

Association of Acne Vulgaris With Polycystic Ovarian Syndrome in patients Visiting the University of Lahore Teaching Hospital

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ABSTRACT

Background: Polycystic syndrome (PCOS) is the most common endocrine disorder in the world affecting 8% of women. The main characters of PCOS are enlarged ovaries, chronic ovulation, menstrual cycles disturbance, androgen overdose, and insulin resistance leading to acne, hirsutism, and reproductive problems. Acne is a quite common dermatological condition in daily practice.

Aim: To determine the association of acne vulgaris with polycystic ovarian syndrome in patients visiting the University of Lahore Teaching Hospital.

Study design: Descriptive cross-sectional study.

Place and duration of study: Dermatology Outpatient Department, University of Lahore Teaching Hospital Lahore from March 2019 to March 2020.

Methodology: It was a descriptive cross-sectional study from March 2019 to March 2020 conducted at the Dermatology Out-patient Department, University of Lahore Teaching Hospital. All patients between the ages of 18 and 40, with acne vulgaris were included in the study. After obtaining informed consent, 101 women with acne vulgaris in I-IV (Indian stages), between the ages of 18-40 years, presented in the Department of Dermatology, University of Lahore Teaching Hospital, from March 2019 to March 2020, were selected for the study. Pregnant females, lactating mothers, and women on hormonal treatment (oral contraceptives or injections) were excluded from the study. A history of acne, oligomenorrhea, hirsutism, seborrhea, alopecia, acanthosis nigricans infertility, obesity and amenorrhea were taken. Weight and height were measured to calculate BMI. Data were collected in a special statistically tool and analyzed using SPSS-25.

Results: A total of 101 women were examined having acne vulgaris issue. A total of 101 female were assessed and having history of acne vulgaris. Out of this, 33 were 18–23 years old, while 24 (23.4%) have ages 24–28 years. There were 18 (17.8%) patients who have 29–33 years old. while 38–40 years were 10 (9.9%) years old. Irregular menstrual cycle was reported 34.6% of the study population. As Perth WHO criteria, only 17% of the participants had BMI in normal weight range. The proportion of women, who were overweight and obese were 50.4% and 32.6% in the study population.

Conclusion: Acne vulgaris has been identified as a serious skin disease found in all age groups. PCOS is more common among women with acne and obesity is a major risk factor for PCOS.

Keywords: PCOS, Acne

INTRODUCTION

Acne vulgaris is one of the most common skin conditions affecting teenagers and adults worldwide and in Pakistan.¹ It is a disease of the pilosebaceous unit in face, neck, back and pectoral region. Pathogenesis is a multifunctional one including increased sebum production, changes in sebum quality, follicular hyperkeratinization, Propionibacterium acnes colonization and inflammation.² Polycystic ovarian (PCOS) syndrome is a common endocrinopathy of women of childbearing age³ with an estimated availability of 5 to 10% in most people.⁴ Increased ovarian androgens can cause a variety of symptoms such as acne, hirsutism, insulin resistance, obesity, and heart disease. According to the Rotterdam 2003 guidelines, PCOS is a syndrome causing pelvic ultrasound (transabdominal or transvaginal) ovarian disease, hyperandrogenism (clinical or biochemical), and polycystic ovary morphology.⁵ Just three things are enough to get you. Acne vulgaris is a condition that affects the youth community and usually resolves in the mid-twentieth century and is a multifactorial etiology⁶.

The pathogenesis of acne vulgaris includes five major factors:

1. Follicular epidermal hyperproliferation,
2. Excess sebum production,
3. Inflammation⁷
4. Colonization of Propionibacterium acne (P.) Acne); and
5. The effect of hormones (usually seen in women)⁸.

Polycystic ovary syndrome (PCOS) is a collection of signs and symptoms with mild presentation in some, and in others severe disorders of fertility, endocrine and immune function. It is characterized by the presence of two of the following three processes:⁹

1. Oligoand/or anovulation.
2. Hyperandrogenism (clinical and/or biochemical)¹⁰
3. Polycystic ovaries (PCOS) in ultrasound testing.

The purpose of this study is to determine the association of acne vulgaris with polycystic ovarian syndrome in patients visiting University of Lahore Teaching Hospital.

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MATERIAL AND METHODS

It was a descriptive cross-sectional study from March 2019 to March 2020 conducted at the Dermatology Out-patient Department, University of Lahore Teaching Hospital. Study was approved by the Institutional Ethical Committee. All patients between the ages of 18 and 40, with acne vulgaris were included in the study. After obtaining informed consent, 101 women with acne vulgaris in I-IV (Indian stages), between the ages of 18-40 years, presented in the Department of Dermatology, University of Lahore Teaching Hospital from March 2019 to March 2020, were selected for the study. Women who take any hormonal treatment (oral contraceptives or injections), become pregnant and lactating were excluded from the study. A history of acne, oligomenorrhea, hirsutism, seborrhea, skin tags alopecia, infertility, obesity and amenorrhea were taken. Weight and height were measured to calculate BMI. Hormonal profile including total testosterone, follicular stimulating hormone (FSH), luteinizing hormone (LH), FSH/LH were determined. Serum dehydroepiandrosterone and serum prolactin levels are made to eliminate other causes of hyperandrogenism. Samples were taken on day 1-3 of the menstrual cycle, while in patients with amenorrhea samples were taken randomly. Pregnancy tests were performed on those who present with amenorrhea. All patients have transabdominal pelvic ultrasonography from the radiology department to assess polycystic ovarian morphology. Age-related fluctuations must be as standard deviations \pm normal. Appropriate variables such as polycystic ovarian syndrome are presented in terms of frequency and percentage for each grade of acne. Data were collected in a special statistically tool and analyzed using SPSS-25.

RESULTS

A total of 101 female were assessed and having history of acne vulgaris as shown in Table 1. Out of this, 33 were 18–23 years old, while 24(23.4%) have ages 24–28 years. There were 18(17.8%) patients 29–33 years old. While 10(9.9%) are 38-40 years old. According to WHO guidelines, only 17% of participants had a BMI of normal body weight. The proportion of women, overweight and obese was 50.4% and 32.6% in the study population. The proportion of women with skin tags was 81.1% in the study population. The proportion of women with PCOS was 41.5% in the study population with acne vulgaris.

Figure 1: Irregular menstrual cycle was reported 34.6% of the study population.

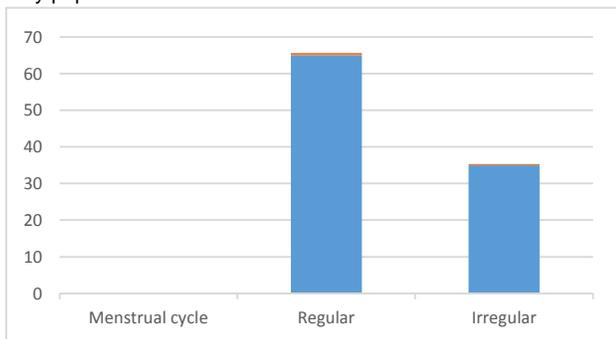


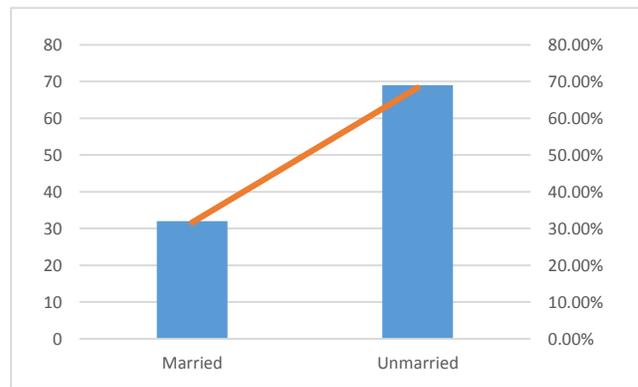
Table 1: Age distribution

| Age (years) | No. | % |
|-------------|-----|------|
| 18–23 | 33 | 32.6 |
| 24–28 | 24 | 23.7 |
| 29–33 | 18 | 17.8 |
| 34–37 | 16 | 15.8 |
| 38–40 | 10 | 9.9 |

Table 2: Parameters

| Body Mass Index | No. | % |
|-----------------------------|-----|------|
| Below 25 | 17 | 16.8 |
| 25 to 30 | 51 | 50.4 |
| above 30 | 33 | 32.6 |
| Skin Tags | | |
| Present | 82 | 81.1 |
| Absents | 18 | 17.8 |
| Polycystic Ovarian Syndrome | | |
| Present | 42 | 41.5 |
| Absents | 58 | 57.5 |

Figure 2: Marital status of patients



DISCUSSION

Primary care NP can treat patients with PCOS, which is a common endocrinopathy that manifests most of the symptoms in women of childbearing age, but it affects women throughout life¹¹. Symptoms of hyperandrogenism and structural disorder develop in patients with PCOS. Medications such as OCP, antiandrogen and or metformin are common treatment options. Education about improving lifestyle and lowering BMI can have a significant impact on a PCOS patient¹². PCOS can have long-term health effects if not treated properly¹³. PCOS patients are at increased risk for diabetes, gestational diabetes, heart disease, hypertension, dyslipidemia, sleep apnea, stroke, depression, and anxiety¹⁴.

Lifestyle improvements such as weight loss can improve PCOS symptoms in all patients (adolescents and the elderly)¹⁵. Reducing BMI is a challenge for patients with PCOS-associated insulin resistance. Promoting a low-calorie diet and eating more fruits and vegetables is a great way to lose. It is important to educate patients about the behavior of weight loss that can be maintained throughout the patient's life¹⁶. Weight loss will reduce the risk of type 2 diabetes, gestational diabetes, dyslipidemia, and other cardiovascular risk factors. In addition, weight loss can help improve ovarian function and stimulate ovulation. PCOS is the first risk factor for metabolic syndrome, and the risk

increases with diagnosis^{16,17}. Early intervention in lifestyle change is important to improve patient health and quality of life.

Acne in women may be resistant to treatment; in this case, acne may be a manifestation of underlying endocrine conditions such as PCOS, Cushing's syndrome and congenital adrenal hyperplasia¹⁹. PCOS acne was present in 42 patients (41.2%) with vulgaris in this study and the combination was significant ($P < 0.000001$). Out of 101, 33 were 18-23 years old and 24(23.4%) were 24-28 years old. There were 18 patients (17.8%) aged 29-33 years and 10(9.9%) are 38-40years.

CONCLUSION

Considering reports of association of acne vulgaris with endocrine systemic dysfunction and polycystic ovary syndrome, the current study was conducted in women with adolescent acne to explore this relationship.¹² The majority of women in the study were between the ages of 14 and 23, with irregular menstrual reported in 37.4% of the study population and 33% with a high BMI. Polycystic ovaries detected by trans-abdominal ultrasound were found in 42 patients with PCOS (42.1%) and the difference was significant ($P < 0.000001$). The result of this study was similar to these studies.^{13,20}

Conflict of interest: None

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