



## POLYCYSTIC OVARIAN SYNDROME; PATTERN OF DISEASE IN PATIENTS

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**ABSTRACT ... Objectives:** The objective of this study is to: describe the pattern of disease in patients with polycystic ovarian syndrome. **Data Source:** Medline Data Base. **Design Of Study:** Descriptive case series study. **Settings:** Gynaecological Outpatient Department of Ghurki trust teaching hospital Lahore. **Duration:** 6months period, from 8th October 2012 to 7th April 2013. **Materials & Methods:** Sixty cases of polycystic ovarian syndrome as diagnosed on ultrasound were selected. These cases were examined for height, weight, body mass index, hirsutism, acne, acanthosis nigricans, breast examination (galactorrhoea). These cases were investigated for blood sugar (random), Fasting Insulin, pelvic ultrasound, LH, FSH and serum prolactin. **Results:** The mean age of the patients were  $24.93 \pm 5.67$  years. There were 28 (47%) patients of menstrual disturbance, 18 (30%) patients of subfertility, 9 (13%) of obesity. There were 13 (21.7%) patients of BMI level of equal to or less than  $25 \text{ kg/m}^2$  and 47 (78.3%) patients of BMI level more than  $25 \text{ kg/m}^2$ . There were 25 (41.7%) patients of hirsutism, 14 (23.3%) patients of acne and 17 (28.3%) patients of acanthosis nigricans on physical examination. There were 28 (46.7%) patients of LH level of more than 10 IU/L (raised) and 1 (1.7%) patient of more than 350 mU/L prolactin (raised). The mean right ovary volume of the patients was  $12.08 \pm 3.04$  and mean left ovarian volume of the patients was  $11.86 \pm 4.83$ . **Conclusions:** Hirsutism and cycle disturbances are the major clinical features of polycystic ovarian syndrome patients. Obesity seems to be more prevalent in polycystic ovarian syndrome patients. The ratio between LH and FSH as a diagnostic tool was low in our patients.

**Key words:** Polycystic, ovarian, infertility, obesity, hirsutism and oligomenorrhoea.

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### INTRODUCTION

Polycystic ovary syndrome (PCOS) is one of the most common female endocrine disorders. It is recognized by the presence of enlarged ovaries with multiple small cysts and a hypervascularized, androgen secreting stroma. This syndrome is characterized by menstrual abnormalities, infertility, obesity, excess hair growth, acanthosis nigricans and acne<sup>1,2,3,4</sup>.

PCOS produces symptoms in approximately 5% to 10% of women of reproductive age (12–45 years old)<sup>1</sup>. It is thought to be one of the leading causes of female subfertility<sup>5,6</sup> and the most frequent endocrine problem in women of reproductive age.

The principal features are anovulation, resulting in irregular menstruation, amenorrhoea, ovulation-related infertility, and polycystic ovaries; excessive amounts or effects of androgenic (masculinizing) hormones, resulting in acne and hirsutism; and insulin resistance, often associated with obesity, Type 2 diabetes, and high cholesterol levels<sup>1,2,3</sup>. The symptoms and severity of the syndrome vary greatly among affected women.

The clinical approach to diagnose polycystic ovary syndrome depends on symptoms and signs, or hormonal testing and ultrasound scanning<sup>6,7</sup>. However, it is a clinical diagnosis in most of cases based on the co-existence of chronic anovulation and varying degrees of

androgen excess. Certain tests like serum testosterone, androgens, gonadotrophins and serum prolactin may aid in diagnosis. For risk assessment, glucose tolerance test, lipid profile, pelvic and endometrial biopsy can be carried out in diagnosed patients.

Polycystic ovarian syndrome has heterogeneous presentation. The findings of study conducted in Isra University Hyderabad were obesity (84.37%), oligomenorrhoea (79.68%), Infertility (71.87%) and hyperandrogenism (62.49%)<sup>8</sup>. According to another study conducted in Islamabad, 75% patients presented with primary infertility, 84.6% with hirsutism, 75% oligomenorrhoea and obesity 86.5%<sup>9</sup>.

PCOS reflects multiple potential aetiologies and variable clinical manifestations<sup>2,3,10</sup>. There is strong evidence that it is a genetic disease. Such evidence includes the familial clustering of cases, greater concordance in monozygotic compared with dizygotic twins and heritability of endocrine and metabolic features of PCOS<sup>2,3</sup>.

PCOS in adolescents arises as a result of a genetically determined disorder of ovarian function that results in hyper-secretion of androgens, possibly during fetal life and also during physiological activation of the hypothalamic-pituitary-ovarian in infancy and at the onset of puberty<sup>3,4</sup>. Obesity unmasks or amplifies symptoms, endocrine and metabolic abnormalities. The increasing incidence of childhood obesity has resulted in an alarming increase not only in distressing symptoms but also impaired glucose tolerance and even diabetes among adolescent girls with PCOS. In due course, however, identification of the major susceptibility loci is likely to provide key insight into the aetiology of the syndrome and improve diagnosis and management<sup>11,12</sup>.

Non-tumor hyperandrogenism with markedly elevated serum Testosterone (T) and associated metabolic syndrome is a defined clinical entity in postmenopause as well as in premenopausal women with polycystic ovary syndrome. This has

hitherto been only sparsely documented in the published literature. A fall in serum T level in response to insulin-sensitizing therapy with metformin and lifestyle change may be a reassuring indicator that such women are highly unlikely to harbor an androgen-secreting tumor<sup>13</sup>.

These clinical presentations of PCO apparently seem to have a geographical variation that is why I want to see clinical presentations of PCO in my hospital.

## MATERIALS & METHODS

### Study Design

Descriptive case series study.

### Settings

Department of Gynaecology and Obstetrics, Ghurki trust teaching hospital lahore. Tertiary care hospital attached with Lahore medical and dental college.

### Sample Size

60 patients of polycystic ovarian syndrome.

### Duration of Study with Dates

Six months from 8th October 2012 to 7th April 2013.

### Sampling Technique

Non-probability purposive sampling.

### Sample Selection

#### Inclusion Criteria

1. Patients presenting with menstrual abnormalities, subfertility, hirsutism and obesity acanthosis nigricans & acne.
2. Ovarian volume more than 7.5cm<sup>3</sup> on ultrasonography.
3. Age 15-45 years.

#### Exclusion Criteria

1. Patients already receiving treatment for polycystic ovarian disease.
2. Other endocrine causes
  - a) Congenital adrenal hyperplasia.

- b) Androgen secreting tumours.
- c) Cushing syndrome.
- d) Hyperprolactenemia
- e) Thyroid dysfunction.

### Data Collection Procedure

Sixty cases of polycystic ovarian syndrome as diagnosed on ultrasound were selected from outpatient department (OPD) of Ghurki trust teaching hospital, Lahore. An informed consent was obtained from all subjects included in the study. History of patient was taken at presentation regarding name, age, address, marital status, symptoms (menstrual disturbances, sub fertility, obesity and excessive hair growth), severity, duration and any previous treatment was obtained. These cases were examined for height, weight, body mass index, hirsutism, acne, acanthosis nigricans, breast examination (galactorrhoea). These cases were investigated for blood sugar (random), Fasting Insulin, pelvic ultrasound, LH, FSH and serum prolactin levels.

All this information was collected through especially designed Proforma.

### Data Analysis Procedure

The data was entered into SPSS version 10 and analysed. Descriptive statistics was calculated. The quantitative variable age, height, weight, LH, FSH, Fasting insulin, serum prolactin were presented as mean and standard deviation. The qualitative variables parity, marital status, sign and symptoms were presented as frequency and percentages. The positive signs were listed as proportion. The routine investigations were presented as proportion of positive and negative.

As this is a descriptive case series study, therefore no test of significance was applied.

## RESULTS

Sixty patients of polycystic ovarian syndrome were diagnosed on ultrasound were selected from outpatient department (OPD) Of Ghurki trust teaching hospital Lahore.

The mean age of the patients was  $24.93 \pm 5.67$

years and 68.3% patients were married. The patients had weight ranged from 40-90 kg with mean  $\pm$ SD of  $65.97 \pm 9.93$  kg. The mean  $\pm$ SD height of the patients was  $153.55 \pm 4.01$  cm with height range of 145-165 cm. The mean  $\pm$ SD body mass index (BMI) of the patients was  $28.17 \pm 4.63$  kg/m<sup>2</sup>. (Fig. 1)

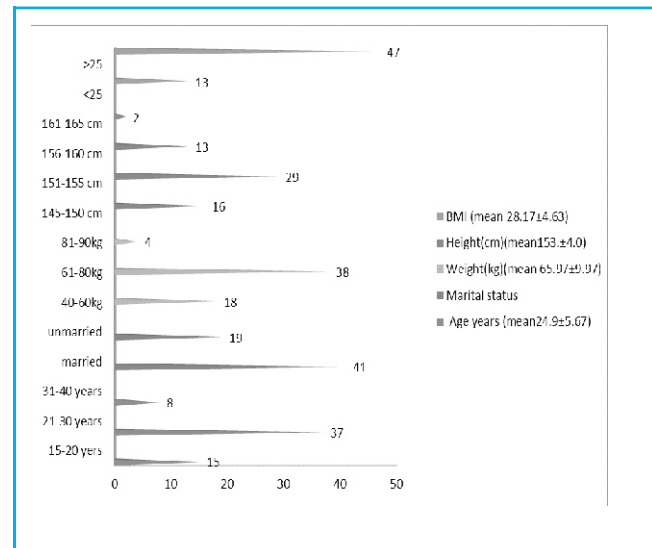


Fig-1. Demographic features of patients presenting with PCOS (n=60)

Key: SD: Standard deviation, BMI: Body mass

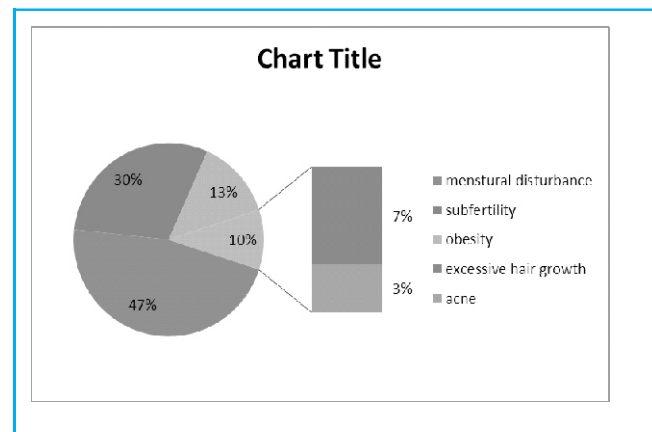
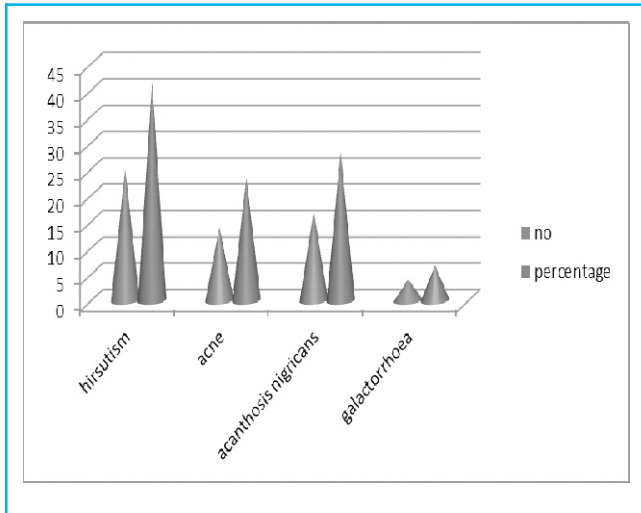


Fig-2. Distribution of patients by clinical symptoms

As for as investigations were concerned LH was raised in 46.7% while only 1.7% of patients had raised fasting insulin and prolactin level (Table-I). On USG the ovarian volume of all patients were more than 7.5 with the mean of right ovarian

volume  $12.08 \pm 3.04$  and mean left ovarian volume was  $11.86 \pm 4.83$  (Table-II).



**Fig-3. Distribution of patients by general physical examination (n=60)**

**DISCUSSION**

The result of the present study demonstrated that the mean age of the patients was  $24.93 \pm 5.67$  years with age range of 15-40 years. As compared with the study done by Najem et al<sup>14</sup> the mean age of the patients was 25.8 years with age range of 15-44 years, which is comparable with our study.

According to our study the mean BMI of the patients was  $28.17 \pm 4.63$  kg/m<sup>2</sup>, and besity was found in 78.3% patients( having BMI greater than 25kg/m<sup>2</sup>).

<b>Blood sugar random (mg/dl)</b> Mean $\pm$ SD ( $135.42 \pm 22.30$ )	No.	%age
Upto 200	59	98.3
>200	01	1.7
<b>Fasting insuli (<math>\mu</math>U/L) Mean <math>\pm</math> SD (<math>14.06 \pm 5.90</math>)</b>		
3-28	59	98.3
>28	01	1.7
<b>Hormones</b>		
<b>LH (0-10IU/L)</b>		
Within normal range	32	53.3
Raised	28	46.7
<b>FSH (0-10 IU/L)</b>		
Normal	60	100
Raised	-	-
<b>Prolactin (&lt;350 mIU/L)</b>		
Normal	59	98.3
Raised	01	1.7

**Table-I. Distribution of patients according to laboratory findings**

The results of my study are comparable with the studies of Najem et al<sup>14</sup>, Lin et al<sup>15</sup> and Vrbikova J<sup>16</sup>. According to them Obesity was encountered in 30-70% of PCOS-affected women, and its presence significantly modifies both clinical and laboratory expression of the syndrome. Obesity increases the risk of co-morbidities associated with PCOS,

<b>Ovary volume</b>	<b>Right ovary volume</b>		<b>Left ovary volume</b>	
	<b>No.</b>	<b>%age</b>	<b>No.</b>	<b>%age</b>
7.5-10.0	21	35	26	43.3
10.1-15.0	28	46.7	23	38.3
15.1-20.0	11	18.3	11	18.3
Mean $\pm$ SD	<b>12.08 <math>\pm</math> 3.04</b>		<b>11.86 <math>\pm</math> 4.83</b>	

**Table-II. Distribution of Patients by Ovary Volume diagnosed on Ultrasound (n=60)**

Key: SD Standard deviation

such as impaired glucose tolerance and type 2 diabetes mellitus, hyperlipidemia and arterial hypertension. There clearly is a vicious circle of abdominal obesity, insulin resistance, and hyperandrogenemia. Differences in ghrelin and neuropeptide Y levels between PCOS patients and those with simple obesity were also described. Weight loss is the first choice recommendation for the treatment of clinical manifestations of PCOS, such as menstrual cycle irregularities, infertility or hirsutism. However, the best treatment approach in obese PCOS patients remains to be defined. Studies concerning different weight loss regimens, antiobesity drugs, bariatric surgery, insulin sensitizers, and hormonal therapy are reviewed.

In our study hirsutism was found in 42% of the patients. As compared with the Chinese study conducted by Li et al<sup>17</sup> hirsutism was found in 35% patients, which is same and comparable with our study. However, according to Najem et al<sup>14</sup> and Al-Ruhaily et al<sup>18</sup> the hirsutism was found in 88.9% of patients and 82% patients respectively.

The reproductive abnormalities like the menstrual disturbance was found in 47% patients according to our study and subfertility was found in 30% patients. As compared with the study of Najem et al<sup>14</sup> the menstrual disturbance was found in 91% patients, however subfertility was found in 40% of patients, which is almost same and comparable with our study.

In our study gataclorrhoea was found in 6.7% patients. acne was found in 23.3% acanthosis nigricans was found in 28.3% patients. As compared with the study of Najem et al<sup>14</sup> gataclorrhoea was found in 8.8% of patients, acne was found in 12%. acanthosis nigricans was found in 15.6% patients. In another study conducted by Li et al<sup>17</sup> acne was found in 45% of patients.

In the literature, about 30% of women with PCOS had LH to FSH ratio >3:1 and many researchers consider this ratio diagnostic for the syndrome.<sup>19</sup> However 46.7% of our patients had LH ratio raised and no patient of FSH ratio raise, indicating the low

sensitivity of this test as a diagnostic tool in patients with PCOS.

In our study the high diabetes mellitus frequency was noted in 1.7% patients, As compared with the study of Najem et al<sup>14</sup> 9% of patients had blood sugar raised. However, if glucose tolerance tests were to be performed, the prevalence of type-2 DM might turn out to be higher and more patients would likely be found to have impaired glucose tolerance<sup>20,21</sup>.

Community based studies are needed to define the prevalence of the syndrome and prospective well organized investigations are needed to define the frequency of each clinical and biochemical feature of the syndrome.

## CONCLUSIONS

This is concluded from our study that hirsutism and cycle disturbances are the major clinical features of polycystic ovarian syndrome patients. Obesity seems to be more prevalent polycystic ovarian syndrome patients in our setup. The ratio between LH and FSH as a diagnostic tool had low in our patients. Prevalence rates of diabetes mellitus seems to be underestimated in our patients.

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## PREVIOUS RELATED STUDY

**Shahid Irshad Rao, Rashida Sadiq, Hina Kokab.** POLYCYSTIC OVARIAN DISEASE; THE DIAGNOSIS AND MANAGEMENT (Original) Prof Med Jour 13(2) 186-191 Apr, May, Jun, 2006.