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Exploring the Relationship Between Hormonal Imbalance and Symptoms in PCOS

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Abstract

Polycystic ovarian ailment (PCOS) is from the different result of ovarian androgens occurrence in exaggerated levels of male sex hormones in daughters. This condition is frequently apparent for individual occurrence of a group of narrow cysts, fluid-tinged sacs (cysts) in the ovaries. This study projected to resolve antitoxin levels of prolactin, folliclestimulating pregnancy prevention arrangement (FSH), luteinizing pregnancy prevention plan (LH), and particular hematological limits in inventors accompanying PCOS. In total, 60 mothers were recorded, of that 30 were acknowledged following PCOS at an Al-Waeli Hospital, Data group approved place 'tween November and December for 2024, and performers held a helper of spouses old 16-40 age and 30 were discharged. Participant pick was established the Rotterdam 2003, tests, and we forbade postmenopausal roommates, those following hyperprolactinemia, and those following apparent thyroid dysfunction. The control group held 20 rich inventors following common pregnancy prevention means levels, balanced menstrual eras, and no signs of hyperandrogenism, as confirmed by ultrasonography. Ages 16 to 46 were corresponding having to do with the usualness of illness, following those under 36 bearing a better incident. Data were calm going around questionnaires, birth control pattern level estimates, and ancestry description (CBC) tests. There was a significant increase in pregnancy prevention design levels (LH, FSH, prolactin, TSH) and CBC law (WBC, Hb, and Plt) in the PCOS group famous to the control group. We seen that wives middle from two points 26 and 35 were more naive to PCOS. Furthermore, founders the individual were chubby manifested a best exposure to the affliction.

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Introduction

Polycystic ovary condition (PCOS) is a metabolic condition, from anovulation, hyperandrogenism and polycystic ovary. PCOS lives usually accompanying inventors at fruitful age following an incident rate of 6- 10%. The impartial authentication of PCOS involves oligomenorrhea, sterility, blemishes, hirsutism, fat. In addition, these matters can extend following many additional related endocrine and metabolic ailments, and have produced risk of pain endometrial virulence, harmed level of sweet substance in ancestry courage, diabetes, and heart attack (Danfeng and Xuelian, 2013). There are three basic characteristics guide PCOS. Hyperandrogenism resources that skillful is an excessive amount of androgens, in a way testosterone, dihydrotestosterone (DHT), and/or androstenedione. Clinical exhibitions of hyperandrogenism involve hirsutism (excessive Cancer of hairpiece), blemishes, androgenic male hair loss (male hair loss), and virilization (the tumor of male traits). Oligomenorrhea or amenorrhea is another characteristic of PCOS, oligomenorrhea refers to irregular ending, while amenorrhea is the inadequacy of a menstrual conclusion. These atmospheres act report of the pregnancy prevention arrangement shortcoming. Elevated gushing androgen levels are seen in 80–90% of daughters following oligomenorrhea, as exaggerated levels of free testosterone present reason for the substantial large part of a group of unusual judgments busy test (Moura and so forth., 2011).³ Polycystic

ovaries are the after second characteristic of PCOS, and this refers to the various cysts in the ovaries. However, it's main to think that just cause a woman has various ovarian cysts doesn't mean she has PCOS. PCOS is usually evident each behavior of not completely two in another route three of the worldwide characteristics I ordered. In addition to these three dominant characteristics I seen, skilled are supplementary signs and exhibitions consistently guide PCOS. These hold pressure gain or obesity, insulin fighting, fatty skin, extreme cholesterol levels, and/or bred parentage pressure (Moura and so forth., 2011). A number of inventors following polycystic ovary condition concede possibility also have an underactive thyroid gland, similarly few investigators, Shirsath and so forth., (2015).it has survived erect that the estrogen can bring about a decline of lust pregnancy prevention pattern binding globulin and increase in free testosterone. Free testosterone is individual of the cause donating to PCOS exhibitions. Dysfunction and fundamental abnormalites of the thyroid are accompanying final average afflictions of the endocrine gland. Abnormalities in the supply of thyroid pregnancy prevention procedure to the minor fabric are guide change in one metabolic processes. Infantile estrogen alternatively blanched, leads to communication imperfection. Untreated juvenile estrogen causes a delay initially of preadulthood attended by anovulatory states. In adult parent, abusive hypothyroidism maybe owned by detracted lust and decline of ovulation. Primary ovarian decline can still be visualized in sufferers following Hashimoto's thyroiditis as one autoimmune 4 polyglandular affliction. Rarely, in basic hypothyroidism, subordinate despair of pituitary function can cause success ovarian decomposition and amenorrhoea. Pregnancy questions are guide obvious and subclinical hypothyroidism, in spite of the impact has various 'tween differing studies (Sinha and so forth., 2013). The main chattels of uneven thyroid levels relates broadly to changes in ovulation and ending. Ovulation can degenerate by changes in the result of sensuality pregnancy prevention arrangement binding globulin (SHBG), minimal living animal exciting pregnancy prevention system (FSH), estrogen, and androgens. The frame compensates by changeful the result of thyroid transferring pregnancy prevention procedure (TRH) from the hypothalamus. The changes in TRH will influence the response loop in the middle of the hypothalamus, pituitary, and the ovary, superior to changes in ovulation and ending. These changes possibly agreeable, specifically when proofs of thyroid dysfunction are not understandable and do not cause success changes in weekly girls's state or ovulation. Early stages of thyroid dysfunction (before syndromes are manifest) can cause success sensitive changes in ovulation and endometrial exposure, that therefore permit an action have deep property on gestation (Michael, 2013). Thyroid hormones ideas following your fruitful hormones, estrogens and progesterone, to claim common function of the ovaries and growth of the children (Krassas and so forth., 2010). Hypothyroidism is an underactive thyroid is a frequent cause of sterility. If the thyroid in underactive, the hypothalamus and pituitary gland can sense this and try to kick

appurtenances back to realistic by increasing levels of the hormones TRH (thyroid5 freeing pregnancy prevention pattern) and TSH (thyroid-inspiring pregnancy prevention design) in your body. TRH led to for individual hypothalamus, prompts the pituitary to release TSH, that in proper sequence evokes the thyroid uproar allure task. However, TRH excessively prompts the pituitary to release more of the pregnancy prevention design prolactin. Elevations of prolactin can prevent ovulation by restraining release of the hormones LH and FSH, that incite the ovary. Low levels of thyroid pregnancy prevention procedure can more prevent the rate at that your material metabolizes desire hormones, that can more cause ovulatory disorders (Dileep, 2012).

The study population

This cross-sectional study was conducted to investigate the association of serum levels of prolactin, follicle stimulating hormone (FSH) and luteinizing hormone (LH) in women with polycystic ovarian syndrome (PCOS). The study was carried out at Al-Waeli Hospital, and the data were collected from November through December 2024, involving a group of women in the age range of 16-40 years.

The sampling and biochemical testing will be performed.

Samples will be taken from men and women suffering with symptoms and they will be classified by their: Age, length of time they have been ill, and the remainder of the following parameters will be calculated:

1. Follicle-Stimulating Hormone (FSH) Levels Test is designed to measure the amount of FSH in the bloodstream.
2. Luteinizing Hormone (LH) Levels Test
3. Serum prolactine

Statistical analyses

The statistical analysis was done with SPSS Statistics software. All the data were analyzed by one-way ANOVA and Least Significant Differences (LSD) test to determine the significance of the results. This test was applied to find the p value which is the level of significance of the test. Pearson correlation coefficient was also used to study the interrelationships among the parameters studied. For statistical significance, a pvalue below 0.05 was used, meaning that differences and relationships that resulted in such a pvalue were deemed to be statistically significant. The data were presented as mean±SD (standard deviation).

Results and discussion

The results of the study indicated that women's age had a significant correlation with the prevalence of PCOS.

In particular, women in the age group 26-35 years had significantly higher percentage of PCOS than women of other age groups ($p < 0.05$). Likewise, women with weight in the range of 66–75 kg also had a higher percentage of PCOS than other weight ranges ($p < 0.05$). These results are summarized in Table 1. Table (4.1) Sample distribution according to age and weight and length.

Table 1: Sample distribution according to age and weight and length.

Characteristic	Category	Frequency and Percentage n (%)	p-value
Age Group (years)	16–25	10 (16.67%)	0.000
	26–35	30 (50.00%)	
	36–46	20 (33.33%)	
	Total	60 (100%)	
Body Weight (kg)	57–65	8 (13.33%)	0.030
	66–75	35 (58.33%)	
	76–85	17 (28.33%)	
	Total	60 (100%)	
Body Height (cm)	150–160	37 (61.66%)	0.000
	161–170	14 (23.33%)	
	171–180	9 (15.00%)	
	Total	60 (100%)	

Women accompanying PCOS shown considerably bigger levels of FSH (4.38 ± 2.05) and LH (12.22 ± 3.31) distinguished to the control group (FSH: 3.10 ± 1.21 ; LH:

2.35 ± 1.30) ($p < 0.05$). Further, daughters accompanying PCOS had considerably bigger prolactin level (1.30 ± 0.41) than the control group (1.06 ± 0.62) ($p < 0.05$).

Table 2: show distance to burden BMI(kg/m²)

Parameter	Category	Mean \pm SD	Significance Level (p-value)	Correlation Coefficient (r)
Body Mass Index (BMI, kg/m ²)	Control subjects	30.07 ± 0.09	0.000	+0.168
	Patient group	28.33 ± 0.05		

The results are proved in Table3, that too shows the equating cooperative (cc) middle from two points the hormones.

Table 3: Hormone levels and equating reasoning accompanying subjects and controls (n=60).

Hormonal Parameter	Study Group	Mean \pm SD	LSD Value	p-value	Correlation (r)
LH	Healthy subjects	2.35 ± 1.30	1.47	0.000	-0.885
	Patients	12.22 ± 3.31			
Prolactin	Healthy subjects	0.66 ± 0.62	0.24	0.000	-0.821
	Patients	1.30 ± 0.41			
FSH	Healthy subjects	3.10 ± 1.21	0.95	0.000	-0.168
	Patients	4.38 ± 2.05			

Results of the study displayed that corpulent mothers are more susceptible to polycystic ovarian disease (PCOS) as registered in Table 2. This judgment corroborates different studies [8] that have erect that corpulence is a significant question for mothers accompanying PCOS. The results story accompanying the theory that obesity is a determinant in the attack and verbalization of PCOS. PCOS victims likely expected obese (Carmina, 1999) [8]. Fat fabric maybe being the reason for the birth control method inequality that is to say associated with corpulence and that concede possibility imitate in the happening of PCOS in inclined individuals. However, fatty fabric has more existed famous to have endocrine action and has been proved to cause the hormonal dysregulation visualized in PCOS (Romacho, 2014). Obesity and PCOS are again connected apiece fact that wives accompanying PCOS had uneven periods and hyperandrogenism was noticed. The uneven menstrual cycles visualized in PCOS, to a degree oligomenorrhea and amenorrhea, maybe from anovulation (Solomon, 2002). Without the growth of an ovulation, skilled will be no formation of a body of text luteum and accordingly, no result of progesterone, that produces an excessively alive proliferative phase (Duran 2014). The GnRH beat repetitiveness refers to the repetitiveness of extreme-repetitiveness pulses of LH (and depressed-frequency pulses of FSH) in rational, adult wives.

When linked accompanying estradiol, progesterone can help to organize the repetitiveness of gonadotropin releasing birth control method (GnRH) pulses. As the body of text luteum produces to a greater extent progesterone, skilled is a decrease in the number of pulses shipped out by LH (luteinizing birth control method). However, the production of FSH (smallest living organism-exciting birth control method) is heartened because it excites the growth of the follicles for the next era of period (Hayes, 1998) [13]. Increased LH (luteinizing birth control method) result from PCOS (polycystic ovary condition) is more likely due to raised awareness of the pituitary to GnRH (gonadotropin-dropping birth control method) or changes in the pattern of GH discharge than to raised GH production. The raised LH result appears expected on account of a incorrect control mechanism. The amounts of LH hidden for one pituitary and hypothalamus are less alert the inhibitory effect of exogenic progesterone on LH discharge in PCOS, and a core luteum fails to produce recurrent progesterone (Abbas al-Jaf, 2020).

Conclusion

The group of same status of 26 to 35 age traditional was raise expected more vulnerable for PCOS and therefore the group of same status needs expected likely distinguished consideration when it comes to risk amount and deterrent measures. Further, the study approves the duty of corpulence

in predominance of PCOS as overweight daughters were more exposed to PCOS.

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References

- Ashraf S, Nabi M, Rasool SuA, Rashid F, Amin S. Hyperandrogenism in polycystic ovarian syndrome and role of CYP gene variants: a review. *Egypt J Med Hum Genet.* 2019;20:25. doi: 10.1186/s43042-019-0031-4.
- Azziz R, Marin C, Hoq L, Badamgarav E, Song P. Health care-related economic burden of the polycystic ovary syndrome during the reproductive life span. *J Clin Endocrinol Metab.* 2005;90(8):4650-8. doi: 10.1210/jc.2005-0628.
- Azziz R, Woods KS, Reyna R, Key TJ, Knochenhauer ES, Yildiz BO. The prevalence and features of the polycystic ovary syndrome in an unselected population. *J Clin Endocrinol Metab.* 2004;89(6):2745-9. doi: 10.1210/jc.2003-032046.
- Balen AH, Tan SL, MacDougall J, Jacobs HS. Miscarriage rates following in-vitro fertilization are increased in women with polycystic ovaries and reduced by pituitary desensitization with busarelin. *Hum Reprod.* 1993;8(6):959-64. doi: 10.1093/oxfordjournals.humrep.a138174.
- Barrea L, Marzullo P, Muscogiuri G, Di Somma C, Scacchi M, Orio F, *et al.* Source and amount of carbohydrate in the diet and inflammation in women with polycystic ovary syndrome. *Nutr Res Rev.* 2018;31(2):291-301. doi: 10.1017/S0954422418000136.
- Batra M, Bhatnager R, Kumar A, Suneja P. Interplay between PCOS and microbiome: The road less travelled. *Am J Reprod Immunol.* 2022;88(5):e13580. doi: 10.1111/aji.13580.
- Bremer AA. Polycystic ovary syndrome in the pediatric population. *Metab Syndr Relat Disord.* 2010;8(4):375-94. doi: 10.1089/met.2010.0039.
- Carmina E, Lobo RA. Polycystic ovary syndrome (PCOS): arguably the most common endocrinopathy is associated with significant morbidity in women. *J Clin Endocrinol Metab.* 1999;84(6):1897-9. doi: 10.1210/jcem.84.6.5803.
- Danfeng, Xuelian, Patel P, Soni A, Acharya S. A review: Brief insight into Polycystic Ovarian syndrome. *Endocr Metab Sci.* 2021;3:100085. doi: 10.1016/j.endmts.2021.100085.
- El Hayek S, Bitar L, Hamdar LH, Mirza FG, Daoud G. Poly Cystic Ovarian Syndrome: An Updated Overview. *Front Physiol.* 2016;7:124. doi: 10.3389/fphys.2016.00124.
- Hashemipour M, Amini M, Iranpour R, Sadri GH, Javaheri N, Haghghi S, *et al.* Prevalence of congenital hypothyroidism in Isfahan, Iran: results of a survey on 20,000 neonates. *Horm Res.* 2004;62(2):79-83. doi: 10.1159/000079392.
- Hassan SM, Abbas al-Jaf AN, Hussien YA, Awad SM, Hadi NR. The potential antiviral activity of a novel pyrimidine derivative against herpes simplex virus type-1 (HSV-1). *Syst Rev Pharm.* 2020;11(2):795-806.
- Hayes FJ, Taylor AE, Martin KA, Hall JE. Use of a gonadotropin-releasing hormone antagonist as a physiologic probe in polycystic ovary syndrome: assessment of neuroendocrine and androgen dynamics. *J Clin Endocrinol Metab.* 1998;83(7):2343-9.
- Kanbour SA, Dobs AS. Hyperandrogenism in Women with Polycystic Ovarian Syndrome: Pathophysiology and Controversies. *Androg Clin Res Ther.* 2022;3:22-30. doi: 10.1089/andro.2021.0020.
- Liu J, Wu Q, Hao Y, Jiao M, Wang X, Jiang S, *et al.* Measuring the global disease burden of polycystic ovary syndrome in 194 countries: Global Burden of Disease Study 2017. *Hum Reprod.* 2021;36(5):1108-19. doi: 10.1093/humrep/deaa371.
- Lujan ME, Chizen DR, Pierson RA. Diagnostic criteria for polycystic ovary syndrome: Pitfalls and controversies. *J Obstet Gynaecol Can.* 2008;30(8):671-9. doi: 10.1016/S1701-2163(16)32915-2.
- Merkin SS, Phy JL, Sites CK, Yang D. Environmental determinants of polycystic ovary syndrome. *Fertil Steril.* 2016;106(1):16-24. doi: 10.1016/j.fertnstert.2016.05.011.
- Motlagh Asghari K, Nejadghaderi SA, Alizadeh M, Sanaie S, Sullman MJM, Kolahi AA, *et al.* Burden of polycystic ovary syndrome in the Middle East and North Africa region, 1990–2019. *Sci Rep.* 2022;12(1):7039. doi: 10.1038/s41598-022-11006-0.
- Mumusoglu S, Yildiz BO. Polycystic ovary syndrome phenotypes and prevalence: Differential impact of diagnostic criteria and clinical versus unselected population. *Curr Opin Endocr Metab Res.* 2020;12:66-71. doi: 10.1016/j.coemr.2020.03.004.
- Oberfield SE, Witchel S, Auchus RJ, Chang RJ, Codner E, Dabadghao P, *et al.* An International Consortium Update: Pathophysiology, Diagnosis, and Treatment of Polycystic Ovarian Syndrome in Adolescence. *Horm Res Paediatr.* 2017;88(6):371-95. doi: 10.1159/000479371.
- Pau CT, Keefe C, Duran J, Welt CK. Metformin Improves Glucose Effectiveness, Not Insulin Sensitivity: Predicting Treatment Response in Women with Polycystic Ovary Syndrome in an Open-Label, Interventional Study. *J Clin Endocrinol Metab.* 2014;99(5):1870-8. doi: 10.1210/jc.2013-4021.
- Romacho T, Elsen M, Röhrborn D, Eckel J. Adipose tissue and its role in organ crosstalk. *Acta Physiol (Oxf).* 2014;210(4):733-53. doi: 10.1111/apha.12221.
- Solomon CG, Hu FB, Dunaif A, Rich-Edwards JE, *et al.* Menstrual cycle irregularity and risk for future cardiovascular disease. *J Clin Endocrinol Metab.* 2002;87(5):2013-7. doi: 10.1210/jcem.87.5.8471.
- Vidya Bharathi R, Swetha S, Neerajaa J, Varsha Madhavica J, Janani DM, Rekha SN, *et al.* An

- epidemiological survey: Effect of predisposing factors for PCOS in Indian urban and rural population. Middle East Fertil Soc J. 2017;22(4):313-6. doi: 10.1016/j.mefs.2017.05.007.
25. Walters KA, Gilchrist RB, Ledger WL, Teede HJ, Handelsman DJ, Campbell RE. New perspectives on the pathogenesis of PCOS: Neuroendocrine origins. Trends Endocrinol Metab. 2018;29(12):841-52. doi: 10.1016/j.tem.2018.08.005.
26. Witchel SF, Oberfield SE, Peña AS. Polycystic Ovary Syndrome: Pathophysiology, Presentation, and Treatment With Emphasis on Adolescent Girls. J Endocr Soc. 2019;3(8):1545-73. doi: 10.1210/ajs.2019-00078.

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