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# Examination of Several Physiological Factors in Females Suffering from Polycystic Ovarian Syndrome (PCOS) in Thi-Qar Governorate

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**Abstract:** Polycystic ovarian syndrome (PCOS) is typical disease characterized through irregular menstruation as well as the biochemical or clinical signs of an overabundance of testosterone . A person may experience PCOS symptoms at any age. These include early puberty in infancy, hirsutism and irregular menstruation in adolescence, infertility and glucose intolerance in middle age and later in life (heart disease and diabetes mellitus). Although a pelvic ultrasound examination is helpful, polycystic ovaries are a typical condition in females with PCOS, so ultrasound evidence is required regarding the diagnosis. It is advisable to test for hyperlipidemia and glucose intolerance, particularly in obese women, as PCOS is frequently associated with diabetes mellitus. The addition of insulin-sensitizing medications, such as metformin, may be helpful in situations like anovulatory infertility. Lifestyle modifications as advised for diabetes are essential for treatment. While clomiphene citrate with or without metformin, ovarian drilling, gonadotrophin-induced ovulation induction, and diet and exercise can all help most women manage their infertility, in vitro fertilization should be avoided. . The DhiQar governorate served as the study's site. It was collected from Bint Al-Huda Maternity Hospital comprising 100 blood samples drawn from 30 Healthy lady, and 70 blood samples drawn from women who had pco and were between the ages of 18 and 42 The hormonal analysis for FSH, LH , Progesterone and Prolactin by using auto analyzer device maglumi . A device was also used packed cell volume haematocrite to measure Blood ratio.

**Keywords** : PCOS, FSH, LH , Progesterone and Prolactin

## Introduction

There has been a recent surge in interest in polycystic ovarian syndrome (PCOS) due to the realization that the disorder impacts much more than the reproductive system. PCOS, which was first identified as the Stein-Leventhal syndrome after the researchers who studied it in the 1930s, is today understood to be a metabolic syndrome that can involve obesity, anovulation, infertility, cosmetic problems, and the more widely known rise in testosterone levels. In addition, it may involve diabetes mellitus, hyperlipidemia, hyperinsulinemia, and potentially heart disease.(Norman RJ, 2002)

### Goal of the research

1- Investigating the potential influence of associated hormonal variables

Luteinizing hormone (LH), follicle-stimulating hormone (FSH), progesterone, prolactin rate.

**2**-For individuals with polycystic ovarian syndrome, determine the blood ratio and compute body mass index (BMI) and compare it to the control group.

**3-** Counting blood ratio infected woman's polycystic ovary syndrome .

**PCOS symptoms**

**1- life of the fetus**

He disorder may have started as post-term delivery or intrauterine growth retardation in the fetus. According to research, these kids are more likely to experience hyperinsulinism, premature puberties, and early-life PCOS symptoms ( Ibanez, etal.,2002).

**2- Teens**

Will frequently experience weight issues, hirsutism, acne, and oligo-or amenorrhea. The question of whether bulimia is more common in PCOS patients is debatable.

**3- Women who are trying to get pregnant**

Will struggle with anovulation and subsequently worry about being overweight or hirsutistic. Whether PCOS increases the risk of miscarriage or whether it is a controversial question whether being overweight causes pregnancy loss .

**4-Metabolic syndrome and PCOS**

Obesity, insulin resistance, and dyslipidemia are frequent metabolic syndrome features in PCOS-affected women.

**5- Obesity**

Between nations and ethnic groups, there are differences in the prevalence of obesity among female PCOS patients. In the US, almost 50% of women with PCOS are obese or overweight.

**Diagnostic Standards**

The hallmark of polycystic ovaries is an enlarged ovary with a discernible rise in the central stroma, surrounded by peripheral cysts measuring at least 10 mm.. he ultrasonic features are subjective, though. Women who do not exhibit hyperandrogenism or menstrual disorder might also have polycystic ovaries . olycystic ovaries, which can also appear in early to mid-adolescence, anorexia nervosa recovery, bulimia, disorders involving high adrenal androgen production, and hyperprolactinemia, can also be caused by ovulation failure or inadequate follicular development. The majority of PCOS articles do not list polycystic ovaries as a diagnostic requirement ( Farquhar CM, et al.,1994).

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**Figure (1)**

A -typical polycystic ovary ultrasound image.

B-Normal ovarian ultrasound picture.

**Cancer and endometrial hyperplasia:** Due to unopposed oestrogen activity and absence of ovulation, menorrhagia is more likely in PCOS patients . Endometrial hypertrophy and uncontrollably bleeding may result from the lack of regular menstruation brought on by progesterone withdrawal.

The possibility of endometrial cancer exists In fact, it has been suggested that women with PCOS are at least four times more likely to develop endometrial cancer, which can strike ladies in their early 20s as young as (Hardiman P,etal,2003).

**Insulin resistance:** This is related to PCOS separately; women with normal weight PCOS exhibit hyperinsulinemia and decreased glucose clearance during oral and intravenous glucose tolerance tests, as well as after meals.(Dunaif A, et al., 1889) is caused by a specific hereditary post-receptor dysfunction, such as a lack in serine phosphorylation. It is possible that a distinct genetic post-receptor deficiency, such as one involving serine phosphorylation, is the source of this insulin resistance, or it could be caused by a genetic post-receptor problem unrelated to the one associated with type 2 diabetes. Although obesity is a contributing cause to hyperinsulinism, it is nevertheless frequent, which complicates clinical interpretation. (A. Dunaif, 1994).

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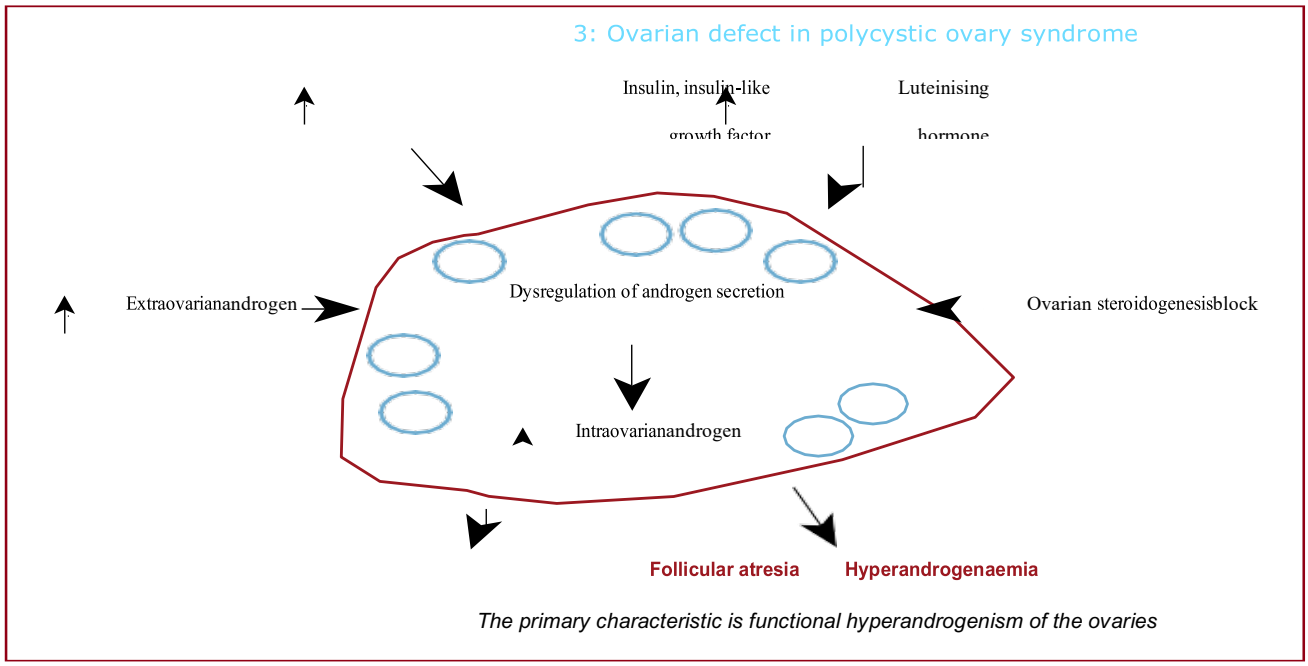


**Figure (2)**

**Type 2 diabetes and reduced glucose tolerance:**

The outcome of a particular genetic post-receptor deficiency, like a serine phosphorylation defect, These are significant problems that overweight PCOS women deal with. While fasting usually results in normal glucose levels, insulin secretion following an elevation in glucose concentration and a reduction in glucose excretion. A wonderful epidemiological study conducted in the UK showed unmistakable evidence of an increase in the prevalence of diabetes among women who had their ovaries removed following a histological diagnosis of PCOS. This verified findings from multiple other studies conducted in the United States and Europe. the blood sugar variation in obese PCOS individuals from normal. Women with PCOS experience a faster onset of diabetes mellitus or decreased glucose tolerance than women without PCOS (Norman RJ, 2001).

**Heart illness:** Cardiovascular disease has become a common fear due to the metabolic characteristics of PCOS. Premature blockage of other major vessels was shown to be more common among young women with angiographically verified constriction of the coronary arteries, and their prevalence of PCOS was found to be higher than expected. Nonetheless, a UK analysis of death certificates and medical records of women with a histological diagnosis of PCOS revealed no indications of a rise in myocardial infarction or other types of cardiac disease.The association is currently being looked at. In(WildS et al.,2000)

**Citation:** In some circumstances, the diagnosis of PCOS may be challenging, and consulting reproductive or medical endocrinologist could be useful. The majority of gynecologists are familiar with the use of clomiphene citrate; nevertheless, when gonadotrophins are required, it is recommended to refer a patient to an infertility expert. In general practice, PCOS can be diagnosed and treated in the majority of individuals.

**Surgery to the ovaries:** Recently, laser drilling or ovarian diathermy have been used with what seem to be promising results; a recent systematic examination of drilling indicated studied equivalency when compared to gonadotrophins and citrate clomiphene (Farquhar C etal.,2003) . As with wedge resection, this operation may leave pelvic adhesions. If a patient's ovaries accidentally show up as polycystic during a routine laparoscopy, this does not mean that damaging ovarian surgery is necessary.

**PCOS, or polycystic ovarian syndrome, treatment:** The goals of treatment are to reduce insulin resistance, improve metabolism through food and exercise, and restore hormonal balance. Clomid, an ovulation-stimulating medication, birth control pills, progesterone pills, and metformin, a medication used to treat Type 2 diabetes, are among the medications frequently used in the treatment of PCOS (Badawy and Elnashar, 2011 ) . Local therapies, lifestyle modifications, anti-androgens, and prescription drugs should all be used in the treatment of PCOS. PCOS symptoms can be temporarily alleviated by insulin sensitizers like metformin and oral contraceptive pills. (Ibanez etal., 2017).

**Metformin:** Metformin, an insulin-sensitizing medication, is controversial when used at levels of 500–2500 mg per day, yet it seems to be helpful in boosting the rate of pregnancy and menstrual cycles. (Norman RJ, *etal*.,2001) . According to recent systematic studies, the medication is effective for inducing ovulation when used alone or in conjunction with clomiphene citrate (Lord JM,etal.,2003) . Despite being under Australia's "category C" (drugs which have caused or may be suspected of having harmful effects on the human fetus) and no specific neonatal problems having been recorded, it has been used often for this purpose. Currently, there is not enough data to support its usage during pregnancy to stop recurrent miscarriages or gestational diabetes. It has been demonstrated that the new insulin-sensitizing medications known as the "glitazones"—pioglitazone, rosiglitazone, and troglitazone, which are recently discontinued—are highly successful at inducing ovulation ( Azziz R,etal.,2001). However, the pharmacy Benefits chart for polycystic ovarian syndrome does not approve of it. When it comes to these medications' effects on the fetus, there are greater concerns than with metformin. Women who are considering using them should not take them You become conceived (Tarrade A .etal .,2001).

**Sample Collection:** Between the third and fifth day of a menstrual cycle, blood samples were taken for the PCOS and control groups. A venipuncture was used to extract five milliliters of blood into a tube devoid of anticoagulant, which was then centrifuged to extract serum for the measurement of progesterone, FSH, prolactin, and LH levels. As a result, until they were used.

**Materials and Methods:** The present case-control study included 70 PCOS-afflicted women and 30 healthy control women without a clinical history of PCOS. The women, whose ages ranged from 18 to 42, were from several private hospitals in the province of Thi Qar in Iraq. PCOS patients were identified using

The three attributes listed below:
1. oligomenorrhea (defined as two menstrual periods lasting longer than 35 days)

2. amenorrhea (defined as no menstrual cycle for six months)
3. Metabolic and/or clinical indications of hyperandrogenism

**TheResults**

**The average hormone of the PCOS patients and control groups**

Patients' levels of prolactin and LH were significantly higher than those of the control group ($p<0.001$), although FSH levels were the same ($p>0.05$). Women with polycystic ovarian syndrome also seem to be seeing a decrease in progesterone levels.

**Table (1).**

| Group | Follicle Stimulating Hormone Mean ± Sd | Luteinizing Hormone Mean ± Sd | Progesterone Mean ± Sd | Prolactin Mean ± Sd |
|---|---|---|---|---|
| Control Mean ± Sd | 2.04±4.80 | 1.99 ±7.47 | 12.2±28.8 | 30.8 ±20.1 |
| Patients Mean ± Sd | 1.65±5.66 | 4.88 ±10.47 | 4.66 ±15.9 | 22.9±35.10 |
| P-Value (T-Test) | >0.05 | <0.0001 | <0.0001 | <0.0001 |

**The average age and body mass index of the PCOS patients and control groups**

Age-wise, no significant difference ($P>0.05$) was found between the PCOS patient and control groups.Table shows that the BMI increased significantly ($P<0.01$) in comparison to the values of the control group.

**Table (2).**

| Group | Patients | Control | P. Value |
|---|---|---|---|
| Age (Years)) Mean ± Sd | 6.20±27.40 | 5.56±22.91 | 0. 630 |
| Bmi (Kg/M2)) Mean ± Sd | 2.94±35.50 | 1.66 ± 19.71 | <0.0001 |

**The average blood ratio of the PCOS patients groups**

The results of the current study showed that there is no relationship between polycystic ovary syndrome and blood counts. The results of our study showed values close to those of healthy women

**Table (3).**

| Patients Group | Hb% Patients |
|---|---|
| Below 21 Years | 9-13 |
| From 21-30 | 11-14 |
| Above 30 Years | 10-14 |

## Discussion

PCOS, the most common endocrine disorder, affects five to twenty percent of women who are of reproductive age. Its numerous symptoms include irregular periods, acne, hirsutism, obesity, menstrual disturbances, and endocrine abnormalities, such as elevated LH, the LH/FSH ratio, hyperandrogenemia, and hyperinsulinemia. in addition to polycystic ovaries showing up on ultrasound. One of the most typical reasons of ovulatory infertility is polycystic ovarian syndrome (Sirmans and Pate, 2014 ) . The mean ages of the PCOS-affected women and the control group do not differ significantly. The two groups' ages were similar, and PCOS could affect people of any proliferative age (Rotterdam, 2004 ) The current study's findings corroborated those of (Quinn *etal*., 2014, Emekci *etal*. 2016), and Crespo *etal*.,2018), who noted that PCOS is one of the most prevalent causes that can affect any woman throughout her reproductive years . One of the most significant aspects of PCOS is the functional and reproductive changes that are closely related to one another and are largely caused by obesity. The body can produce powerful androgens from adipose tissue. Because fat causes cholesterol to be converted into peripheral testosterone through a number of metabolic pathways, obesity raises levels of androgen hormone. Our findings concur with several research, including ( Valkeuburg et al., 2008; Recabarren et al., 2008; Pasquali, 2006; Fassnacht et al.,

2003). Through our study conducted on the percentage of women with polycystic ovary syndrome, we did not notice a relationship between the blood percentage and the incidence of polycystic ovary syndrome.

## Conclusions:

1- High percentage of hirsutism, increased body mass index and irregular

menstrual cycle in women with PCOS, was observed

2- There is no relationship between blood levels and polycystic ovary syndrome.

## Recommendations:

1- To learn more about the involvement of genetic variables in PCOS, more research is required .

2-Exercising and eating a healthy diet in order to reduce weight.

3- It is very necessary to carry out periodic and various examinations in puberty and to raise health and cultural awareness of the necessity to continue periodic examinations.

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