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ORIGINAL ARTICLE

Clinical and Radiological Profile of Patients with Polycystic Ovary Syndrome

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ABSTRACT

Background: The current study aimed to assess the symptomatology, clinical features, and ultrasound findings in individuals with polycystic ovarian syndrome (PCOS).

Methodology: A cross-sectional research was undertaken at the Department of Gynaecology at the Medical Teaching Institute, Hayatabad Medical Complex, Peshawar MTI, HMC between 1st January 2021 to 31 December 2022. Hundred patients of the reproductive age group presenting in Gynecology outpatient departments with signs of PCOS meeting the inclusion criteria were selected for the study. A thorough history and examination were conducted. Laboratory and ultrasound examinations supported the PCOS diagnosis.

Results: A total of 109 patients with a mean age of 26.02 ± 8.66 years were assessed. 13 (11.93%) were overweight, and 44 (40.37%) were classified as obese. The mean BMI was 26.98 ± 7.24 kg/m^2. 75 (68.8%) individuals reported having menstrual irregularities. Out of these, oligomenorrhea was reported in 56 (51.38%) and amenorrhoea was revealed in 19 (17.43%) patients. 80 (73.39%) reported having overgrowth of hair. Infertility was reported in 60 (55.05%) patients. Majority of the patients had high cholesterol, luteinizing hormone and testosterone.

Conclusion: Obesity, hirsutism, and irregular periods were the most prevalent clinical manifestations of PCOS. Hormonal irregularities were quite common. Many PCOS patients can be identified by taking a thorough medical history and completing a thorough physical examination.

Keywords: PCOS, diagnosis, obesity, amenorrhea, menorrhagia

INTRODUCTION

The complicated hormonal disorder known as polycystic ovarian syndrome (PCOS) has wide-ranging effects on one's overall health[1]. It is one of the most frequently seen endocrine conditions in women, affecting 15-20% of those who are reproductive age, and is marked by hyperandrogenism and persistent anovulation[2]. When all other potential causes are ruled out, polycystic ovarian syndrome is defined as the existence of menstrual irregularities coupled with hormonal abnormalities such as hyperandrogenism, and polycystic ovaries. A polycystic ovary is one that contains 12 or more follicles that are at least 2 mm in size and/or has an enlarged ovarian volume (>10 cm3).[5,6]

35–60% of women with polycystic ovarian syndrome are obese. A predominance of abdominal fat that is concentrated in the truncal region is linked to hyperandrogenism. [7,8] Obese women with PCOS exhibit decreased glucose tolerance in 18–20% of cases. [9] The majority of type 2 diabetic women under 45 have polycystic ovaries.[10]

In a study conducted at Rawalpindi in 2003 it was found that irregularities in periods and hirsutism are the two most frequent clinical presentations of PCOS. [39] In another study conducted at Lahore in June 2004 it was stated that 20% of polycystic ovarian disease patients with a diagnosis had reduced glucose tolerance. Compared to PCOD patients with normal glucose tolerance, those with anomalies in glucose metabolism had larger body mass indices, higher fasting glucose levels, and higher glucose levels two hours after a load.[40]

In a study at Hyderabad in 2005 out of the total study population 42.19% women had hyperinsulinemia which indicates significant insulin resistance. Thus, fasting serum insulin levels must be checked in all individuals presenting with clinical or biochemical signs of PCOS.[41]

The objectives of this study were to determine the clinical profile and radiological findings of polycystic ovarian syndrome (PCOS).

MATERIALS AND METHODS

A cross-sectional study was undertaken at the Department of Gynaecology at the Medical Teaching Institute, Hayatabad Medical Complex, Peshawar MTI, HMC between 1st January 2021 to 31 December 2022. Ethical approval was obtained prior to the data collection. A 100 patients with signs and symptoms of polycystic ovarian syndrome were included using a non-probability convenience sampling technique that was utilized to recruit participants in the study.

All patients of the reproductive age group with at least two of the following symptoms: obesity, hirsutism, oligomenorrhea, and infertility were included in the study.

All pregnant females, females before age of menarche and post menopausal, and those with other endocrinological disorders like adrenal hyperplasia, Cushing syndrome were excluded from the study. During a one year period, all females of the reproductive age group presenting in Gynecology outpatient departments with signs and symptoms of polycystic ovarian syndrome meeting the inclusion criteria were included in the study. A thorough history and examination were conducted. Following that, results from laboratory testing and an ultrasound confirmed the diagnosis of polycystic ovarian syndrome. For the diagnosis of polycystic ovarian disease, the ESHRE/ASRM diagnostic criteria was used.

At the time of presentation, pre-designed pro forma were completed, after which further research and ultrasound results were input. Pre-designed pro forma were filled at the time of presentation and then further investigations and ultrasound findings were entered in it.

Following variables were included in the Performa: age, marital status, weight, symptoms, and signs, blood Sugar level, hormone levels, and ultrasound findings.

Descriptive outputs were obtained as tables in relation to various variables as outlined above.

Mean and SD was calculated for age of the patients, weight , height, waist hip ratio, random blood sugar, fasting blood sugar and hormone levels. Frequencies and percentages were calculated for marital status, signs, symptoms and ultrasound findings.

Data was entered and analyzed by SPSS version 23.0. Since this was a descriptive study design therefore, frequencies and percentages were calculated. There was no need for statistical analysis but to evaluate the results of this study leaving no error some statistical tests were used to see the significance of data of this study. Correlation test was used to see the significance of data from this study. Correlation test was used to evaluate the results manually as well as numerically. Chi- square test was applied to analyze the relationship between two variables e.g. WHR and

serum testosterone, BMI and fasting insulin levels, BMI and infertility. P-value noted it is only significant if <0.05.

RESULTS

A total of 109 patients with a mean age of 26.02 ± 8.66 years were assessed. A total of 36 (32.7%) women were married. Minimum age was 17 while maximum age was 65 years. Patients were grouped according to the body mass index (BMI) categories. In the underweight category, there were 33 (30.27%) women, while 13 (11.93%) were overweight, and 44 (40.37%) were classified as obese. The mean BMI was 26.98 ± 7.24 kg/m^2.

75 (68.8%) individuals reported having menstrual irregularities. Out of these, oligomenorrhea was reported in 56 (51.38%) and amenorrhoea was revealed in 19 (17.43%) patients. 80 (73.39%) reported having overgrowth of hair. Infertility was reported in 60 (55.05%) patients. Out of these, primary infertility was found in 32 (53.33%) patients and secondary infertility was reported in 28 (46.67%) patients (Table 1).

Table 1: Patient characteristics of study participants

Parameter	Mean or Frequency
Age (years)	26.02 ± 8.66
Marital Status	
Married	36 (32.7%)
Unmarried	73 (67.3%)
Body mass index (BMI)	26.5 ± 3.51
Underweight	33 (30.27%)
Normal Weight	19 (17.4%)
Overweight	13 (11.93%)
Obese	44 (40.37%)
Clinical History	
Menstrual irregularities	
Yes	75 (68.8%)
No	34 (31.2%)
Oligomenorrhea	56 (51.38%)
Amenorrhoea	19 (17.43%)
Regular cycle	34 (31.19%)
Hair overgrowth (hirsutism)	
Yes	80 (73.39%)
No	29 (26.61%)
History of recurrent miscarriages among married women	3 (2.75%)
Infertility	60 (55.05%)
Primary infertility	32 (53.33%)
Secondary infertility	28 (46.67%)

Majority of the patients had high cholesterol levels (>200 mg/dl) i.e. 60 (55.05%). 56 (51.38%) patients had high levels of Luteinizing hormone (LH) IU/L, 41 (37.61%) had high plasma total testosterone (T) ng/ml (Table 2).

Table 2: Abnormal hormone levels among participants in the study

Abnormal (High) Hormone levels	N (%)
Luteinizing hormone (LH) IU/L	56 (51.38%)
Follicle stimulating hormone (FSH) IU/L	9 (8.26%)
Plasma total testosterone (T) ng/ml	41 (37.61%)
Thyroid stimulating hormone (TSH) IU/L	9 (8.26%)
Serum prolactin levels ng/ml	5 (4.59%)
Cholesterol (> 200 mg\dl)	60 (55.05%)
Triglycerides (> 150 mg/dl)	35 (32.11%)
High density lipoproteins (HDL) (< 50 mg/dl)	47 (43.12%)

DISCUSSION

A total of 109 patients with a mean age of 26.02 ± 8.66 years were assessed. A total of 36 (32.7%) women were married. Minimum age was 17 while maximum age was 65 years. Patients were grouped according to the body mass index (BMI) categories. In the underweight category, there were 33 (30.27%) women, while 13 (11.93%) were overweight, and 44 (40.37%) were classified as obese. The mean BMI was 26.98 ± 7.24 kg/m^2. 75 (68.8%) individuals reported having menstrual irregularities. Out of these, oligomenorrhea was reported in 56 (51.38%) and amenorrhoea was revealed in 19 (17.43%) patients. 80 (73.39%) reported having overgrowth of hair. Infertility was reported in 60 (55.05%) patients. Out of these, primary infertility was found in 32 (53.33%) patients and secondary infertility was reported in 28 (46.67%) patients (Table 1). Majority of the patients had high cholesterol levels (>200 mg/dl) i.e. 60 (55.05%). 56 (51.38%) patients had high levels of Luteinizing hormone (LH) IU/L, 41 (37.61%) had high plasma total testosterone (T) ng/ml.

The findings of the current research are corroborated by several other studies.[9, 11, 14]

In 1.61% of PCOS individuals, which was nearly the same as the frequency in the general population, recurrent miscarriage was a presenting characteristic. This study's findings are consistent with other studies' findings in that recurrent miscarriages were not more common in PCOS individuals.[15]

In this study 72% patients presented with menstrual irregularities out of which 16% had amenorrhea, 56% had oligomenorrhea and 28% had a regular cycle. This was similar to the findings of the study by Balen et al in which amenorrhoea was observed in 20% of cases, oligomenorrhea in 50% and regular cycle in 30% patients.[9]

All individuals had their hormone profiles recorded, and the percentage of patients with elevated levels was determined. In the present study, LH levels were elevated in more than 50% of participants, compared to 40% in Balen et al and 72% in the Multan study.[9, 14]

Prolactin was slightly raised in 3% of patients compared to 8% in the study at Multan.[14]

In a study by Aziz et al in 2001 proportion of obese patients was also 30%.[16]

Another research done in Rawalpindi found that 58% of patients had elevated HDL levels, whereas 12% and 21% of patients had elevated cholesterol and triglyceride thresholds. [17] This demonstrates that a sizable portion of PCOS patients have abnormal lipid profiles, which puts them at a higher risk of developing cardiovascular morbidity in the future.

The majority of the individuals in the current research who had primary infertility were obese. In the study by Balen et al., 14%, or about 11.76%, of individuals with secondary infertility were obese.[9]

PCOS can lead to alterations in the LH/FSH ratio, irregular menstrual cycles, and other clinical symptoms. Improved endocrine and biochemical control is a benefit of PCOS treatment, particularly in terms of decreased insulin resistance, hyperinsulinemia, and LH/FSH ratio.[18]

There are some limitations associated with the study. For instance, a small sample size limited generalizability of the current findings. Further multicenter and large scale studies should be undertaken to explore the variability in PCOS presentation.

CONCLUSION

Obesity, hirsutism, and irregular periods were the most prevalent clinical manifestations of PCOS. Hormonal irregularities were quite common. Many PCOS patients can be identified by taking a thorough medical history and completing a thorough physical examination.

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