

Поттури Рагха Саи Махима Латха
ЗДОРОВЬЕ ЩИТОВИДНОЙ ЖЕЛЕЗЫ И ЖЕНСКОЕ
БЛАГОПОЛУЧИЕ: ЖИЗНЕННО ВАЖНАЯ СВЯЗЬ

Научный руководитель: ст. преп. Е.С. Алексеева

Кафедра поликлинической терапии

Белорусский государственный медицинский университет, г. Минск

Potturi Ragha Sai Mahima Latha
THYROID HEALTH AND WOMEN'S WELL-BEING: A VITAL LINK

Tutor: senior lecturer A.S. Aliakseyeva

Department of Outpatient Therapy

Belarusian State Medical University, Minsk

Resume. Having knowledge about thyroid gland and its disorders among woman is crucial taking into account the alarming increase in thyroid issues among women. I come from a place where at least one woman in every household has been diagnosed with such disorders. A slight imbalance of hormones in a woman's body can significantly affect the quality of life. My article therefore, primarily focuses on the functioning of thyroid gland and consequences of thyroid disorders, thereby creating awareness how it is a vital link to women's well-being.

Keywords: thyroid gland, vital link, wellbeing, effects on woman's body

Резюме. Знание о щитовидной железе и ее нарушениях имеет решающее значение, учитывая тревожный рост случаев заболеваний щитовидной железы среди женщин. Я родом из страны, где, по крайней мере, у одной женщины в каждой семье были диагностированы такие заболевания. Незначительный гормональный дисбаланс в организме женщины может существенно повлиять на качество ее жизни. Поэтому в моей статье основное внимание уделяется функционированию щитовидной железы и последствиям ее заболеваний, что позволяет понять, насколько она важна для благополучия женщин.

Ключевые слова: щитовидная железа, жизненно важное звено, благополучие, влияние на организм женщины.

Introduction. The Thyroid gland is a small, butterfly-shaped gland located at the front of a neck under skin. It is a part of our endocrine system. The thyroid plays a major role in the metabolism, growth and development of the human body by secreting hormones.

The thyroid gland releases four hormones: triiodothyronine (T3), tetraiodothyronine or thyroxine (T4) [1], reverse triiodothyronine (RT3) and calcitonin. Thyroxine is the primary hormone secreted by thyroid gland and it is converted into triiodothyronine by a process called deiodination. Triiodothyronine is produced in lesser amounts than T4 but it has a much greater effect on your metabolism than T4. Reverse triiodothyronine is produced in little amounts and has reverse effects of T3. Calcitonin is produced by C-cells and it is involved in calcium and bone metabolism. The thyroid hormones are released in a negative feedback mechanism. The hypothalamus releases thyrotropin- releasing hormone (TRH) into hypothalamic-hypophyseal portal system triggering the anterior pituitary to release thyroid stimulating hormone (TSH) which in turn stimulates the production of T3 and T4.

Excess amount of T3 and T4 inhibits the secretion of TRH and TSH. Iodine is the main element needed to make thyroid hormones [2]. The changes in the levels of iodine above or below the normal range can lead to certain disorders of thyroid gland. Thyroid problems are

particularly important for women due to their unique reproductive and hormonal properties. It also has a huge impact on the quality of life of a woman as hormonal imbalances can cause fatigue, decreased energy levels, mood swings, anxiety, depression which can interrupt work life of a woman. Thyroid disorders are also known to show changes in skin, hair and affect weight management, leading to weight loss or weight gain impacting self-esteem and confidence of a woman. Most importantly thyroid disorders can interrupt reproductive health of a woman of all ages by either causing early menarche or late menarche, irregular periods or even no periods at all (amenorrhea) and may cause early menopause in women. These interruptions especially irregular periods can have a negative effect on the overall health and increase risks associated with fertility, heart health, bone health etc. thus making it an important topic of discussion.

Aim: is to study the impact of thyroid health on women's well-being and increase awareness about thyroid gland and thyroid associated disorders among women.

Material and methods. This review article synthesizes current research on the impact of thyroid health on women's well-being through a comprehensive literature search in databases such as PubMed, Cochrane Library, and Scopus.

Epidemiology. Iodine nutrition is a key determinant of thyroid disease risk. However other factors such as age, individual's habits, genes and etc., can also lead to various thyroid gland disorders. The main thyroid gland disorders that affect women are Hypothyroidism, hyperthyroidism, Hashimoto's thyroiditis, Grave's disease, Thyroid nodules, Thyroid cancer. Among these hypothyroidisms is the most common disorder seen globally with the prevalence of variation in epidemiology: the prevalence of the hypothyroidism in the general population varies between 0.2% and 5.3% in Europe and 0.3% and 3.7% in the USA. Depending on the definition used and population studied [4][5][6].

Longitudinal studies from large UK cohort report an incidence rate of spontaneous hypothyroidism of 3.5-5.0 per 1000 and 0.6-1.0 per 1000 in women and men respectively, in Asia prevalence of hypothyroidism among adults is 11%. Prevalence of hypothyroidism in Belarus is 2.95%.

Deficiency or excess of iodine is the major cause of thyroid disorders. Autoimmune disorders Hashimoto's thyroiditis and Grave's disease are known to cause hypothyroidism and hyperthyroidism respectively. Pituitary gland disorders can have decreased or increased production of thyroid-stimulating hormone (TSH) there by effecting the production and release of thyroid hormones.

Many drugs can affect thyroid function. One of the drugs in particular is lithium, which is used commonly to treat psychological disorders like bipolar disorder. Many studies have concluded that use of lithium is associated with developing hypothyroidism. Other medications like thalidomide, rifampicin also increase the risk for developing hypothyroidism. Corticosteroids such as prednisone can also affect thyroid hormones. First, normal doses of prednisone can stop the production of TSH. Second, high doses of prednisone slow down the conversion of T4 to T3. Iodine supplements if taken in excess amounts can also lead to thyroid problems. Therefore, it is necessary to use the right dosage of supplements in order to avoid risks of developing disorders.

Stress is also a biggest concern in today's competitive world as stress is known to have an impact on thyroid and hormone production. Stress triggers the release of cortisol which is produced by the adrenal gland, elevated cortisol levels can disrupt thyroid hormone

production. Stress can also suppress the production of TSH, leading to decreased thyroid production.

The thyroid gland has a big effect on female health. It is known to maintain metabolism, puberty and menstruation, pregnancy, bone health and the thyroid hormones are known to virtually effect all our organ systems in the body including the heart and central nervous system (CNS). Underactive or overactive thyroid can cause disturbance in the normal functioning thyroid gland.

Literature' review:

Puberty and Menstruation: Can cause puberty and the first menstrual period to start early or late. High or low levels of thyroid hormones can cause very light or very heavy periods. Sometimes it can also cause irregular periods or even amenorrhea. Abnormal menstrual cycles were experienced by 34% of women with hypothyroidism. A study made in patients with menstrual disorders in an outpatient department in a city of India showed that 44% of patients had thyroid disorders of which subclinical hypothyroidism was prevalent in 20%, overt hypothyroidism in 14% and overt hyperthyroidism in 8% of women, and autoimmune thyroid antibodies were present in 30% of patients showing that it is necessary to address the increasing menstrual irregularities due to thyroid disorders.

Reproduction: Having thyroid disorders may prevent ovulation. Physiologically, during the midcycle (around the time of ovulation), estrogen - one of the main hormones regulating a woman's reproductive system- exerts a positive feedback mechanism on luteinizing hormone (LH). This surge in LH is a key trigger for ovulation, facilitating the release of the ovum. However, thyroid hormones can disrupt this action of estrogen, which may hinder the process of ovulation.

Hypothyroidism can cause ovarian cysts which may increase the risk of developing polycystic ovarian syndrome (PCOS).

Pregnancy and postpartum: Low amounts of thyroid hormones can cause serious problems in pregnancy include pre-eclampsia, miscarriage, preterm birth, stillbirth and rarely congestive heart failure. During labor there can also develop a risk for cesarean birth and increased bleeding after delivery. During the first trimester the baby relies on the mother for thyroid hormones. These hormones are vital for normal brain development and growth of the baby. Therefore, having low level of thyroid hormones especially during the first trimester can cause low IQ and problems with normal development of the child. Studies suggest that children born to mothers with untreated hypothyroidism may have a 20-30% higher risk of developmental delays Hence it is evident that thyroid problems in pregnancy can harm the baby. They may also lead to ongoing thyroid problems in the parent after birth. A well-known complication of postpartum is postpartum thyroiditis which occurs in 5-10% of women after childbirth.

Overactive thyroid causes severe morning sickness as well as an increased risk of heart failure in both parent and fetus.

Menopause: Thyroid disorders may cause early menopause. Hyperthyroidism mimics characteristics of perimenopause such as excessive sweating, insomnia, hot flashes, anxiety.

Apart from reproductive symptoms thyroid disorders have known to cause unusual weight changes, hair loss, decreased tolerance to hot and cold climates, depression or anxiety, rapid or slow pulse, mood swings, brain fog, osteoporosis.

Thyroid issues are more common in women than in men. One in eight women will suffer

from thyroid problems at some point during her life, so it is especially important for women to be educated about what the thyroid does, issues that may arise, and treatment options.

Diagnostics. The first line test for checking thyroid health is a blood test which measures the levels of TSH, T3 and T4. This blood test is called thyroid function test. It is used as a screening test for both hypothyroidism and hyperthyroidism. Normal range for TSH is 0.5-5.0 mIU/L. A higher level of TSH indicates that it is hypothyroidism. It means thyroid isn't producing enough hormones as a result TSH is constantly released into the blood. A lower level of TSH indicates hyperthyroidism means the thyroid is producing too much thyroid as a result pituitary stops making TSH. If the levels of TSH are normal it is necessary to make T4 tests.

Normal range of T4 is 100-200 ng/dL. Higher levels indicate hyperthyroidism and low levels indicate hypothyroidism. It is important to note that certain conditions like pregnancy and medications like oral contraceptives can make T4 levels high. T3 test is usually done to confirm the diagnosis. Apart from hormonal test Thyroid antibody test is also done to diagnose autoimmune disorders Hashimoto's and Grave's.

Imaging tests like Ultrasound, thyroid scan and radioactive iodine uptake test (RAIU) are used to determine the shape and size of the thyroid gland. They can also be used to detect if any nodules are present. Ultrasound is used to detect and determine the structure and position of masses, cysts or goiter of thyroid gland.

Thyroid scan is used to look at the size, shape and position of thyroid gland. A small amount of radioactive iodine or a similar substance is either injected or taken orally (RAIU) to detect hyperthyroidism. Fine needle aspiration biopsy is usually made to detect if the lump is cancerous.

Management of thyroid disorders in outpatient therapy: For hypothyroidism-Levothyroxine (LT4) -50 -100mg/day, the dose can be increased to 4 to 6 weeks to aim for TSH normalization and symptoms control, corticosteroid (200mg) replacement should be started before LT4, in pregnancy and concomitant therapy higher doses may be required. For hyperthyroidism - antithyroid disease: carbimazole and propylthiouracil 40mg/day and 150 mg/day respectively. In case of hypothyroidism iodine rich diet should be followed and in case of hyperthyroidism vice versa other minerals like selenium [8], zinc, iron, magnesium should be included along with vitamin B12, D and A. Gluten rich diet should be avoided in case of hypothyroidism. In diet, a person can include non-starchy vegetables, lean fish, eggs, healthy fats, whole grains etc.

Conclusion: Thyroid gland plays a vital role in overall health of a woman by secreting hormones that regulates many functions of the body, including metabolism, puberty and menstruation, reproduction, pregnancy, postpartum recovery, and menopause. As mentioned above, almost 1 in 8 women are affected by a thyroid condition at some point of their lives. The risk for developing a thyroid disorder in women is about 10 times higher than for men. The prevalence of thyroid disorders in women is that there is interplay between thyroid hormones and the hormones that fluctuate during the menstrual cycle and autoimmune responses of the body. They are especially common in women during and after the menopause when hormone levels are changing. Some women may confuse the symptoms of thyroid disorders with the effects of the menopause, which can prevent them from seeking treatment.

Therefore, understanding the functions and potential ailments of the thyroid gland empowers women to recognize symptoms, seek appropriate medical attention, and

effectively manage any thyroid-related issues that may arise. With this knowledge, women are better equipped to prioritize their health and well-being, ultimately leading to improved overall quality of life.

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