OPEN ACCESS Freely available online

Journal of Thyroid Disorders & Therapy

Commentary

Importance of a Thyroid Stress Test Using Carefully Controlled Ovarian Hyper Stimulation

Dennis Cabbuley*

Department of Endocrinology and Metabolic Diseases, Leiden University, Tokyo, Japan

DESCRIPTION

The thyroid hormone is important for female reproduction. Numerous thyroid hormone receptors are present throughout the female reproductive tract, and thyroid hormone regulates important physiological processes of reproductive, particularly through the effects of Follicle-Stimulating Hormone (FSH) and Luteinizing Hormone (LH). Clinically stated, thyroid disease's effects are a consequence of the functioning of thyroid hormone. The direct effects of hypothyroidism and hyperthyroidism on subfertility are well-established modifiable risk factors for subfertility, as are indirect effects such hyperprolactinemia, alterations in gonadotropin-releasing hormone sensitivity, and variations in estradiol concentrations.

The indication for treatment of overt thyroid disease has been well recognized, and recent research has shown the levothyroxine treatment for thyroid autoimmunity is just not useful [1].

The advantage of levothyroxine treatment for less serious thyroid problems, especially subclinical hypothyroidism, is still unknown. Fertility physicians frequently take use of this knowledge gap to treat women who do have normal thyroid function (measured as a thyroid-stimulating hormone TSH concentration of >2.5 mU/L or lower). Due to over diagnosis and overtreatment, such non-evidence-based approaches inflict needless emotional and biologic harm. Busnelli report the results of their systematic review and meta-analysis assessing changes in thyroid function test under Controlled Ovarian Hyper stimulation in the current issue (COH) [2]. Because there is of high-quality clinical evidence in this field and because low-quality clinical data are usually interpreted, studying these changes is especially valuable.

Therefore, rather than using a non-hypothesis-based approach, future clinical studies or treatments should be focused on thyroid physiology. The current study is well-supported by experimental studies and physiology studies. Because thyroid hormone regulates 3,ß-hydroxysteroid dehydrogenase, the final step in the formation of progesterone, aromatase, and LH/human chorionic gonadotropin receptor expression, low thyroid hormone availability is related to the suboptimal local ovarian stimulatory effects of follicle-stimulating hormone and LH [3]. This indicates that the identification of women with abnormal thyroid function test results that emerge during COH may ultimately enhance their outcomes as COH is a state of supraphysiologic ovarian stimulation. COH is a disease in which there is an increased need thyroid hormone production.

Whereas the results of thyroid function test remain stable throughout a typical menstrual cycle, a sudden rise in estragon levels during COH induces thyroxine-binding globulin concentrations to increase and type-3 deiodinase gene transcription, which deactivates thyroid hormone, decreasing thyroid hormone availability and enhance the level of the Thyroid Stimulating Hormone (TSH) [3]. *In vitro* fertilization/intracytoplasmic sperm injection in thyroid women resulted in an increase in mean TSH concentration of 0.69 mU/L (95 percent Confidence Interval (CI), 0.30-1.08) during COH, and this effect persisted until a positive pregnancy test result, but almost no change in mean free thyroxin (FT4) concentration (-0.34 pmol/L (95 % CI, -0.91 to 0.23)). [2].

Effect estimates in women with thyroid autoimmunity in sub analyses ranged between 0.1 to 2.86 mU/L, which would be likely due to the small number of individuals (n=7-24), poor data techniques in the initial studies, and the combination of thyroperoxidase antibody-positive and thyroglobulin antibody-positive individuals (the latter are unlikely to present a reduced thyroid functional capacity). This research of hypothyroid women receiving a fixed dose of levothyroxine is important because thyroid function cannot be increased in this group due to an increase in TSH concentrations, making this experiment better controlled. The mean TSH concentration in these women increased by 1.50 mU/L (95% confidence level, 1.10-1.89), and this rise persisted for at least three months after COH [4,5].

Our previous study utilized a rigorous methodology, takes into account a longitudinal aspect, and utilizes a baseline measurement that almost excludes off reverse causality to provide the best quantitative data on the effects of COH on thyroid function. The results of analyses after stratification for the different regimens are difficult to interpret as it was not proven if

Correspondence to: Dennis Cabbuley, Department of Endocrinology and Metabolic Diseases, Leiden University, Tokyo, Japan, E-mail: cabbleydennis56@gmail.com

Received: 05-May-2022; Manuscript No. JTDT-22-18390; **Editor assigned:** 09-May-2022; PreQc No. JTDT-22-18390 (PQ); **Reviewed:** 27-May-2022; QC No. JTDT-22-18390; **Revised:** 03-Jun-2022, Manuscript No. JTDT-22-18390 (R); **Published:** 13-Jun-2022, DOI: 10.35248/2167-7948.22.11.274.

Citation: Cabbuley D (2022) Importance of a Thyroid Stress Test Using Carefully Controlled Ovarian Hyper Stimulation. Thyroid Disorders Ther. 11: 274.

clinicians may have based the type of COH on the thyroid function test outcome. The severity of thyroid function changes, especially in hypothyroid women taking levothyroxine, indicates that COH is a disease because there is an increased need for production of thyroid hormone. The international guidelines' recommendation to aim for a TSH treatment target of <2.50 mU/L is strengthened by the 1.50 mU/L increase in mean TSH concentration in this group. Therefore, a meta-analysis of individual participant data could provide relevant insights and serve as the foundation for the design of future studies in addition to the new prospective investigations.

REFERENCES

1. Smith RKD, Middleton LJ, Sunner KK, Cheed V, Baker K, Farrell Carver S, et al. Levothyroxine in women with thyroid peroxidase antibodies before conception. N Engl J Med. 2019;380:1316-1325.
2. Busnelli A, Cirillo F, Levi-Setti PE. Thyroid function modifications in women undergoing controlled ovarian hyperstimulation for IVF: A Systematic review and meta-analysis. Fertil Steril. 2021;116:218-231.
3. Korevaar TI. Thyroid disorders during preconception, pregnancy, and the postpartum period. In: Werner and Ingbar's. The thyroid, 11. Philadelphia, PA: Wolters Kluwer; 2020.
4. Alexander EK, Pearce EN, Brent GA, Brown RS, Chen H, Dosiou C, et al. 2017 Guidelines of the American thyroid association for the diagnosis and management of thyroid disease during pregnancy and the postpartum. Thyroid 2017;27:315-389.
5. Korevaar TI, Derakhshan A, Taylor PN, Meima M, Chen L, Bliddal S, et al. Association of thyroid function test abnormalities and thyroid autoimmunity with preterm birth: A Systematic review and meta-analysis. JAMA 2019;322:632-641.