may not be diagnosed until patients encounter troublesome cosmetic issues such as hirsutism, androgenic acne, alopecia, and/or problems associated with infertility [3, 4].

The aim of the study was to study the phenotypes, clinical symptoms and age distribution of women with PCOS.

2 Material and methods

This cross-sectional observational study was conducted on 110 women with polycystic ovary syndrome (PCOS) fulfilling Rotterdam criteria [5] over a period of one year. Pregnant or lactating women or women with chronic diseases were excluded from the study. Institutional research review board and ethical committee clearance was taken. Written informed consent was taken of all.

* Corresponding author: Nupur Hooja

Detailed history pertaining to symptoms was taken. General physical examination and complete systemic examination was done.Weight was measured in kilograms on a standardised weighing machine. Height was taken in centimetres up to two decimal points and BMI was calculated. Data was analysed and inferences drawn. P value <0.05 was taken as significant.

3 Results and discussion

PCOS was diagnosed by Rotterdam criteria, according to which two of the following three criteria are required-oligo/anovulation, hyperandrogenism - clinical (hirsutism or less commonly, male pattern alopecia) or biochemical (raised FAI or free testosterone) and polycystic ovaries on ultrasound (presence of 12 or more follicles in each ovary measuring 2-9 mm in diameter, and/or increased ovarian volume (>10 ml) [5].

Presentation of PCOS women is not homogenous .It depends on the presence or absence of three characteristics: hyperandrogenism (HA), menstrual irregularity (OD), and PCO morphology on ultrasonography (PCO).Variation in these make up the different phenotypes. Different phenotypes present differently depending on their clinical, metabolic and hormonal profile.

In the study, phenotype D (OD+PCO) was the most prevalent phenotype with 64.5% women belonging to it, followed by 21.8% of phenotype A (HA+OD+PCO), 7.2% were phenotype C (HA+PCO) and phenotype B (HA+OD) were only 6.3%.Table 1

Table 1 Phenotypes and Age Groups of Women With PCOS

Age Groups (in years)	**Phenotype A(n=24)**		**Phenotype B(n=7)**		**Phenotype C(n=8)**		**Phenotype D(n=71)**		**P value**
	No	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	
18-22(n=39)	6	15.3	1	2.5	1	2.5	31	79.4	p>0.05NS
22-26(n=56)	15	26.7	5	8.9	6	10.7	30	53.5	
26-30(n=13)	2	15.3	1	7.6	1	7.6	9	69.2	
>30 (n=2)	1	50	0	-	0	-	1	50	
Mean age	23.7		24.4		23.8		22.9		

Majority of women with PCOS belonged to the age group of 22-26 years (50.9%), with the mean age being 23.1 years. Across all age groups,phenotype D was the most prevalent. The mean age in the various phenotypes was similar; differences in age groups across the phenotypes were not found to be significant.

As per WHO ,BMI cut off points for the Asian population were lowered and revised as BMI 18-22.9kg/m^2 as normal weight, 23-27.5 kg/m^2 as overweight and >27.5 kg/m^2 as obese[6].

Table 2 BMI and Age Groups of Women with PCOS

Age Groups	**Total**	**Normal BMI**	**Overweight BMI**	**Obese BMI**
		18-22.9 kg/m2	**23-24.9 kg/m2**	**>25 kg/m2**
(in years)	**(n=110)**	**(n=34)**	**(n=36)**	**(n=40)**
	No.	No.	No.	No.
18-22	39	16	14	9
22-26	56	15	17	24
26-30	13	3	4	6
>30	2	-	1	1

In our study, of the 110 women with PCOS, 6 9 % had BMI more than normal range (>23 kg/m^2); with mean BMI being 23.9 kg/m^2 and 28.6 kg/m^2 in the overweight and obese groups respectively as compared to the normal weight group where mean BMI was 20.5 kg/m^2. The mean age in different BMI groups was similar; differences in BMI across the age groups was not found to be statistically significant (p>0.05). Table 2.

Among Phenotype D, the chief complaint was oligomenorrhoea. whereas in phenotype B and C ,symptoms due to hyperandrogenism made the patient seek medical help, this being hirsutism and acne. In phenotype A, besides oligomenorhhoea, acne and hirsutism, 29% had a history of increased weight gain. Table 3.

Table 3 Symptoms in various Phenotypes of PCOS

Symptoms	**Phenotype A(n=24)**		**Phenotype B(n=7)**		**Phenotype C(n=8)**		**Phenotype D(n=71)**	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
AUB	24		7		-		24	
Hirsutism	19		7		7		-	
Hyperandrogenemia alone	5		-		1		-	
Weight gain	7		2		3		1	
Acne	2		3		3		-	

59% women were unmarried .68% of these had phenotype D (OD+PCO), i.e. no hyperandrogenism.Among the married women, 60% had Phenotype D, 26.6% had phenotype A (HA+OD+PCO).48.8% of the married women were infertile and this was the chief reason to seek treatment. Table 4

Table 4 Marital Status and Infertility in various Phenotypes of PCOS

Marital status and infertility	**Phenotype A(n=24)**		**Phenotype B(n=7)**		**Phenotype C(n=8)**		**Phenotype D(n=71)**	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Unmarried n=65	12	50	4	57	5	62.5	44	61.9
Married n=45	12	50	3	43	3	37.5	27	38.1
Infertility n=22	8	66.66	2	66.66	3	100	9	33.33

4 Discussion

These different phenotypes suggest that each one is a variation of the common syndrome PCOS.The commonest phenotype in the study was type D, most women were between 22-26 years age, 66% of these were unmarried and worried about future conception. These women had a history of oligomenorrhoea, but sought advice only before getting married. This may be attributable to both a lack of awareness and educational material available for individuals [7].

In a study done by Sachdeva et al from North India, in 2019, the most common PCOS phenotype was phenotype A which had a prevalence of 67.7%. The prevalence of phenotypes D was least, which differs from our findings [8].

Phenotype A was the commonest one observed by Gluszak *et al* and Pehlivanov et al in Polish and Bulgarian population respectively[9,10]

Various hypotheses have been given to explain this heterogeneity in clinical presentation; it could be an interplay between genetic and environmental factors which affect the pathogenesis of PCOS.

69% women had BMI more than normal in the present study. In a study done by Al-Nakash and Al-Tae'e et al in Iraq and by Thathapudi et al in Hyderabad , majority of PCOS women were overweight (BMI >25 kg/m^2)[11,12].

Studies have shown that BMI differs across ethnic groups. The explanation for high incidence of overweight can be attributed to food habits and life styles of Indian women. With an increase in ready to cook foods, favour of junk food and sedentary lifestyle, the incidence of PCOS is increasing.

Weight gain is a prominent feature of PCOS. Obesity, particularly the abdominal phenotype, may be partly responsible for insulin resistance and associated hyperinsulinemia in women with PCOS. Therefore, obesity-related hyperinsulinemia may play a key role in favouring hyperandrogenism in these women. Other factors such as decreased sex hormone binding globulin synthesis and increased oestrogen production rate is responsible for the development of hyperandrogenism [13].

The major endocrine symptom of PCOS, hirsutism, acne, etc. are due to hyperandrogenism. This is associated with a preponderance of fatlocalized in the upper body sites, commonly called android fat distribution, and is associated with avariety of metabolic characteristics.These also lead to reduced reproductive capability of the woman [14].

The heterogeneity in racial, ethnic, and age distribution of various studies influence the clinical presentation of hyperandrogenism and ultrasonographic appearance of ovarian follicles over time [7].

5 Conclusion

The presentation of PCOS women is varied. Depending on their symptoms, they take time to seek medical advice. There is a need to sensitize women regarding their health and to develop educational tools for women with PCOS, so that timely interventions may be done to prevent the development of the metabolic syndrome and its consequences.

Compliance with ethical standards

Disclosure of conflict of interest

There was no conflict of interest what so ever because all the authors that appeared on the manuscript. contributed significantly in making this publication processes a success.

Statement of ethical approval

Institutional research review board and ethical committee clearance was taken.

Statement of informed consent

Written informed consent taken of all women included in the study.

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