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Study of Prevalence of Menstrual Disorders in Cases of Insulin Resistance in Patients with Polycystic Ovary Syndrome

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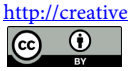

Abstract

Background: Polycystic ovary syndrome PCOs is a common hormonal disorder that affects women of childbearing age. Insulin resistance plays an important role in the pathogenesis of PCOs, especially menstrual disorders and infertility. In this study, we will try to find the importance of improving insulin resistance in achieving regular menstrual periods. **Objective:** Studying the correlation of menstrual disorders in polycystic ovary syndrome patients and insulin-resistant conditions to decide the best and the most effective treatment. **Methods:** This study included patients with polycystic ovary syndrome and insulin resistance who had visited obstetrics and gynecology clinic in Tishreen University Hospital, Lattakia. Insulin resistance was calculated for all patients at the first visit. In addition to clinical assessment with ultrasound examination. **Results:** This study included 65 women with insulin resistance and diagnosed with polycystic ovary syndrome. The age of the participants ranged between 22 - 40 years, with an average age of 28.3 ± 3.63 years. All of them suffered from menstrual disorders, bradymenorrhea accounted for the largest percentage of the sample, with more than 66% of cases. **Conclusion:** Our study found a significant role of reducing insulin resistance in improving ovulation and menstrual disorders in patients with Polycystic Ovary Syndrome (PCOs).

Subject Areas

Gynecology & Obstetrics, Health Policy

Keywords

Polycystic Ovary Syndrome, Menstrual Disorders, Insulin Resistance

1. Introduction

Polycystic ovary syndrome (PCOs) is one of the most commonly diagnosed

conditions in females of reproductive age [1]. This syndrome arises from the overlap of several congenital or acquired factors. Congenital factors may include maternal androgens or nutritional disorders affecting the fetus, while hyperinsulinemia is one of the acquired causes of insulin resistance [2]. We may see a role for the family genetic factor, as the prevalence of this syndrome within the same family ranges from 20% - 40% [3].

There are many clinical and laboratory manifestations represented by hirsutism [4], obesity [5], ovulation disorders [6] [7], acanthosis nigricans [8] and common count [9]. Ovulation disorders manifest themselves in two-thirds of patients with polycystic ovary syndrome in several forms, such as primary or secondary amenorrhea, menstrual bleeding or oligomenorrhea [6] [7].

The integration of symptoms and clinical findings with radiological investigations such as ultrasound is relied on in the approved world standards for the diagnosis of this syndrome [10]-[13], and accurate laboratory assessment also supports the diagnosis of this syndrome [14]. Insulin resistance is defined as a decrease in the response of target tissues to insulin and plays an important role in the pathogenesis of this syndrome, as hyperinsulinemia causes excessive production of androgens by the ovaries, which is the main characteristic of patients polycystic ovary syndrome [15].

2. Objective

Determining the prevalence of various menstrual disorders in polycystic ovary syndrome patients with insulin-resistant conditions, which helps in developing a treatment plan for patients.

3. Study Sample

The study included all females who attended Obstetrics And Gynecology clinic at Tishreen University Hospital in Lattakia between 2022 and 2024.

4. Study Design

Observational cross-sectional study.

5. Patients and Methods

A detailed history was taken from all patients, including personal profiles and complete medical information, with signed agreement to join this research. Radiological examination, such as ultrasound was conducted along with clinical evaluation to confirm the diagnosis of polycystic ovary syndrome.

All patients were diagnosed with insulin resistance after the following procedures:

- Measurement of insulin and fasting blood sugar (FBS).
- Calculation of insulin resistance is as follows: insulin*glucose/405.
- All patients in this study with increased insulin resistance > 1.9.

6. Statistical Analysis

- Statistical analyzes were conducted using the Statistical Package for the Social Sciences (SPSS) version 20.
- Graphic forms and tables were used in the characterization of values.
- Averages, Standard Deviations and Central Tendency Measures were used to characterize quantitative data.

7. Results

Table 1 shows the characteristics of the sample, which consisted of 65 patients, aged between 22 - 40 years, with an average age of 28.3 ± 3.63 years. The variety of patients was between 27 - 30 years with 40%.

Table 1. Demographic data of the sample.

Patients (n)	65
Mean	28.3
St.deviation	3.63
Max	40
Min	22
Age categories	
22 - 25	11 (17%)
26 - 30	26 (40%)
31 - 35	20 (30.7%)
36 - 40	8 (12.3%)

Fasting blood sugar (FBS) was measured (after 8 - 10 hours fasting) with Insulin measurement in all patients. Insulin resistance was calculated as mentioned previously (See Table 2 and Figure 1).

Table 2. Fasting blood sugar and Insulin measurements.

	Patients (n)	Mean	St.devation
Fasting blood sugar	65	85.42	4.8
Insulin measurement	65	17.87	1.93
Insulin resistance	65	3.74	0.3

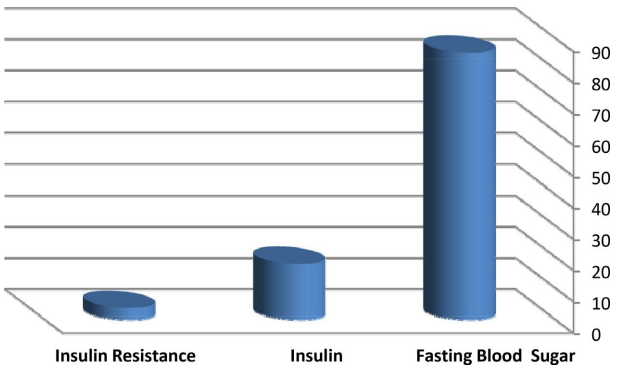

Figure 1. Fasting blood sugar and Insulin measurements.

The patterns of menstrual disorders differ in females with polycystic ovary syndrome, and bradymenorrhea accounted for the largest percentage of the sample, with more than 66% of cases, while no case of primary amenorrhea was recorded in the study sample, as shown in Table 3 and Figure 2.

Table 3. Menstrual disorders in study sample.

Menstrual disorders	Number (n)	Percentage (%)
Bradymenorrhea	43	66.16%
Metromenorrhagia	14	21.53%
Primary amenorrhea	0	0.00%
Secondary amenorrhea	5	7.70%
Epimenorrhea	3	4.61%

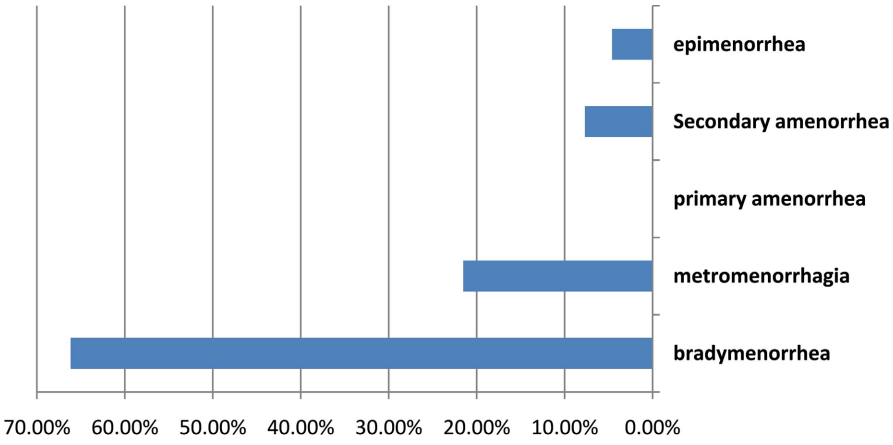

Figure 2. Menstrual disorders in study sample.

8. Discussion

This study included 65 women who were diagnosed with polycystic ovary syndrome PCOs with insulin resistance. All participants had menstrual disorders. The majority of them were in form of bradymenorrhea (more than 35 days between periods).

Insulin resistance in patients with polycystic ovary syndrome is considered one of the causes of menstrual disorders, ovulation disorders and infertility. Sometimes, many studies have proven the prescription of oral antidiabetics with lifestyle improvement (sport, weight reduction) has a role in reducing insulin resistance and thus reducing testosterone levels in the blood with increasing the chances of normal ovulation Our study found that all patients with polycystic ovary syndrome with insulin resistance have menstrual disorders in accordance with International Studies similar to our study [16]-[19].

Many previous studies have found that reducing insulin resistance contributed to improving ovulation and menstrual regularity in patients [16] [18] [20]. However, these studies went further in discussion the treatment type and its effects on

insulin and fasting blood sugar as (Sohrevardi *et al*., 2016) who discussed Bioglitazon effects were better than Metformin in regulating menstrual periods in women with PCOs [18].

In this study, we aimed to find the relationship between menstrual disorders and insulin resistance apart from experimental treatments. We suggest to perform prolonged studies with a large number of patients to discuss treatments.

9. Conclusion

As polycystic ovary syndrome is very common in Syria and especially Mediterranean coastal cities as Lattakia, It is recommended to investigate insulin resistance in all patients with polycystic ovary syndrome before deciding a treatment plan, because of the significant role of reducing insulin resistance in improving ovulation and menstrual disorders which increase pregnancy chances and improve fertility.

Ethical Approval

This research received approval from the scientific research ethics committee at Tishreen University and Tishreen University Hospital.

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Conflicts of Interest

The authors have no relevant financial or non-financial interests to disclose.

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