



Original Research Article

Study of thyroid stimulating hormone among obese women with polycystic ovarian syndrome

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ABSTRACT

Aim: To investigate the relationship of thyroid stimulating hormone (TSH) in patients with PCOS.**Materials and Methods:** Present cross sectional study was carried out in 120 patients detected with PCOS, attending gynaecology OPD for menstrual problems. Control group consist of total of 120 normo-ovulatory and norm androgenic women with parallel age were enrol as a control group for thyroid hormones levels. After an all night fast of 12 hours, venous blood was collected from the antecubital vein for the assessment of Thyroid stimulating hormone as biochemical parameters.**Results:** The mean of Thyroid stimulating hormone in the control group was found to be 1.81 ± 0.74 , while in patients with PCOS the mean value of TSH was found to be 4.23 ± 1.98 . While the assessment for Thyroid stimulating hormone was through among the case and control groups, the values of thyroid stimulating hormone was establish to be improved in case groups and the raise in the disparity was found to be statistically significant.**Conclusion:** It was concluded that advanced prevalence of TSH in young women with PCOS contrast with that reported for the residents of young women in common. Additional future studies with big sample sizes are necessary to raise accepting of the relationship between these diseases and to grant management on which to base curative conclusions.© This is an open access article distributed under the terms of the Creative Commons Attribution License (<https://creativecommons.org/licenses/by/4.0/>) which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

1. Introduction

Women of reproductive age are exaggerated by polycystic ovary syndrome (PCOS) by 5–7% depending on society and analytical criteria. PCOS is characterized by clinical or biochemical signs of hyperandrogenism, and polycystic ovaries detected by ultrasound.¹ Three main phenotypes of PCOS have been proposed: classic PCOS with hyperandrogenism and anovulation, with or without polycystic ovaries; ovulatory PCOS with hyperandrogenism and polycystic ovaries; and anovulatory PCOS without hyperandrogenism and with polycystic ovaries.^{2,3}

PCOS is a characterized by hyperandrogenism and polycystic ovaries. The worldwide prevalence of polycystic ovaries amongst women is 25%. They are identify as the existence of 12 or further follicles in every ovary measuring

2-9 mm and/or enlarged ovarian volume larger than 10 mL.^{4,5} The hyper androgenic condition is thought to be a cause of deficient follicular development. PCOS is a condition of insulin confrontation, measured to be the chief aspect causal to expansion of the syndrome; analysis is based on the existence of two out of three of the following: clinical and/or biochemical androgen excess, an ovulation and polycystic ovaries on pelvic ultrasound.⁴

Patients' distresses from PCOD have abundant tiny cysts in their ovaries. These cysts occur when the usual vary of a standard menstrual cycle are disrupted. The ovaries are inflamed; and produce tremendous quantity of androgen and estrogenic hormones. This surplus, all along with the nonexistence of ovulation, may cause infertility. Other names for PCOD are Polycystic Ovarian Syndrome (PCOS) or the Stein-Leventhal syndrome.^{6,7}

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Thyroid-stimulating hormone is a pituitary hormone that excite the thyroid gland to produce thyroxine (T_4), and then triiodothyronine (T_3) which provoke the metabolism of around all tissue in the body.⁸ About 80% of this exchange is in the liver and other organs, and 20% in the thyroid itself. TSH is secreted right through life but mainly reaches high levels through the periods of fast development and progress, as well as in answer to strain. Bakker et al. reported serum thyroid stimulating hormone (TSH) value is associated with a higher risk for dyslipidemia and severe cardiovascular risk factors.⁹

Thyroid hormone not only plays an significant position in adaptable metabolism but too in reproductive health. Both thyroid receptor and TSH receptor are articulated in ovary, uterus and widely uttered in the feto-maternal unit all through implantation.¹⁰ TSH has been explaining as the largely responsive parameters for notice slight degrees of primary thyroid hormone deficiency. But there is a argument on management verge based on TSH value in sterile women. Even though PCOS is the largely frequent reason in women with sterility, uncommon studies examine the relationship of TSH in euthyroid PCOS population. The aim of the current study was to examine the association of TSH in patients with PCOS.

2. Materials and Methods

The current cross sectional study was performed on 120 diagnosed patients with PCOS who were selected randomly from attending gynaecology OPD for menstrual problems. Control group consist of total of 120 normo-ovulatory and normoandrogenic women with alike age and BMI were register as a control group for thyroid hormones levels. These Patients had usual menstrual cycles of 27–31 days and did not show clinical and/or biochemical proof of hyperandrogenism. The institutional ethical committee w certificate was obtained from them. All the females who were in between the age of 18 to 35 years who were set to give the written consent and all individuals who meet the Rotterdam criteria for the analysis of PCOS were incorporated in the research. The patients on oral contraceptives or hormone replacement therapy, liver and kidney diseases, congenital adrenal hyperplasia simple virilizing or severe, adrenal insufficiency, Cushing's syndrome, primary amenorrhea owing to a few cause, Sheehan syndrome, pregnancy, lactation, management for infertility, premature ovarian failure, and hyperprolactinemia were excluded.

A throughout clinical examination and history was taken. Menstrual history noted. Diagnosis of PCOS was done by Rotterdam classification. Another applicable history about symptoms of hyper/ hypothyroidism was asked. History of primary or secondary sterility was asked.

After an overnight fast of 12 hours, venous blood was collected from the antecubital vein for the assessment of

Thyroid stimulating hormone as biochemical parameters. Blood samples were obtained in the follicular phase of the menstrual cycle. Descriptive statistics are expressed as mean \pm standard deviation. The Chi-Square test was used for the comparison of nonparametric independent variables in two-group.

3. Results

The mean age of patients diagnosed with PCOS was found to be 21 ± 8.34 years. All the patients in the case group did have some form of menstrual irregularities like oligomenorrhea, unequal menses and secondary amenorrhea.

When the assessment between the two groups for BMI and waist circumference was done, the dissimilarity was found to be statistically significant. The mean of Thyroid stimulating hormone in the control group was found to be 1.81 ± 0.74 , while in patients with PCOS the mean value of TSH was found to be 4.23 ± 1.98 . When the assessment for Thyroid stimulating hormone was done between the case and control groups, the values of thyroid stimulating hormone was found to be amplified in case groups and the increase in the dissimilarity was found to be statistically significant.

Table 1: Comparison of TSH in between control group and PCOS group

Test	Control group	PCOS group
TSH	1.70 ± 0.70	5.92 ± 2.12

4. Discussion

Thyroid hormones have an assortment of things on the reproductive system of the human female. Thyroid dysfunction is linked with change in a number of metabolic processes. Premature stages of thyroid dysfunction can lead to slight change in ovulation and endometrial receptivity, which may have deep effect on fertility. If unprocessed it may cause a wait in the onset of puberty pursue by anovulatory cycles. Still subclinical hypothyroidism can affect richness harmfully.¹¹

Women with PCOS are at likelihood for sterility and early pregnancy harm. Numerous are overweight, find it difficult to lose weight, and undergo with fatigue, depression and anxiety. PCOS has no heal.¹² Management may engage existence alter such as weight loss and exercise. Birth control pills might assist with recovering the constancy of periods, surplus hair enlargement, and spots. Metformin and anti-androgens may to assist Efforts to get better fruitfulness comprise weight loss, clomiphene, or metformin. In vitro fertilization is used by some in whom other measures are not effective.¹³

Assessment was done for thyroid stimulating hormone level in control group and PCOS patient group. We found that thyroid stimulating hormone level increase beyond the normal range in the PCOS women patients. All the cases in our study did show statistical significant rise in the TSH level as contrast to control group. Findings are alike to that obtained by Sinha et al.¹⁴ Previous researches attempted to discover thyroid changes in PCOS. Mainly the findings of these studies demonstrate superior TSH and advanced autoimmune thyroiditis in PCOS women as contrast to control women without PCOS. Researchers propose an increased estrogen and estrogen/ progesterone ratio to be straight occupied in high anti-thyroid peroxidase levels in PCOS patients. Both genetic and environmental factors are supposed to be causal to thyroid disorders in PCOS.

5. Conclusion

The current results describe a advanced prevalence of TSH in young women with PCOS contrast with that reported for the residents of young women in general; Additional future studies with larger sample sizes are necessary to amplify understanding of the relationship between these diseases and to offer management on which to base healing results.

6. Source of Funding

None.

7. Conflict of Interest

None declared.

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