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Research Article

Epidemiological study of clinical characteristics of patients with PCOS attending infertility clinic and awareness of PCOS in a rural set up

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ABSTRACT

Background: Polycystic ovarian syndrome (PCOS) is one of the most common endocrine disorders in women of reproductive age group. It is a common diagnosis in women presenting with infertility. All the dimensions of PCOS have not been completely explored. In this study we studied the clinical features of PCOS and comparing with non-PCOS infertility patients and simultaneously studied the prevalence of PCOS in infertility patients and its awareness in a rural set up.
Methods: It is a prospective observational study carried out over a period of 15 months at infertility clinic Acharya Vinoba Bhave Rural Hospital in Maharashtra, India in 100 infertility patients.
Results: 54 out of 100 infertility patients had PCOS.16 out of 54 had oligomenorrhoea in contrast to 10 out of 46 in non PCOS. 38 PCOS patients had multiple follicles which only 18 non PCOS had. There was a significant difference in androgenic features of PCOS and non PCOS but not in BMI and WHR. Only 10 patients were aware regarding PCOS.
Conclusion: PCOS is one of the important factors causing infertility. It is an ill defined symptom complex needing its due attention. There is a need to increase awareness regarding. The clinical features of PCOS are heterogeneous and thus can be investigated accordingly of selection of appropriate treatment modality.

Keywords: Polycystic ovarian syndrome, Awareness, Infertility

INTRODUCTION

Polycystic ovary syndrome is one of the most common endocrine disorders affecting 7-10% of women of reproductive age group. In infertile women of Indian subcontinent prevalence rates of upto 50-60% have been detected. It is thus a leading cause of infertility. In 1935 Irving F. Stein and Michael L. Leventhal described it, a symptom complex due to anovulation.[1] It is defined as a chronic condition of anovulation or oligo-ovulation with clinical or biochemical signs of hyperandrogenism and ultrasound picture of polycystic ovaries, which occurs in the absence of any other underlying condition.[2] It may also have metabolic disorders including obesity, metabolic syndrome, type 2 diabetes mellitus, dyslipidemia, hypertension and cardiovascular diseases.[2] Majority of PCOS are obese and obesity exacerbates insulin resistance. It is now accepted that this problem is arising from persistent anovulation with a spectrum of etiologies and clinical manifestations, now recognized as a heterogeneous disorder that results in overproduction of androgens, primarily from the ovary, and is associated with insulin resistance. The report of the bearded diabetic woman by Archard and Thiers in 1921 was a landmark in recognition of association between glucose intolerance and hyperandrogenism (HA). Indians are known to have high prevalence of insulin resistance, so the prevalence of PCOS may be high in our population.

As these women are vulnerable to type II diabetes, dyslipidemia, premature arteriosclerosis, and endometrial carcinoma, treatment of PCOS should also aim to search

these abnormalities. Treatment of these concurrent abnormalities in individual PCOS woman will result in a better outcome. It may correct the signs and symptoms and also prevent anticipated and or unanticipated future adverse outcomes. Infertility as a result of an ovulation is a complication of PCOS. PCOS women may present with a complaint of failure to conceive. PCOS may result in primary or secondary infertility. Consideration of a one definitive endocrine or clinical criterion for the diagnosis of the PCOS may result in biased selection of patients focusing on an isolated segment of a wide clinical spectrum. This can influence the incidence and prevalence of PCOS, thereby masking the gravity of the problem.

Obesity has long been recognized as one of the features of PCOS, and 40-80% of women with PCOS are overweight or obese.[4,5] The mechanisms by which obesity influences the pathophysiology and clinical manifestations of PCOS are not completely understood, but obesity has an important impact on the severity of hyperandrogenism, menstrual irregularities and insulin resistance.[6] Even modest weight loss has been shown to result in significant improvements in insulin resistance in women with PCOS.[7]

Aim: To evaluate the clinical characteristics of women with polycystic ovarian syndrome, in turn leading to infertility.

Objectives

1. To study the prevalence of PCOS in infertility patients.
2. To study the clinical characteristics of PCOS patients and comparing it with non-PCOS infertility patients.
3. To study the awareness of PCOS in women attending infertility clinic in a rural set up.

METHODS

In this prospective study 100 infertile women were studied. Study was conducted at infertility clinic at Acharya Vinoba Bhave Rural Hospital was done over 15 month period from June 2012 to December 2013. Women complaining of infertility were enrolled after taking written informed consent. PCOS was diagnosed according to the Rotterdam criteria, having two of the following:

- Oligo or anovulation
- Clinical and/or biochemical signs of hyperandrogenism
- Polycystic ovaries on ultrasound examination (presence of follicles measuring 2-9 mm in diameter and/or ovarian volume>10 mm in diameter and/or ovarian volume>10 cm^3).

Detailed menstrual history was recorded. In patients complaining of amenorrhoea, pregnancy was ruled out whenever necessary. Cut-off body mass index (BMI) with body fat as Standard Consensus Statement for Indian population was considered, i.e., Normal BMI: 18.0-22.9 kg/m^2, Overweight: 23.0-24.9 kg/m^2 Obesity: >25 kg/m^2 BMI ≥ 25 was considered as obese.[8]

Hirsutism was scored according to modified Ferriman Gallaway score.[9] Grading of severity based on the score was assessed as <4 - mild, 4-7 - moderate, ≥8 - severe.

z –test and chi square test was used. Statistical analysis was done by using SPSS 17.0 and graph pad prison 5.0 software. The result was tested at 5 % significance.

RESULTS

Out of 100 infertility patients studied 54 were PCOS and 46 were non-PCOS.PCOS is found in women of reproductive age group. It was more in age group 21-30 years (Table 1). 44 out of 54 belonged to middle socio economic status (Table 2). Out of 100 patients only 10 had awareness regarding PCOS (Table 3).

Table 1: Age wise distribution of women.

Age Group (yrs)	PCOS	Non PCOS	Total
16-20	5	5	10
21-25	17	14	31
26-30	14	12	26
31-35	8	8	16
36-40	10	7	17
Total	54	46	100
ϰ2-value	0.33		
p-value	0.98, NS, p>0.05		

1 patient was obese and 12 overweight out of which 10 were PCOS. There was no significant difference between BMI and WHR of PCOS and non-PCOS patients (Table 4, 5). 21 PCOS patients had hirsutism in contrast to 4 in non-PCOS (table6). 22 PCOS had acne and 10 out of 46 in non PCOS (Table 7). Ovulation was seen only in 15 cases out of 54 PCOS and in 27 out of 46 non-PCOS (Table 8). Multiple follicles were seen in 38 out of 54 PCOS (Table 9). 16 patients out of 54 PCOS had oligomenorrhoea (Table 10). Adnexal mass was present only in one infertility PCOS (Table 11).

Table 2: Distribution of women according to their socio-economic status.

SES	PCOS	Non PCOS	Total
Poor	1	1	2
Middle	16	12	28
Lower Middle	14	13	27
Upper Middle	14	10	24
Rich	9	10	19
Total	54	46	100
א2-value	0.69		
p-value	0.95, NS, p>0.05		

Table 3: Comparison of awareness in women.

Awareness	PCOS	Non PCOS	Total
Present	10	0	10
Absent	44	46	90
Total	54	46	100
א2-value	9.46		
p-value	0.002, S*, p<0.05		

Table 4: Comparison of height, weight, BMI in women.

	Group	N	Mean	Std. Deviation	Std. Error Mean	z-value	p-value
Height	PCOS	54	154.90	5.50	0.74	0.67	0.50 NS, p>0.05
	Non PCOS	46	154.15	5.70	0.84		
Weight	PCOS	54	53.01	9.09	1.23	1.69	0.09 NS, p>0.05
	Non PCOS	46	50.04	8.27	1.22		
BMI	PCOS	54	22.07	3.36	0.45	1.49	0.13 NS, p>0.05
	Non PCOS	46	21.06	3.39	0.50		
	Non PCOS	46	0.77	0.05	0.007		

Table 5: Comparison of waist-hip ratio in women.

Waist Hip Ratio	Group	N	Mean	Std. Deviation	Std. Error Mean	z-value	p-value
Waist	PCOS	54	72.01	7.53	1.02	0.46	0.64 NS, p>0.05
	Non PCOS	46	71.28	8.19	1.20		
Hip	PCOS	54	94.27	8.21	1.11	1.31	0.19 NS, p>0.05
	Non PCOS	46	92.13	8.10	1.19		
WHR	PCOS	54	0.76	0.04	0.005	0.98	0.32 NS, p>0.05
	Non PCOS	46	0.77	0.05	0.007		

Table 6: Acne.

Acne	PCOS	Non PCOS	Total
Yes	22	10	32
No	32	36	68
Total	54	46	100
א2-value	4.12		
p-value	0.04, S*, p<0.05		

Table 7: Hirsutism.

Hirsute	PCOS	Non PCOS	Total
Yes	21	4	25
No	33	42	75
Total	54	46	100
א2-value	12.07		
p-value	0.001, S*, p<0.05		

Table 8: Comparison of ovulation in women.

Ovulation	PCOS	Non PCOS	Total
Present	15	27	42
Absent	39	19	58
Total	54	46	100
א2-value	9.74		
p-value	0.002, S*, p<0.05		

Table 9: Distribution of follicle in women.

Follicle	PCOS	Non PCOS	Total
<12	16	28	44
≥12	38	18	56
Total	54	46	100
א2-value	9.83		
p-value	0.002, S*, p<0.05		

Table 10: Distribution of women according to their menstrual cycle.

Cycle	PCOS	Non PCOS	Total
Regular	16	36	52
Irregular	38	10	48
Total	54	46	100
א2-value	23.56		
p-value	0.000, S, p<0.05		

Table 11: Distribution of adnexal mass in women.

Adnexal Mass	PCOS	Non PCOS	Total
Present	1	10	11
Absent	53	36	89
Total	54	46	100
א2-value	10.03		
p-value	0.002, S, p<0.05		

DISCUSSION

In this study, we are reporting the prevalence of PCOS in infertility patients, comparing the clinical characteristics of PCOS with NON PCOS infertility patients and awareness about PCOS. The precise triggering factor(s) and the chronology of events which lead to PCOS remain less well-known. Researchers think that PCOS is a maladaptation of the evolutionary phenomenon that is adrearche. During pubertal development, adolescents typically have relative androgenemia, insulin resistance, cystic ovaries and anovulatory cycles, which transits to an estrogenic state later in puberty. Failure to make this transition may result in PCOS secondary to abnormal pubertal development.[10]

In 1935, Stein and Leventhal described seven women presenting with oligo/amenorrhea combined with the presence of bilateral polycystic ovaries established during surgery. Three of these seven patients also presented with obesity, whereas five showed signs of hirsutism. Only one woman was both obese and showed hirsutism.[1] Likewise, with the use of transvaginal ultrasonography, it has become evident that women with oligo/amenorrhea, obesity and hirsutism do not all have the typical PCO morphology.

Though more number of obese patients had oligomenorrhoea, the difference between obese and non-obese was not significant. Oligomenorrhoea is considered as a highly predictive surrogate marker of PCOS. Nurses' Health study II reported that over an 8-year period, the conversion rate to type 2 diabetes among oligomenorrheic women was approximately two-fold greater than that for eumenorrheic women, regardless of whether the oligomenorrheic women were obese or lean, indicating that oligomenorrhoea was an independent predictor of type 2 diabetes.[11]

Majumdar and Singh have compared the clinical features of PCOS in Indian women. The authors have reported prevalence of menstrual irregularities as 79.2% vs. 44% in obese vs. non-obese women.[10]

There is no significant difference between obese PCOS and non-obese PCOS women as far as infertility is

concerned. Though the number of study subjects is low, we suggest that PCOS patients, irrespective of weight, are at risk of infertility. Pfeifer SM have also mentioned infertility as one of the long term sequelae of PCOS.[12]

These findings imply that in case polycystic ovary (PCO) is diagnosed by morphology in women with oligo/ anovulation, not all the features which are believed to be associated with PCOS need to be present.

The occurrence of considerable heterogeneity in clinical symptoms and endocrine features associated with PCOS implies that some women with PCO on ultrasound scan may even exhibit none of the other features of PCOS. In the present study, a diverse presentation of PCOS was observed.

Obesity is not essential to make the diagnosis of PCOS.[13] Though obesity is common in PCOS, non-obese women are also at risk of PCOS. For many years, PCOS was treated as a single abnormality. As a consequence, managing this entity became less flexible. Recommendations to consider this symptom complex as a syndrome and to avoid disease-like term have been made.

CONCLUSION

PCOS is one of the important factors causing infertility. It is an ill defined symptom complex needing its due attention. There is a need to increase awareness regarding. The clinical features of PCOS are heterogeneous and thus can be investigated accordingly of selection of appropriate treatment modality. Timely therapeutic intervention can halt this ongoing process.

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