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REVIEW ARTICLE

The Role of Thyroid Dysfunction and The Importance of Conducting Regular Thyroid Function Tests in patients with PCOS: A Narrative Review

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ABSTRACT:

Polycystic Ovary Syndrome (PCOS) and thyroid pathology, the two endocrine abnormalities have been connected to each other since quite a long while, however, the majority of the scientists have researched the relationship amongst hypothyroidism and PCOS, a backward relationship of PCOS prompting thyroid brokenness is presently being tested into. Consequently this investigation went for investigating the likelihood of improvement of thyroid brokenness in ladies with PCOS. Thyroid hormones effectively affect the regenerative arrangement of the human female. Modification in thyroid capacity, especially hypothyroidism, can cause ovulatory brokenness and prompt impeded female richness. Hypothyroidism and PCOS are frequently joined by expanded serum free testosterone, luteinizing hormone (LH) and elevated cholesterol. At the point when the ovaries of hypothyroid women with PCOS have seen with an ultrasound, an expansion in ovarian volume and the presence of reciprocal multicystic ovaries are frequently obvious. At the point when thyroid hormone substitution treatment is started, notwithstanding settling thyroid hormone levels, ovarian sores relapse and ovarian volume are diminished. In this way ladies with PCOS could be at a hazard for the advancement of thyroid issue and biochemical screening of all the thyroid parameters including that of thyroid autoantibodies is of most extreme significance in such people.

KEYWORDS: PCOS, thyroid dysfunction, thyroid autoantibodies.

INTRODUCTION:

Polycystic Ovary Syndrome (PCOS) is a hereditarily complex endocrine issue of ladies of questionable etiology and is a typical reason for anovulatory fruitlessness, menstrual brokenness, and hirsutism. PCOS seems, by all accounts, to be related with an expanded danger of metabolic distortions, including insulin protection and hyperinsulinism, type 2 diabetes mellitus, dyslipidemia, cardiovascular sickness, and endometrial carcinoma.[1]

For inquire about purposes, numerous examiners characterize PCOS utilizing the proposals of a meeting supported by the National Institutes of Health (NIH)/National Institute of Child Health and Human Development in April 1990. The gathering inferred that PCOS ought to be characterized by the accompanying (arranged by significance): 1) hyperandrogenism or potentially hyperandrogenemia, 2) ovulatory brokenness, and 3) rejection of related issue, for example, hyperprolactinemia, thyroid issue, and no established adrenal hyperplasia (NCAH).[2]

Connection between Hypothyroidism and PCOS:

Hypothyroidism is a state in which the thyroid organ does not make enough thyroid hormone. Numerous speculate hypothyroidism is identified with polycystic ovary disorder (PCOS), ovarian expansion and sore development. A current study investigated this theory. It

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included 26 patients with untreated hypothyroidism who had polycystic (n=10) or ordinary showing up (n=16) ovaries and 20 thyroid controls. All subjects were given a battery of hormonal tests including basal serum add up to testosterone, free testosterone, androstenedione, dehydroepiandosterone-sulfate (DHEAS), prolactin, estradiol, luteinizing hormone, follicle-animating hormone (FSH), free triiodothyronine (FT3), free thyroxine (FT4), and thyroid-invigorating hormone (TSH). Cortisol, 11-deoxycorticosterone and 17-hydroxyprogesterone (17-OHP), a progesterone subordinate were likewise estimated. Results from the hormone tests were contrasted and ovarian volumes.[3-5]

Thyroid Hormones, PCOS and the Reproductive System:

Thyroid hormones effectively affect the regenerative arrangement of the human female. Change in thyroid capacity, especially hypothyroidism, can cause ovulatory brokenness and prompt hindered female fruitfulness. Hypothyroidism and PCOS are regularly joined by expanded serum free testosterone, luteinizing hormone (LH) and elevated cholesterol. [6,7] When the ovaries of hypothyroid ladies with PCOS are seen with a ultrasound an expansion in ovarian volume and the presence of reciprocal multicystic ovaries are frequently obvious. At the point when thyroid hormone substitution treatment is started, notwithstanding balancing out thyroid hormone levels, ovarian pimples relapse and ovarian volume is decreased.

Thyroid Hormone Replacement, Estradiol and the Androgens:

In the present investigation a noteworthy change in serum hormone levels happened after thyroid hormone substitution treatment. Serum FT3 and FT4 levels expanded while serum TSH, prolactin, estradiol, free testosterone and aggregate testosterone levels diminished. The serum DHEAS levels of patients with polycystic ovaries stayed high, and there was no general change in serum cortisol, 17OHP and 11DOC levels. Change in the menstrual cycle happened in 18 ladies. Serum add up to testosterone fixations were fundamentally higher in hypothyroid patients without polycystic ovaries, and thyroid hormone substitution treatment accomplished a noteworthy lessening altogether and free testosterone levels.[8-11]

Thyroid Hormone Replacement and Menstrual Irregularities:

Hypothyroid ladies usually experience the ill effects of menstrual anomalies and debilitated richness credited to anovulation or potentially luteal stage deformity. The present examination demonstrated that the ladies with hypothyroidism (with or without polycystic ovaries) had fundamentally bigger ovaries when contrasted and controls, proposing that thyroid brokenness profoundly affects ovarian size, and may likewise create ovarian blisters.

Research in animal models has demonstrated that hypothyroidism causes collagen testimony inside the ovarian intracellular framework. In people, hypothyroidism is described by testimony of mucopolysaccharides (hyaluronic corrosive and chondroitin sulfate) inside the connective tissue of different organs. While extra collagen in the lips or to decrease the presence of wrinkles can be something worth being thankful for, expanded collagenic material in the ovaries makes issues with ovarian capacity and may dysregulate hormone union.

Reproductive Hormone changes in Hypothyroid Women:

The study showed that although the overall basal serum androgen level of patients with hypothyroidism tended to be higher, only the difference in total testosterone was statistically significant. Hypothyroid patients with polycystic ovaries had significantly higher serum DHEAS and free testosterone but lower androstenedione levels.

Achieving normal thyroid levels after replacement therapy decreased overall serum prolactin, E2, total and free T levels (but not androstenedione and DHEAS values) significantly compared to pre-treatment. Resumption of regular menses occurred in 50% of PCOS and 81% of non-PCOS patients after thyroid levels had been normalized. Additionally, the polycystic appearance of the ovaries disappeared in all patients after thyroxine treatment. These findings indicate that the PCOS-like appearance of the ovaries can be caused by primary hypothyroidism. A decrease in ovarian volume and resolution of ovarian cysts should be expected after euthyroidism has been achieved with thyroid hormone replacement therapy.[12-15]

The severity of ovarian morphology also depends on duration and severity of underlying primary hypothyroidism. In most severe cases like long standing untreated cases of congenital hypothyroidism ovarian morphology can be very striking and can even be mistaken for ovarian malignancies. These cases have been given an eponym Van Wyk and Grumbach syndrome, after the scientist who first described the case.[16]

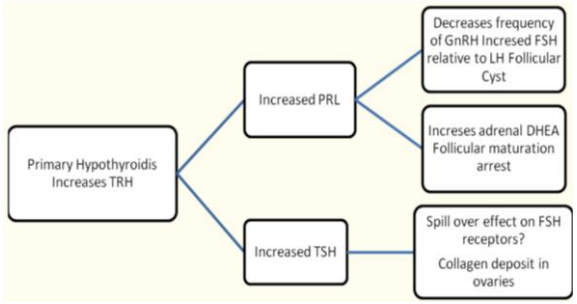

Figure 1: Hypothyroidism and PCOS

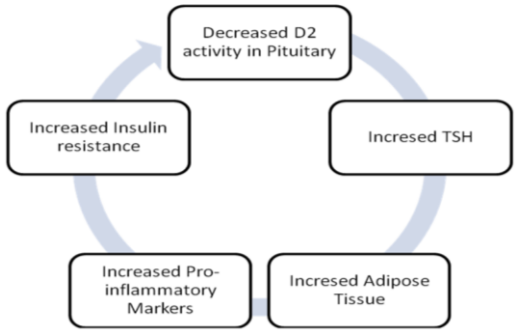

Figure 2: Pituitary Activity and PCOS

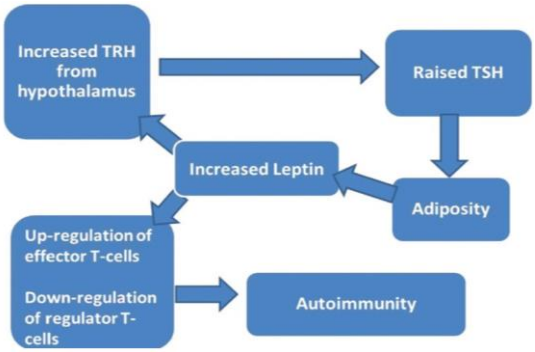

Figure 3: Autoimmunity

CONCLUSION:

Hence since the only major difference between the two groups was seen in terms of thyroid function and thyroid antibody tests, biochemical screening of thyroid parameters including that of thyroid antibodies for all the PCOS patients is absolutely essential for early diagnosis and early management, as both thyroid dysfunction and PCOS have similar complications and the dual presence of these would definitely come in the way of the management of the syndrome. Clinicians therefore should take a serious note of this and ensure that patients with PCOS are diagnosed and treated for thyroid dysfunction as early as possible as no obvious symptoms of the disorder may be presented initially but it could produce deleterious changes in the endocrinesystem of the body thus interrupting the management of PCOS.

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