International Journal of Clinical Obstetrics and Gynaecology

ISSN (P): 2522-6614
ISSN (E): 2522-6622

www.gynaecologyjournal.com
2019; 3(4): 01-05
Received: 01-05-2019
Accepted: 03-06-2019

Dr. Sushma sharma
Prof. and Head, Dept. of Obstetrics and Gyanecology, Dr. Bhausaheb Sardesai Talegaon Rural Hospital and MIMER Medical College, Talegaon, Pune, Maharashtra, India

Dr. Jankidevi S Borade
Assistant Prof. Dept. of Obstetrics and Gyanecology, Dr. Bhausaheb Sardesai Talegaon Rural Hospital and MIMER Medical College, Talegaon, Pune, Maharashtra, India

Correspondence
Dr. Jankidevi S Borade
Assistant Prof. Dept. of Obstetrics and Gyanecology, Dr. Bhausaheb Sardesai Talegaon Rural Hospital and MIMER Medical College, Talegaon, Pune, Maharashtra, India

Clinical profile of PCOS patients in a rural tertiary care hospital

Dr. Sushma sharma and Dr. Jankidevi S Borade

DOI: https://doi.org/10.33545/gynae.2019.v3.i4a.281

Abstract
Background: Polycystic Ovarian Syndrome (PCOS) is a common gynaecological Endocrinopathies characterized by chronic anovulation and hyperandrogenism. It's a heterogeneous, multifactorial, complex disorder and is one of the most common treatable causes of infertility.
Aim: To study the various clinical presentations of patients with Polycystic ovarian syndrome in rural Indian women.
Materials and Methods: Present study is a cross-sectional study carried out in a rural tertiary hospital. 82 cases of PCOS as per Rotterdam Criteria (2003) were taken. Patients underwent detailed clinical, anthropometric examination and ultrasonography was Performed.
Observations: PCOS is a condition of the young with mean age 21.6. Oligomenorrhea was the most common menstrual abnormality (89%). 42% patients were obese and 56% had Infertility.
Conclusions: PCOS is a common Endocrinopathies with varying clinical manifestation. Its diagnosis is extremely important because it identifies risk for potential metabolic and cardiovascular diseases and its seqeualae reaches beyond reproductive health.

Keywords: Oligomenorrhea, polycystic ovarian appearance, hirsutism, obesity, infertility

Introduction
Polycystic ovary syndrome (PCOS) is common endocrine disorder of reproductive age affecting 5% to 10% of women worldwide [1].
PCOS can be viewed as a heterogeneous androgen excess disorder with varying degrees of reproductive and metabolic abnormalities determined by the interaction of multiple genetic and environmental factors [1 3]. It is the leading cause of anovulatory infertility, hyperandrogenism and hirsutism.
PCOS was first described by Valisnere in 1721[4] as, "Young, married peasant women, moderately obese, and infertile with two larger than normal ovaries, bumpy, shiny and whitish, just like pigeon eggs".
PCOS was described by Stein and Leventhal [5] in 1935. The PCO definition was revised in May 2003 at the ESHER conference in Rotterdam, Netherland [6]. For diagnosis two out of three criteria should be fulfilled, they are:

- Oligo-ovulation or anovulation;
- Clinical and/or biochemical signs of hyperandrogenism (with the exclusion of other causes of androgen excess like Cushing's syndrome, congenital adrenal hyperplasia, thyroid abnormalities, androgen-secreting tumour and hyper prolactinemia);
- Polycystic ovaries (PCO) detected on ultrasound i.e. presence of 12 or more follicles in each ovary (with one ovary being sufficient for diagnosis) measuring 2-9mm in diameter or increase ovarian volume >10ml.
- Then Balen [7] and co-workers suggested that 12 or more follicles in one ovary, each follicle measuring 2-9 mm in diameter and/or volume of the ovary >10ml.

Aim
The aim of the present study was to study the clinical profile of patients with PCOS in a tertiary care hospital in the rural area of western Maharashtra.

Objectives
1. To define a patient of PCOS as per Rotterdam's Criteria.

2. To study the history, clinical characteristics, anthropology and USG features of the patient.
3. To correlate and analyses the above and compare with other studies.

PCOS is frequently associated with obesity and insulin resistance. The mechanism by which obesity affects the pathophysiology and clinical manifestations of PCOS is not completely understood, but obesity has an important impact on the severity of hyperandrogenism, menstrual irregularities and insulin resistance [8]. 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). The original National Cholesterol Education Programme - Adult Treatment Panel III (NCEP - ATP111) criteria in 2001 [9]. defines metabolic syndrome as the co-occurrence of three or more of the following risk factors (i) central obesity with waist circumference ≥88 cm in women, (ii) elevated systolic and/or diastolic blood pressure of ≥130/85 mmHg, (iii) impaired fasting serum glucose ≥110 mg/dL, (iv) elevated fasting serum triglycerides ≥150 mg/dL, and (v) fasting high-density lipoprotein (HDL) cholesterol. Obesity has long been recognized as one of the features of PCOS, and 40-80% of women with PCOS are overweight or obese.

PCOS has an important impact on the reproductive health of a woman. A Common clinical features of PCOS includes Oligomenorrhea or short period of amenorrhea followed by prolonged or heavy periods. Infertility due to anovulation is a major problem in women of reproductive age. Pregnancy loss occurs in 20- 30%cases. During pregnancy it may affect carbohydrate metabolism of the mother and may predispose her to gestational diabetes mellitus and gestational hypertension.

Hyperandrogenism appears mostly in the form of acne and hirsutus. Acanthuses Nigerians, a brown to black poorly defined velvety hyper pigmented lesion of skin commonly seen in nape of neck, might be seen which occurs as a result of insulin resistance. Male pattern baldness is noted in a few cases. Nihilism is extremely rare.

Metabolic disorders such as hyperlipidemia, insulin resistance, hypertension and type 2 diabetes mellitus are common in PCOS in addition to increased risk of cardiovascular disease. It is important because it is associated with increased risks of non-insulin dependent diabetes mellitus, metabolic syndrome and cardiovascular complications. Endometrial cancer remains one of the serious complications for women with untreated PCOS.

Diagnosis of PCOS involves clinical, radiological and biochemical studies. Radiological studies include pelvic ultrasound and biochemical tests include estimation of serum concentrations of LH, FSH, and Testosterone etc. In the past 21 years progress in characterizing the relationship between insulin and PCOS has been substantial, pointing the way to new and novel therapy of PCOS. Insulin reduction whether by weight reduction or by insulin sensitizing agents like metformin appears to be of paramount importance in reducing circulating total or free testosterone in women with PCOS.

Material and methods

This study was performed in the Out Patient Department of Obstetrics and Gynaecology in Dr. BSTR hospital and MIMER Medical College, Malegaon, Maharashtra, India.

82 women in reproductive age group attending gynecology outpatient department with any 2 out of 3 Rotterdam criteria were taken for study.

Inclusion Criteria: Women (married or unmarried) in age group 15-40 years of age were included.

Exclusion Criteria

1. Pregnant women.
2. Women with age more than 40 years
3. Women with other causes of menstrual irregularity like hypothyroidism and hyper prolactinemia
4. Women with other causes of hyperandrogenism like Congenital Adrenal Hyperplasia, androgen secreting tumors, Cushing's Syndrome
5. Patients with known medical illness like diabetes or impaired glucose tolerance
6. Patients on medications like corticosteroids, oral contraceptives, metformin etc. which could alter the endocrine and metabolic parameters under investigations

Informed consent was obtained from each patient and ethical committee clearance was taken.

Detailed history, clinical and anthropological examination was done. All patients were subjected to ultrasonography for polycystic ovarian morphology and ovarian volume.

Amenorrhea was defined as absence of cycles in the past 6 months and Oligomenorrhea as menses >35 days. Infertility was assessed only in married patients and was defined as failure of spontaneous pregnancy after one year of active married life. Patients with male factor infertility and other factors of infertility were excluded.

For every patient, detailed menstrual history regarding age of menarche, menstrual cycle was noted. Each patient was questioned about H/O diabetes / hypertension / epilepsy / drug intake / childhood obesity.

Personal history like dietary habits, life style were given importance.

Family history like similar complaint in mother/ siblings, and also the family H/O diabetes and hypertension was taken. All patients were healthy with a spontaneous onset of puberty and normal sexual development. None of them received medication known to affect carbohydrate metabolism and plasma sex steroids for at least 3 months before the study.

Weight was measured using the same conventional digital scale with a precision of 100 g, and height was measured with the same standard measuring tape.

BMI: Obesity and overweight were defined according to WHO criteria modified for Indian Population [10].

Underweight <18.5
Normal/ Lean 18.6-22.9
Overweight 23-24.9
Obese >25

Importance was given to search for hirsutus/Acanthuses Nigerians / acne. Hirsutus was used as a parameter for clinical hyperandrogenism .Hirsutus was graded as per Ferriman-Gallway scoring system[11]. Clinical hyperandrogenism was diagnosed if the FG score was 8 or greater or the patient had moderate to severe acne, defined by the presence of inflammatory lesions and their extension.

A Trans vaginal/Trans abdominal ultrasound was performed on each patient using a 6.5 MHz end vaginal probe. The ultrasound examinations were performed by one of the well-trained radiologists who were not aware of the patient's endocrine profiles.

The following parameters were evaluated son graphically:

1. Presence, number and disposition of follicles in each ovary,
2. Ovarian volume, estimated according to the formula: 0.523(A x B x C), where A, B and C are the three ovarian diameters.[12]
3. Endometrial thickness

Polycystic ovarian morphology on ultra sound was defined as the presence of 12 or more follicles in each ovary (with one ovary being sufficient for diagnosis) measuring 2-9 mm in diameter and/ or increased ovarian volume > 10 ml (With the exclusion of other etiologies)

Results

Age distribution

When age distribution of PCOS patients was analysed, maximum patients (41%) were in the age group 15-20 years, followed by 21-25 years, whereas minimum patients (2%) were in age group of 31-35 years. Mean age was 21.6 years.

Table 1: Distribution of Age in Polycystic ovaries.

Age	Frequency	Percentage
15-20	34	41
21-25	24	29
26-30	22	27
31-35	2	2

Menstrual complaints

In our study most commonly encountered menstrual complain in PCOS is Oligomenorrhea occurring in 73 of 82 (89%) patients. 9 patients had no menstrual complaints.

Obstetrical profile

Out of 82 cases of PCOS included in the present study 50 patients were married and 32 were unmarried. Of this 50, 28 presented with infertility (56%). 22 patients (26%) where porous who were not interested in further childbearing.

Table 2: Obstetric Profile of PCOS patients

Clinical Profile	Number of Patients	Percentage
Unmarried	32	39
Infertility	28	56 (Out of 50 married)
Porous	22	26

Obesity in PCOS

Table 3: Classification of PCOS patients as per their BMI[10]

Bmi	Number Of Patients	Percentage
Underweight <18.5	16	20
Normal/Lean 18.6-22.9	22	27
Overweight 23-24.9	9	11
Obese >25	35	42

In the study maximum patients 42% belonged to obese group according to their BMI. 27% had normal BMI and 11% in overweight group. 20% of cases were lean with PCOS.

Components of PCO Syndrome

Of the three components in Rotterdam criteria for PCOS diagnosis most commonly found in the present study was Oligomenorrhea seen in 89 patients. Next was ultrasound picture of polycystic ovaries found in 84 patients and least was clinical features of hyperandrogenism 39%.

Table 4: Components of Rotterdam Criteria for PCOS

Component	No. of Patients	Percentage
Oligomenorrhea	73	89
Polycystic Ovaries	69	84
Hyperandrogenism	32	39

Patients presenting with Oligomenorrhea with polycystic appearance were most common (60%).

The Ovulatory phenotype (H+P) was least common (11%). Patients presenting with the classic triad (H+O+P) were also minimal (12%)

Table 5: Criteria for PCOS

Criteria For PCOS	Number of Patients	Percentage
Oligomenorrhea with Polycystic ovaries (P+O)	50	60
Oligomenorrhea with Hirsutus (H+O)	13	15
Hirsutus with polycystic ovaries (H+P)	9	11
All three features	10	12

Discussion

Age Distribution.

In the study by Ramanad *et al.* [13] The mean age was 22 Joshi *et al.* [14] in their study, found the mean age of the patients with PCOS as 24 years. Mean age by Christodoulopoulou *et al.* [15] was 24.9 years

Table 6: Comparision of Age distribution with various Studies.

Study	Mean Age (years)
Present Study	21.6
Ramanand *et al.* [13]	22.05
Joshi *et al.* [14]	24
Christos populous *et al.* [15]	24.9

Mean age in our as well as other studies are comparable. All this indicates that it is a disease mainly of the young age.

PCOS is belived to result from maladaptation of the 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 of this transition to happen may result in PCOS [16].

Oligomenorrhea

Oligomenorrhea was present in 65% patients in study by Ramanand *et al.* [13]. In the study by Joshi *et al.* [14] menstrual irregularity was observed in 83% of the patients, while the remaining patients had normal menses. Mandrelle *et al.* [17] reported Oligomenorrhea in 84.2% in his study on 120 infertile PCOS women.

Table 7: Comparison of presence of Oligomenorrhea with other studies.

Study	Presence of Oligomenorrhea (%)
Present Study	89
Ramanand *et al.* [13]	65
Joshi *et al.* [14]	83
Mandrella *et al.* [17]	84

The patients presenting with Oligomenorrhea in this study were comparable with the study performed by Joshi *et al.* and Mandela *et al*.

Oligomenorrhea was found to be the most common menstrual irregularity as well as most common chief complain of patients with PCOS in our and most other studies. Anovulation is the path gnomic feature of PCOS and results in irregular menstrual cycles. Therefore, persistent menstrual irregularities (resulting from anovulation) seem to be better predictors compared to biochemical parameter as evident in our as well as other studies. Thus Oligomenorrhea is rightly 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 Oligomenorrhea women was approximately two-fold greater than that for eumenorrheic women, regardless of whether the Oligomenorrhea women were obese or lean, indicating that Oligomenorrhea was an independent predictor of type 2 diabetes [18].

Infertility

Alaknanda *et al.* [19] showed the presence of Primary infertility in 54%.In the study by Joshi *et al.* [14] 46% of patients were married and 43% complained of infertility. Ramanand *et al.* [13] in the study on 120 PCOS women, 47 were married and 44.68% of married women complained of infertility.

Table 8: Comparison of infertility in PCOS with other studies

Study	Percentage of Infertility
Present study	56%
Alaknanda *et al.* [19]	54%
Ramanand *et al.* [13]	45%
Joshi *et al.* [14]	46%

The incidence of infertility in this study was comparable with that done by Alaknanda *et al*.

The overall prevalence of infertility could still be higher because most of the patients in our study were not desirous of conception.

As PCOS has a linear correlation with metabolic syndrome, it has a galloping rise along with type 2 DM. 80% of an ovulatory infertility is due to PCOS [24].

The incidence of infertility is higher in the present study due to higher prevalence of infertility in the present times, along with increasing awareness and promt consultation with the doctor for treatment. Also, because this study was performed in a tertiary reference centre, many patients with infertility were referred for futher management.

Obesity

Obesity is seen in 35-50% of women with PCOS found in the study Balen *et al.* [7]. In the study conducted by Kalra, *et al.* [20] the percentage of obese, overweight and normal BMI in Indian POCS women (n = 65) based on ACOG criteria was 15.38%, 44.61%, and 40%, respectively. This is comparable with our study.

Table 9: Comparison of Obesity in PCOS with Other studies

Study	Percentage of PCOS who are obese
Present Study	42%
Balen *et al.* [7]	35-50%
Kalra *et al.* [20]	44.6%

Asian Indians have higher percentage body fat, abdominal adiposity at lower or similar BMI levels as compared to white Caucasians. The obesity is typically centripetal, related to fat accumulation in the centre of the body (truncal abdominal fat), resulting in an increased waist to hip ratio, as opposed to the fat accumulation in the thighs and hips (gluteo femoral fat). Asian Indians are more predisposed to develop insulin resistance and cardiovascular risk factors at lower levels of BMI as compared to other ethnic groups. PCOS and its relation with obesity is well established and can be supported well by the findings in our as well as other studies. Central obesity is seen in most of the cases the cases.

As obesity in growing children is a major health problem, more PCOS adolescent girls are put at risk of increase in the severity of the symptoms and health hazards. In fact, with the rising prevalence of childhood obesity, adolescent girls who may have never displayed symptoms of PCOS, with the exception of irregular cycles may now experience symptoms of anovulation and androgen excess.

Obesity increases the risk for metabolic dysfunction and insulin resistance is worsened. Many patients of PCOS have a normal BMI. Obesity is not essential to make the diagnosis of PCOS [20]. This study also shows that there is an alarming rise of obesity even in the rural population of India.

There is an increasing trend of lean PCOS, and they have different phenotypic and metabolic characteristics than the obese patients [21].

Table 10: Presence of PCOS in lean patients and with Comparison with other studies.

Study	Percentage of lean PCOS
Present Study	20%
Manu *et al.* [21]	20%

Weight reduction in adult women has been shown to improve free androgen levels, insulin sensitivity and ovulatory function [18]. Differentiating subgroups based on BMI in PCOS will help in selecting the modalities of treatment including weight reduction as mentioned above.

Comparison of individual Components of PCOS

Moghetti *et al.* [22] among their 137 women with PCOS diagnosed by Rotterdam criteria found PCO morphology in 89%, oligomenorrhea in 84.7% and hyperandrogenism in 84.7%. In the study by Sujata Kar [23], of 410 PCOS patients in India it was seen that PCO complete type was the commonest, 65.6% ,followed by P+O 22.22%, H+O in 11.2%. The ovulatory type, H+P was the least common, 0.9% of patients. In the present study, the phenotypic distribution was quite similar.

Table 11: Comparison of Oligomenorrhea in PCOS with other studies.

Study	Percentage of PCOS with Oligomenorrhea
Moghetti *et al.* [22]	84.7%
Present Study	89%

Table 12: Comparison Of phenotype of PCOS with other studies

Study	P+O	H+O
Sujata Kar *et al.* [23]	65	22
Present Study	60	15

Limitations of the Study

1. As this study is conducted in Ob Gy OPD, the patients presenting with menstrual irregularities were higher than any other complaints as compared to an endocrine OPD.
2. As this is a cross sectional study, long term health implications of PCOS cannot be studied.
3. This is a clinical study and the patients need laboratory investigations for further evaluation.

Conclusion

- PCOS is a common Endocrinopathies with varying clinical manifestation and may present to a gynecologist, endocrinologist or a dermatologist.
- PCOS can be diagnosed by detailed history and clinical examination.
- Obesity, that was initially a lifestyle disorder of the urban area, is now rampant in the rural population too.
- Lifestyle changes, weight reduction, insulin sensitization with drugs like Metformin, form the mainstay of treatment. Ovulation induction gives good results in an ovulatory type of infertility.
- The seqeualae of PCOS reaches beyond reproductive health, where these women are at increased risk of cardiovascular disease, Type 2 Diabetes mellitus, endometrial hyperplasia, thereby at increased risk of endometrial carcinoma.
- Thus awareness regarding PCOS is important as it has significant implications for the health and quality of life of these patients.

References

1. Cloyton RN, Ogelen V, Hodgkin son J, Wors wick L, Roden D, Dyer S *et al*. how common are PCO in normal women and what is their significance for the fertility of the population, Clin Endocrinal. 1992; 37:127-134.
2. Knochenhauer ES, Key TJ, Kahsar –Miler M, Waygoner W, BOOTS LR, Azziz K *et al.* prevalance of PCOS in black and white women of the south eastern unitedstates: A prospective study. J Clin Endocrinal metab. 1998; 83:3078-3082.
3. Azziz R, Woods KS, Reyna R, Key TJ, Knochenhauer ES, Yildiz BO *et al.* The prevalence and features of the polycystic ovary syndrome in an unselected population. J Clini Endocrinol Metab. 2004; 89:2745-9.
4. Insler V, Lunenfeld B, PCOD: A challenge and controversy. gynecol endocrinol. 1990; 4:51-70.
5. Stein IF, Leventhal ML. Amenorrhoea associated with bilateral PCO. AM J Obstet Gynecol. 1935; 29:181-191.
6. Rotterdam ESHRE/ASRM sponsored PCOS consensus workshop group. Revised 2003 consensus on diagnostic criteria and long term health risks related to PCOS. Hum Reprod. 2004; 19:41.
7. Balen AH, Gerard SC, Homburg R, Legro RS (editors). Taylor and Francis: London Epidemiology of Polycystic Ovary syndrome in Polycystic Ovary syndrome: A guide to clinical management, 2005, 23-31.
8. Pasquali R, Gambineri A, Pagotto U. The impact of obesity on reproduction in women with polycystic ovary syndrome. BJOG. 2006; 113:1148-59.
9. Lepor NE, Vogel RE. National Cholesterol Education Program Adult Treatment Panel III. Summary of the third report of the National Cholesterol Education Program Adult Treatment Panel III. Rev Cardiovas Med. 2001; 2:160-5.
10. World health organization Physical status. WHO technical report series number 854.Geneva. 1995.
11. 11. Ferriman D, Gallwey JD. Clinical assessment of body hair growth in women. J Clin Endocrinol Metab. 1961; 21:1440-1447.
12. Chen Y[1], Li L, Chen X, Zhang Q, Wang W, Li Y, Yang D. Ovarian volume and follicle number in the diagnosis of polycystic ovary syndrome in Chinese women. Ultrasound Obstet Gynecol doi: 10.1002/uog.5393. 2008; 32(5):700-3.
13. Ramanand, *et al.* Polycystic ovary syndrome in Indian women 140 Indian Journal of Endocrinology and Metabolism. 2013; 17(1).
14. Joshi AM, Yonzon P, Tandukar S. Clinical Profile of Patients with Polycystic Ovarian Syndrome in Nepal. Endocrinol Metab Int J. 2017; 4(2):83.
15. Christodoulopoulou V, Trakakis E, Pergialiotis V, Peppa M, Chrelias C, Kassanos D, *et al.* Clinical and Biochemical Characteristics in PCOS Women With Menstrual Abnormalities. J Fam Reprod Health .201; 10(4):184-190.
16. Nader S. Adrenarche and polycystic ovary syndrome: A tale of two hypotheses. J Pediatr Adolesc Gynecol. 2007; 20:353-60.
17. Mandrelle K, Karmath MS, Bondu DJ, Chandy A, Aleyamma TK, George K. Prevalance of metabolic.
    Syn drome in women with PCOS attending an infertility clinic in a tertiary care hospital in South India. J Hum Reprod Sci. 2012; 5:26-31.
18. Solomon CG, Hu FB, Dunaif A, Rich-Edwards J, Willett WC, Hunter DJ, *et al*. Long or highly irregular menstrual cycles as a marker for risk of type 2 diabetes mellitus. JAMA. 2001; 286:2421-6.
19. Alaknanda *et al*. Dr Alakananda, Dr Bishnu Prasad Das, Dr Ishaa Goel, A Study on Clinical Profile of Patients with Polycystic Ovarian Syndrome Volume 6 Issue 10, October 2017, International Journal of Science and Research (IJSR).
20. Kalra A, Nair S, Rai L. Association of obesity and insulin resistance with dyslipidemia in Indian women with polycystic ovarian syndrome. Indian J Med Sci. 2006; 60:447-53.
21. Manu G, Ayman D, Debates regarding lean patient with PCOS, J Hum Reprod Sci jul-Sep. 2017; 10(3):154-161.
22. Moghetti P, Tosi F, Bonin C, Sarra D, Kaufman JM. Divergences in Insulin Resistance Between the different phenotypes of the Polycystic Ovary Syndrome. J Clin Endocrinol Metab. 2013; 98:1-10.
23. Kar S. Anthropometric, clinical, and metabolic comparisons of the four Rotterdam PCOS phenotypes: A prospective study of PCOS women. J Hum Reprod Sci. 2013; 6:194-200.
24. Ashraf M, Kalra S. PCOS- A metabolic Malady, Mother of all lifestyle disorders in women. Indian J Endocrinol Metab. 2011; 15(4):239-241.