



## ASSESSMENT OF CORELATION BETWEEN POLYCYSTIC OVARIAN SYNDROME AND HYPOTHYROIDISM

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**ABSTRACT** **Objective-** To analyse the correlation between Polycystic ovarian syndrome (PCOS) and hypothyroidism. **Material and methods-** 100 women attending Gynaecology outdoor with menstrual irregularities or infertility were recruited in the study after applying exclusion criteria. These were subjected to various tests. Amongst them 36 diagnosed with hypothyroidism constituted group A. Rest 64 were euthyroid females and they constituted Group B. women in both groups who fulfilled the Rotterdam's criteria were labelled as PCOS. **Results-** There was statistically significant higher prevalence of PCOS in women with hypothyroidism (38.89%). Women with PCOS had higher mean Serum TSH levels and low Free T4 levels as compared to controls. **Conclusion-** It was concluded that occurrence of PCOS was significantly higher in hypothyroid females suggesting that all hypothyroid females should be evaluated for PCOS.

**KEYWORDS :** PCOS, Hypothyroidism.**Introduction-**

There is an alarming increase in the incidence of PCOS in young women worldwide. Hypothyroidism is also widely prevalent among females. Both are associated with increased BMI and obesity. Obesity which is widely seen in PCOS leads to increase in inflammatory cytokines resistance thereby leading to decreased deiodinase-2 activity and so decreased Free T4 levels. PCOS is also associated with autoimmune diseases – hypothyroidism being a feature of some.

**Material and methods-**

This was a hospital based case control study in which 100 women attending Gynaecology outdoor with menstrual irregularities or infertility were recruited in the study after applying exclusion criteria. Exclusion criteria included previous history of ovarian surgery, secondary hypothyroidism, congenital adrenal hyperplasia, Cushing's syndrome, androgen secreting tumor and adrenal tumour. Informed consent was taken from each of them. Patients were subjected to various tests and ultrasonography. 36 women diagnosed with hypothyroidism constituted group A. Rest 64 were euthyroid females and they constituted Group B. Women in both groups who fulfilled the Rotterdam's criteria were labelled as PCOS. Rotterdam's criteria includes- 1) menstrual abnormalities like oligomenorrhea or amenorrhea, 2) clinical or biochemical hyperandrogenism, 3) ultrasound appearance of polycystic ovaries. The presence of two of these criteria were required to define PCOS. Various laboratory tests were done and their normal values considered were- 1) free T3 (2.4-4.2pg/ml), 2) free T4- (0.7-1.24 ng/dl), 3) S.TSH-(0.34-4.25mIU/ml), 4) anti-TPO antibody (35 IU/ml).

**Results-**

The mean age of the women was 24.36 years. It was observed that 14 out of 36 hypothyroid women (38.89%) had PCOS. This result was statistically significant with a p-value of < 0.001. A higher mean S.TSH was found in hypothyroid females with PCOS (S.TSH- 12.93mIU/ml) than those without PCOS (S.TSH – 10.41mIU/ml), but this difference was not statistically significant. Mean S. free T4 levels in women with both hypothyroidism and PCOS was 0.94 ng/dl, while in females with only hypothyroidism and no PCOS, it was 1.147 ng/dl (statistically not significant).

**Discussion-**

The aim of this study was to scrutinize the distribution of polycystic ovary syndrome in patients with hypothyroidism. The prevalence of PCOS in hypothyroid females was 38.99%. Garelli et al evaluated females with autoimmune thyroiditis and found it to be commonly associated with PCOS<sup>1</sup>.

Gaine et al examined 175 (age group 13-18 years) with chronic lymphocytic thyroiditis and age matched controls were taken. These were examined for presence of PCOS. It was observed that prevalence of PCOS was significantly higher in thyroiditis group as compared to controls (46.8% vs 4.3%, p-value < 0.001)<sup>2</sup>.

Sinha U et al revealed statistically significant higher frequency of autoimmune thyroiditis (22.5%) in PCOS females<sup>3</sup>.

Novais Jde et al found subclinical hypothyroidism commoner in females with PCOS<sup>4</sup>.

Wakim et al also established the hypothesis that hypothyroidism worsens PCOS by decreasing Sex hormone binding globulin levels, increasing the conversion of androstenedione to testosterone and aromatization to estradiol. They also stated that thyroid hormones were also involved in the gonadotropin induced estrogen and progesterone secretion and thus hypothyroidism would interfere with ovarian function and infertility<sup>5</sup>.

**Table-1 : Association between hypothyroidism and PCOS**

	PCOS	No PCOS	Total
Hypothyroid (group A)	14	22	36
Euthyroid (group B)	4	60	64
Total	18	82	100

**Table-2: Mean S. free T4 levels in PCOS**

	PCOS	No PCOS
Hypothyroid (Group A)	0.94 ng/dl	1.147 ng/dl
Euthyroid (Group B)	1.2ng/dl	1.3 ng/dl

**Table-3 : Mean S.TSH in PCOS**

	PCOS	No PCOS
Hypothyroid (Group A)	12.93 mIU/ml	10.41mIU/ml
Euthyroid (Group B)	2.7 mIU/ml	3mIU/ml

**Conclusion**

Hypothyroidism and PCOS both are rapidly growing endocrine abnormalities in females. This study shows a close correlation between the two, however pathophysiology behind this association is not proven. Quick and effective treatment should be administered to them so that menstrual complaints and infertility can be addressed.

**Bibliography**

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