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Original Article

PREVALENCE OF POLYCYSTIC OVARIAN SYNDROME AMONG YOUNG WOMEN WHO ATTENDED TERTIARY CARE HOSPITAL, VISAKHAPATNAM

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ABSTRACT

Objective: The present study aimed to determine the prevalence of PCOS among young adults attended to medical OP in a Tertiary care teaching hospital.

Materials: It is a retrospective study conducted in a Tertiary care teaching hospital, Visakhapatnam using existing records in the Department of Obstetrics and Gynaecology. The study was conducted from July 2021 to July 2023. The study population includes young adults of age in between 18-30 y. PCOS was defined by Rotterdam's criteria having presence of any two of the three features. Hormonal assays were conducted using immunoradiometric assay for TSH, LH, FSH.

Results: Majority of the PCOS cases 39% were reported in the age group of 26-30 Y. Among the 100 cases reported, the majority of them are reported with menstrual irregularity 62%. However, it was identified from the results that the mean values of cholesterol and triglycerides levels are quite higher suggested hyperlipidemia. The hormonal levels of TSH, LH and FSH were normal.

Conclusion: Although the overall frequency of PCOS is low and evaluating PCOS in young adults can be difficult, the condition is becoming more common at this age. Changes in lifestyle are essential at this age to avoid long-term metabolic and reproductive issues.

Keywords: PCOS, BMI, Hirsutism, Rotterdam criteria, Lifestyle

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INTRODUCTION

Polycystic Ovary Syndrome (PCOS), also called Stein–Leventhal syndrome, is a hormonal disorder common among women of reproductive age [1]. It's characterized by irregular menstrual cycles, excess androgen levels, and polycystic ovaries, which can lead to symptoms like acne, hirsutism, and fertility issues [2]. Insulin resistance is also often associated with PCOS, increasing the risk of type 2 diabetes [2]. Treatment focuses on managing symptoms through lifestyle changes, medications, and sometimes fertility treatments [3]. Generally, PCOS is estimated to affect about 4 to 20% of women of reproductive age worldwide [4]. Among young adults specifically, studies have reported prevalence rates ranging from 5% to 20%, with some studies suggesting higher rates in certain populations [5]. The prevalence of PCOS are variable due to lack of well-accepted criteria for diagnosis i.e., histopathologically, ultrasonographic appearance and biochemical parameters. PCOS diagnosis can be complex due to the lack of universally accepted criteria. Polycystic Ovary Syndrome (PCOS) can occur in young adults due to a combination of genetic factors i. e, hereditarily run in families, hormonal, and lifestyle factors [5]. PCOS is characterized by hormonal imbalances, including elevated levels of androgens (male hormones) such as testosterone and irregularities in insulin and glucose metabolism [6]. These hormonal disruptions can lead to problems with ovulation, ovarian cysts, and other symptoms of PCOS. Many women with PCOS have insulin resistance, which means their cells don't respond effectively to insulin, leading to higher levels of insulin in the blood [7]. Insulin resistance is closely linked to obesity and can contribute to hormonal imbalances and difficulty with weight management. Excess body weight, particularly abdominal obesity, is a common factor in PCOS development. Obesity can exacerbate insulin resistance and hormonal imbalances, contributing to the symptoms of PCOS [8]. Poor diet, lack of exercise, and high stress levels can also play a role in the development and exacerbation of PCOS symptoms. A sedentary lifestyle and unhealthy eating habits can contribute to obesity and insulin resistance, further complicating PCOS management [8]. Exposure to certain environmental pollutants and endocrine-disrupting chemicals may also influence the development of PCOS, although the exact mechanisms are still being studied [8]. Women with PCOS display abnormal patterns of gonadotropin secretion, characterized by increased lH pulse frequency and amplitude together with normal or low FSH secretion, resulting in an elevated lH/FSH ratio [9]. The abnormal gonadotropin secretion may be due to enhanced pituitary sensitivity to GnRH stimulation or to increased pulse frequency of GnRH secretion. The ovaries are the main source of the excess androgen seen in PCOS [10]. Increased androgen synthesis and secretion is a consistent phenotype of ovarian theca cells from women with PCOS [11]. These factors often interact in complex ways, making PCOS a multifactorial condition that requires a comprehensive approach to diagnosis and management. The diagnosis often starts with a review of the patient's medical history and an assessment of their symptoms. Common symptoms of PCOS include irregular menstrual cycles, excess hair growth (hirsutism), acne, and obesity [12]. Blood tests are used to measure hormone levels, including testosterone, luteinizing hormone (LH), follicle-stimulating hormone (FSH), and insulin [13]. Elevated levels of testosterone and lH, along with a high lH/FSH ratio, are often seen in PCOS. Insulin resistance is common in PCOS, so glucose and insulin levels may be measured to assess for this condition. Transvaginal ultrasound may be used to visualize the ovaries. In PCOS, the ovaries may appear enlarged and contain multiple small follicles (cysts) [13]. The Rotterdam criteria are commonly used, requiring at least two out of three features: oligo-ovulation or anovulation, clinical and/or biochemical signs of hyperandrogenism, and polycystic ovaries on ultrasound. However, even with these criteria, there can still be variability in diagnosis [14]. Researchers and clinicians are continually working to refine diagnostic criteria for better consistency in identifying and managing PCOS. Depending on the patient's specific symptoms and risk factors, additional assessments may be recommended, such as lipid profile testing, liver function tests, and assessment of cardiovascular risk factors. The treatment

options include life style management, using oral contraceptives, anti-androgen medications like spironolactone and usage of metformin to improve insulin sensitivity and Clomiphene Citrate. In some cases, a surgical procedure called laparoscopic ovarian drilling may be considered to improve ovulation by puncturing the ovarian surface. The present study aimed to determine the prevalence of PCOS among the young adults attended to medical OP in a Tertiary care teaching hospital.

MATERIALS AND METHODS

It is a retrospective study conducted in a Tertiary care teaching hospital, Visakhapatnam using existing records in the Department of Obstetrics and Gynaecology. The study was conducted from July 2021 to July 2023. The study population includes young adults of age in between 18-30 Y. A purposive and convenient sampling technique was used for the data collection from the study population, who satisfied inclusion criteria to participate in the study. The data related to anthropometric measurements including height, weight, and waist measurements was collected. The body mass index (BMI) was calculated as weight in kilograms divided by the square of height in meters. The data related to blood glucose levels, lipid profile, TSH of all the patients were collected and tabulated.

PCOS was defined by Rotterdam's criteria having the presence of any two of the three features. Oligo/amenorrhea i.e. absence of menstruation for 45 days or more and/or less than 8 menses per year, clinical hyperandrogenism defined as serum testosterone and free androgen index exceeding the 97th percentile, with respective values of 1.76 nmol/l and 5.22 nmol/l. Modified Ferriman and Gall way (mFG) score of 8 or higher was considered for PCOS and presence of more than 12 follicles, 2-9 mm in diameter arranged peripherally, usually combined with the increased ovarian volume of more than 10 cm^3, and an echo-dense stroma in pelvic ultrasound scan. Hormonal assays were conducted using immunoradiometric assay for TSH, lH, FSH.

RESULTS

The present study is a retrospective study involving the collection of data from 100 PCOS-confirmed cases. Majority of the PCOS cases 39% were reported in the age group of 26-30 Y (table 1). Among the 100 cases reported majority of them are reported with menstrual irregularity 62% (table 2). Most of the patients were reported with acne 85%, hair loss 81% and weight gain 54%. When anthropometric parameters of the study population was studied, there mean age group reported was 25 Y. Among the study population the BMI value is quite high 27.1±3. The mean values of blood pressure were normal in the study population (table 3). However it was identified from the results that, the mean values of cholesterol and triglycerides levels are quite higher suggested hyperlipidemia (table 4). The hormonal levels of TSH, lH and FSH were normal.

Table 1: Age-wise distribution of PCOS cases

Age	Number	Percentage
18-21 y	24	24%
22-25 y	37	37%
26-30 y	39	39%
Total	100	100%

Table 2: Symptoms of PCOS

Symptoms (N=100)	Present	Percentage
Menstrual irregularity	62	62%
Hirsutism	23	23%
Menstrual irregularity with Hirsutism	15	15%
Total100%		
Other symptoms	Present	Absent
Acne	85	15
Mood swings	32	68
Weight gain	54	46
Hair loss	81	19
Hyperpigmentation	30	70

Table 3: Anthropometric parameters of PCOS patients

Anthropometric variables of PCOS	mean value
mean age group (years)	25±7.2
Height (cm)	159±3.5
Weight (kg)	71.3±9
BMI (kg/m$^{2)}$	27.1±3
Waist circumference (cm)	84.7±1.3
Systolic blood pressure (mmHg)	105.9±8
Diastolic blood pressure (mmHg)	75.6±4

Table 4: Biochemical parameters of PCOS patients

Biochemical variables of PCOS	mean value
Fasting blood glucose levels (mg/dl)	89.8±5.3
Post-prandial glucose levels (mg/dl)	110±3.1
Total cholesterol (mg/dl)	205.2±5.7
VLDL (mg/dl)	32.5±4.1
LDL (mg/dl)	141.6±3.8
HDL (mg/dl)	43±0.4
TG (mg/dl)	168.4±6.7
TSH (µg/dl)	3.5±0.2
LH (mIU/ml)	8.1±2.8
FSH (mIU/ml)	6.4±2.1

DISCUSSION

PCOS is a leading cause of infertility in women due to irregular ovulation or lack of ovulation. Young adults with PCOS may struggle with fertility issues when they try to conceive, leading to emotional distress and challenges in family planning. PCOS is associated with an increased risk of developing other health conditions later in life, such as type 2 diabetes, cardiovascular disease, and endometrial cancer. Young adults with PCOS may need to be proactive in managing their health and reducing these risks through lifestyle changes and regular medical monitoring. Similar findings with Ganie *et al.* have reported that PCOS was seen more commonly in the age group between 18 to 40 y [15]. Deswal *et al.* showed that PCOS was more seen the females of age group in between 16 to 45y [16]. In our study, majority of the PCOS cases 39% were reported in the age group of 26-30 Y. Among the 100 cases reported majority of them are reported with menstrual irregularity 62% and these findings correlates to the findings of Deswai *et al.* [16] who reported PCOS was more seen in irregular menstruating women 41%. Rao *et al.* reported 63% of their study population from Ethopia showed menustral irregularity [17]. Most of the patients were reported with acne 85%, hair loss 81% and weight gain 54%. Acne is one of the cutaneous manifestations of PCOS, but it is important to differentiate it from acne vulgaris, which affects almost 80% of adolescents and majority of them remit before third decade of life. Most women with PCOS exhibit facial acne lesions and up to 50% women have involvement of the neck, chest, and upper back as well. As compared to hirsutism, the prevalence of acne alone (excluding hirsutism) is very less. Around 20–40% of PCOS women are reported to have acne and highest incidence has been reported in Indonesian women [18]. When anthropometric parameters of the study population was studied, there mean age group reported was 25 y. Among the study population, the BMI value is quite high 27.1±3. Many studies had proved that BMI plays a major role in the development of PCOS in adult women and adolescents, which were consistent with the findings of present study [19-21]. The mean values of blood pressure were normal in the study population. However, it was identified from the results that the mean values of cholesterol and triglycerides levels are quite higher, suggested dyslipidemia. The hormonal levels of TSH, lH and FSH were normal. A literature survey done by Fan *et al.* [22] had explained there was an altered level of thyroid hormones and dyslipidemia was identified in the PCOS patients. In the present study, dyslipidemia was seen in more cases of PCOS, which agrees to the findings of Fan *et al.* [22].

CONCLUSION

Although the overall frequency of PCOS is low and evaluating PCOS in young adults can be difficult, the condition is becoming more common at this age. Changes in lifestyle are essential at this age to avoid long-term metabolic and reproductive issues.

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AUTHORS CONTRIBUTIONS

All the authors have contributed equally

CONFLICTS OF INTERESTS

Declared none

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