



## Thyroid diseases in primary care

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### Keywords

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Graves disease

### Abstract

Thyroid is the largest endocrine gland in the human body. It provides physical and mental balance thanks to the hormone it secretes. It is used as a marker in the diagnosis of thyroid disease in primary care with Triiodothyronine, Thyroxine, and TSH. One of the most sensitive reasons for the progression of the disease is iodine deficiency or excess, environmental conditions, as well as genetics. Some factors such as psychological and age affect the progress of the disease. Levothyroxine is used in the first-line treatment of the hypothyroidism. One of the most common causes of the hypothyroidism is Hashimoto's thyroid. In the treatment of the hyperthyroidism, anti-thyroidal medication, radioactive iodine ablation and thyroidectomy are used. Hyperthyroidism is the basis of the Graves' disease. In our study we will give a brief review about the thyroid diseases.

## Introduction

Thyroid is an endocrine gland consisting of the right and left lobes in the neck [1]. The thyroid glands have a weight of 20 grams and are the largest gland in the human body [1]. The pituitary gland stimulates the thyroid gland by secreting the hormone called TSH [1,2]. Through the function of the TSH, the thyroid gland begins to produce hormones [3-5]. The hormones stimulated by the thyroid gland are responsible for the basic functioning of the body [1]. Triiodothyronine and Thyroxine are secreted by the thyroid gland [2,3].

The primary reason for the thyroid deficiency is the iodine deficiency or excess levels of it [4,5]. Graves' disease is an autoimmune disease together with the hyperthyroidism [8,9]. The most prominent side effects of the Graves' disease are enlargement of the eyes, swelling in the throat, hair loss, sharpness of the nail and flesh separation on the nails, rapid weight loss and trembling in the hands and feet [3,10]. It is thought that genetic predisposition affects Graves' disease more. [8,9] In addition to its genetic predisposition, HLA, DR3, cytotoxic T lymphocyte antigen 4 affects polymorphisms. [8,9] Interferon alpha and anti-CD52 antibodies have been proven to be associated with the pathogenesis of the Graves' disease [8,9].

As a result of the decrease in thyroid's effect on the peripheral target tissue, "Hypothyroidism" is observed [2,3,5]. The side effects of hypothyroidism are generally slowed heart rate, fatigue, aggressive attitudes and forgetfulness [5,6]. One of the most common results of hypothyroidism is "Hashimoto thyroid" [8,9]. Another name for Hashimoto disease is "Lymphocytic Thyroid" [12]. Possible side effects of Hashimoto's disease are voice changes, chills, and skin dryness. However, since these side effects are seen in many diseases, it is difficult to detect Hashimoto's disease [5,12]. T lymphocytes activated in the Hashimoto's thyroiditis interact with the B lymphocytes and lead to the secretion of multiple cytokines including interferon-gamma. Iodine stimulates the formation of B and T lymphocytes. There is overproduction of Fas and Fas L ligand, which causes apoptosis, which is involved in the other pathogenesis of Hashimoto's thyroid [8,9].

Apart from the iodine deficiency or excess, there are causes such as environmental conditions, genetics, and air pollution for the development of the thyroid-based diseases [1,2]. Thyroid disease covers 30% of the young and old population in our country [7].

In the diagnosis of thyroid disease, primarily blood tests and the reference range of hormones are checked [6,7]. In addition to blood tests, thyroid ultrasound (TU), thyroid scintigraphy (TS) and thyroid fine needle aspiration biopsy methods are also utilized [7].

In the primary thyroid diagnosis, free T3, free T4 and TSH hormones should be within the reference range of the healthy individuals' blood tests [5,8].

## Discussion

Thyroid disease has an autoimmune pathogenesis.[1] It is treated with oral anti-thyroid, sulfonamides, lithium, phenylbutazone, PAS and oral hypoglycemic agents in order to prevent weakness, depression, anorexia, basal metabolism not working fast or slowly, malaise, rapid weight loss or gaining seen in thyroid disease progression [5,12].

In the treatment of hyperthyroidism, reduction of the thyroid hormone secretion and application of  $\beta$ -adrenergic blockade have been recommended [14]. While recommending total thyroid ablation or glucocorticoid therapy in patients diagnosed with Graves' disease, no treatment option can be applied in the absence of ophthalmopathy [10,11]. Surgery or radioactive ions can be applied in addition to anti-thyroid drugs for the Graves' disease [10]. In recent years, it has been thought that oxidative stress also affects the pathogenesis of Graves' disease [11,14].

Levothyroxine is used in the treatment of hypothyroidism. According to studies conducted in recent years, it has been stated that it should be done with LT4 [6,14]. It is thought that vitamin D or calcium should be given in addition to this treatment method [14].

In Hashimoto's disease, daily thyroid hormone is given. The main purpose in Hashimoto's disease is to supplement the deficient hormones [12]. It has been determined that thyroid autoantibodies are found in the serum on Hashimoto's disease [12,14].

## Conclusion

Diagnosis of thyroid diseases in primary care and determination of the pathology provide how the houses in secondary and tertiary care will proceed for an effective treatment. After thyroid diagnosis is made, thyroid auto antibodies and anti-peroxidase are examined [5,7].

After diagnosis, levothyroxine is administered in the treatment of hypothyroidism. Levothyroxine is taken by mouth or given by intravenous injection [5,7]. Thyroid hormone (levothyroxine) is given in the treatment of Hashimoto's disease, which is one of the most common causes of hypothyroidism. However, there is no definitive treatment [12].

In the treatment of hyperthyroidism, treatment with antithyroid drugs (propylthiouracil and thiomazole), radioactive iodine treatment and thyroidectomy have been used [2,5]. Graves disease caused by the hyperthyroidism can be treated with anti-thyroid or radioactive iodine as effective treatment methods [3,10,11].

## References

1. Gül, S. S., Kutlutürk, F., & Esen, M. (2020). Tiroit.
2. Demir, M. (2020). Tiroit hastalıklarının böbrek üzerine etkileri
3. Durgun, Z., Yazici, C., & İnan, A. O. (2019). Tiroit Hormonları ve Hastalıkları. *Akdeniz Spor Bilimleri Dergisi*, 2(1), 28-40.
4. Rişvanlı, A., Aydın, M., Kaygusuzoğlu, E., & Timurkan, H. (2003). The effect of thyroidectomy on sexual cycle and pregnancy rates in rats. *Turkish Journal of Veterinary & Animal Sciences*, 27(4), 873-877.
5. Solmaz, R. (2013). Tiroit hastalığının teşhisinde.
6. Tiroit hastalıkları tanı, tedavi ve izlem kılavuzu, Türkiye Endokrinoloji ve Metabolizma Derneği, ISBN NO: 978-605-4011-15-5, 2012.
7. Amaç, I. (2003). Tiroit sintigrafisi uygulama kılavuzu. *Turk J Nucl Med*, 12, 178-180.
8. Gül, U. D. N., & Alagöl, F. (2010). Tiroid Nodüllerinin Patogenezinde Apoptozun Rolü.
9. Üçgün, S. (2016). Otoimmün tiroid hastalarında erythrovirus B19 (parvovirus B12) sıklığının araştırılması.
10. Saklamaz, A., Sivrikoz, O., & Çökmez, A. (2012). Graves hastalığında rastlantısal saptanan papiller karsinom: Olgu sunumu. *Türk Jem*, 16, 102-104.
11. Yalav, O., Demircan, O., & Sakman, G. (2012). Graves hastalığında tedavi seçenekleri. *Journal of Dialog in Endocrinology/Endokrinolide Diyalog Dergisi*, 9(4).
12. Çorapoğlu, D. (1996). Hashimoto tiroiditli olgularımızın klinik ve laboratuvar değerlendirilmesi.
13. Derhem, B. (2019). Birinci basamakta tiroid disfonksiyonuna yaklaşım ve tarama. *Anadolu Güncel Tıp Dergisi*, 1(3), 72-76.
14. Çeçen, P., & İmamoğlu, N. (2013). Tiroid Bezi Hastalıkları Ve Farmakolojik Tedavisindeki Güncel Gelişmeler.