

Association of Hypothyroidism with PCOS

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SBV Journal of Basic, Clinical and Applied Health Science (2019): 10.5005/jp-journals-10082-02208

The association between the PCOS and hypothyroidism has been gaining a significant importance in the recent times, attributable to the rising incidences of these conditions among the female of reproductive age group.

The PCOS characterized by hormonal imbalances and presenting as menstrual irregularities with infertility due to anovulatory dysfunction and hyperandrogenism, is the most prevalent endocrine disorder affecting the women in reproductive age group today.

Insulin resistance alongwith hyperandrogenism is the most typical features of PCOS and more than 50% of the subjects present with features varying from weight gain, hyperglycemia and other features of IR to metabolic syndrome.

A similar picture is seen in cases of hypothyroidism where there is an association with hyperglycemia and increased sex hormone binding globulin (SHBG) along with dyslipidemia.¹

In hypothyroidism, the ovaries become increasingly sensitive to GnRH causing ovarian hypertrophy and formation of several follicular cysts. In addition, there are profound effects on the end-organs including the reproductive system.

The decreased GnRH secretion causes increase in TRH leading to rise in prolactin levels. The FSH/LH ratio is altered and increased levels of FSH in comparison to LH, cause formation of follicular cysts.² There is an increase in adrenal DHEA that arrests the follicle maturation. Collagen deposition occurs as a result of spill-over effect on the FSH receptors due to increased levels of TSH.

Hypothyroidism also has effects on estrogen metabolism. The SHBG in plasma is decreased leading to decrease in plasma testosterone and estradiol, whereas an increase in unbound fractions of estrogen is seen.³ Altogether, these result in anovulatory dysfunction thus presenting with features similar to PCOS as mentioned earlier.

Two things are very interesting about PCOS and hypothyroidism. (1) Both these conditions have different etiopathologies though both the conditions share common features (*viz.* anovulatory dysfunction, hyperlipidemia, hyperglycemia, insulin resistance, obesity in addition to cystic ovaries). (2) It is observed that the thyroid dysfunctions are more common in PCOS women.^{3,4}

In reverse, the PCOS is reported to be the most common of the endocrine disorders in women with thyroid dysfunction.⁵

Coexistence of both these endocrinal disorders has more severe and complex effects on reproductive health. Together, they may not only lead to infertility, but also affect the pregnancy outcome, sometimes even causing premature ovarian failure.³

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How to cite this article: Selvi D, Kotur P, Shendre S. Association of Hypothyroidism with PCOS. *J Basic Clin Appl Health Sci* 2019;2(2):85.

Various studies suggest the incidence of hypothyroidism varies from 21.6 to 32% in PCOS women. With our small experience through our ongoing study conducted on 49 PCOS women fulfilling the Rotterdam's criteria, 28.6% women were detected to have hypothyroidism.

Taking into consideration the high prevalence of hypothyroidism, in PCOS patients, we feel that screening the women for thyroid dysfunction should be mandatory in all PCOS women so that correction of hypothyroidism, which is simpler as compared to that of PCOS, can be considered as early as possible. It can be treated effectively by supplementing the thyroid hormone and this will help in reducing the severity of the condition in cases where both these conditions coexist.

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