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Araştırma/ Research Article

EVALUATION OF THYROID DISEASE STORIES OF INDIVIDUALS ATTENDED TO THE FACULTY OF DENTISTRY

DİŞ HEKİMLİĞİ FAKÜLTESİNE BAŞVURAN BİREYLERİN TİROİD HASTALIKLARI ÖYKÜLERİNİN DEĞERLENDİRİLMESİ≠

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ABSTRACT

Aim: It is vital to question the medical history of the patients before dental treatment and to determine the treatment protocols according to systemic disorders and drug regimens. In dental treatments, emergency situations such as cardiac arrhythmias, heart failure and thyrotoxic crisis may occur as complications. In this study, it was aimed to calculate the prevalence of thyroid disease stories of patients who came to Zonguldak Bülent Ecevit University Faculty of Dentistry with treatment or routine control requests.
Material And Methods: In the study, systemic anamnesis records of 28950 patients who referred to Zonguldak Bülent Ecevit University Faculty of Dentistry, Oral, Maxillofacial Radiology Department in 2019 were collected retrospectively. Thyroid disorders recorded in the system as a result of screened anamnesis of all patients included in the study group were classified into 4 groups as: hypothyroidism, hyperthyroidism, hashimoto thyroiditis and thyroid cancers. Statistical tests were applied to the anamnesis records of the patients to question the age and sex relationship of thyroid diseases.
Results: Considering the frequency of thyroid diseases of the patients included in the study, 26152 (90.3%) of all patients did not have any thyroid disease, while 2551 (8.8%) had hypothyroidism, 185 (0.6%) hyperthyroidism, 27 hashimoto thyroiditis (0.1%) and a history of thyroid cancer in 35 (0.1%). The incidence of thyroid diseases was determined 2-3 times more in women than in men.
Conclusıon: It is vital to take a detailed anamnesis and establish appropriate treatment protocols before dental treatments, considering the prevalence of thyroid disorders in young adult individuals, especially female patients.
Key Words: thyroid,anamnesis , classification

ÖZ

Amaç: Hastaların dental tedavileri öncesi medikal hikâyelerini sorgulamak ve tedavi protokollerini sistemik rahatsızlıklara ve ilaç rejimlerine göre belirlemek hayati bir önem taşımaktadır. Dental tedavilerde tiroid hastalıklarına karşı kardiyak aritmileri, kalp yetmezliği ve tirotoksik kriz riski gibi acil olabilecek durumlar karşımıza komplikasyon olarak çıkabilmektedir. Bu çalışmada Zonguldak Bülent Ecevit Üniversitesi Diş Hekimliği Fakültesi'ne tedavi veya rutin kontrol istemi ile gelen hastaların tiroid hastalık öykülerinin prevalansının hesaplanması amaçlanmıştır.
Gereç Yöntem: Çalışmada 2019 yılında Zonguldak Bülent Ecevit Üniversitesi Diş Hekimliği Fakültesi Ağız, Diş ve Çene Radyolojisi Anabilim dalına başvuran 28950 hastanın sistemik anamnez kayıtları retrospektif olarak toplanmıştır. Çalışma grubuna dahil edilen tüm hastaların taranan anamnezler sonucunda sisteme kaydedilmiş olan tiroid rahatsızlıkları: hipotiroidizm, hipertiroidizm, hashimoto tiroiditi ve tiroid kanserleri olarak 4 grup şeklinde sınıflandırıldı. Hastaların anamnez kayıtlarına tiroid hastalıklarının yaş ve cinsiyet ilişkisini sorgulamak için istatistiksel testler uygulandı.
Bulgular: Çalışmaya dahil edilen hastaların tiroid hastalıkları sıklığına bakıldığında tüm hastaların 26152(%90,3)' sinde herhangi bir tiroid hastalığı saptanmazken, 2551(8,8%)' inde hipotiroidi, 185(%0,6)' inde hipertiroidi, 27(%0,1)' sinde hashimoto tiroiditi, 35(%0,1)' inde tiroid kanseri öyküsü tespit edildi. Tiroid hastalıkları görülme sıklığı kadınlarda erkeklere oranla 2-3 kat fazla sayıda belirlendi.
Sonuç: Genç yetişkin bireylerde özellikle kadın hastalarda tiroid rahatsızlıklarının sık görülme yüzdesi göz önünde bulundurularak dental tedavilerden önce detaylı bir anamnez alınması ve uygun tedavi protokollerinin oluşturulması hayati önem taşımaktadır.
Anahtar Kelimeler : tiroid, anamnez, sınıflandırma

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INTRODUCTION

Thyroid gland diseases, which are in the class of endocrine diseases, are observed with a considerable frequency in the Black Sea Region.[1,2] Among the reasons for this are goitrogenic factors such as the lack of iodine in the foods consumed, the soil cover structure does not contain sufficient iodine, and the consumption of kale, radish, and turnips is common.[3] It is vital to question the medical history of the patients before dental treatment and to determine the treatment protocols according to systemic disorders and drug regimens. Surgical procedures in hyperthyroid patients who apply for dental treatment may create emergencies such as cardiac arrhythmias, heart failure, and thyrotoxic crisis risk. Therefore, no treatment should be performed in patients with uncontrolled hyperthyroidism until thyroid dysfunction is corrected.[4,5] Besides, patients with untreated hypothyroidism have risks such as heart failure, hypotension, development of ileus, development of mental confusion, and delay in wound healing during and after the procedure.[6] Avoiding the use of opioids, sedatives, and general anesthesia and using the local anesthetic solution without adrenaline in the procedures to be performed will be more useful in terms of the prognosis of the patient.[7] It will be beneficial to know thyroid diseases and to apply appropriate treatment protocols in terms of avoiding the mentioned complications, qualified dental treatment practices, and directing the patient to the required departments.

In this study, it was aimed to calculate the prevalence of thyroid disease stories of patients who came to Zonguldak Bülent Ecevit University Faculty of Dentistry with treatment or routine control requests.

Thyroid Gland Anatomy

The thyroid gland is a gland consisting of right and left lobes with a middle isthmus structure in the neck region. The thyroid gland produces, stores, and secretes thyroid hormones (T3 and T4). These hormones are found to be bound to proteins in the circulation.[8] Adequate iodine intake is required for the normal production of thyroid hormones. Iodine passes through some steps in the thyroid gland and enters the structure of T4 and T3. As thyroid hormones provide normal growth and development, they increase the sensitivity of tissues, especially the heart, to catecholamines and regulate a series of homeostatic functions including energy and heat production. It is reported in the literature that thyroid hormones also have important effects on fetal development.[9]

Thyroid Gland Diseases

Hypothyroidism

The clinical condition that develops with the incomplete secretion of thyroid hormones is called hypothyroidism. Disorders caused by the thyroid gland are called primary hypothyroidism. Secondary hypothyroidism occurs as a result of insufficient TSH release. Tertiary hypothyroidism develops as a result of insufficient thyrotropin-releasing hormone (TRH) secreted in the hypothalamus and its incidence is very rare. Iodine deficiency and autoimmune thyroid disease (Hashimoto thyroiditis) are the most common causes of hypothyroidism.[8,10-11]

Thyrotoxicosis

While the increase of thyroid hormone due to different factors is called thyrotoxicosis, hyperthyroidism is called when the thyroid gland works more than normal and produces excessive amounts of thyroid hormones. Primary hyperthyroidism may develop due to Graves's disease, toxic multinodular goiter, toxic adenoma, and functional thyroid carcinoma metastases. Secondary hyperthyroidism is less common. TSH-secreting pituitary adenoma, thyroid hormone resistance syndrome, and gestational thyrotoxicosis are among the causes of secondary hyperthyroidism.[8]

Goiter

The thyroid gland is larger than normal is called a goiter. When this growth is common, that is, no nodule formation and hyperthyroidism, it is called a diffuse euthyroid (non-toxic) goiter. When goiter is present in more than 10% of the adult population or 5% of the 6-12-year-old child population, endemic goiter can be mentioned. Iodine deficiency is most commonly blamed for the etiology of goiter.[11]

Thyroid Cancers

When all cancers are considered, thyroid cancers are found at a rate of 1%. However, it is one of the most common endocrine organ malignancies.[12-15] 95% of thyroid cancer is caused by follicular cells. Differentiated thyroid cancers (papillary and follicular) originate from follicular cells and synthesize thyroglobulin. Differentiated thyroid cancers tend to grow slowly and their prognosis is quite good.[16]

Congenital Anomalies

Congenital anomalies of the thyroid gland consist of ectopia, aplasia, hypoplasia, and

thyroglossal duct cysts. Ectopic thyroid tissue is localized between the foramen caecum and epiglottis in the thyroglossal duct tract, in the midline or lateral to the midline, above the hyoid, and is called the lingual thyroid tissue. Lingual thyroid is seen in 1 / 100,000 healthy individuals.[17]

Thyroiditis

6.a. Chronic Lymphocytic Thyroiditis (Hashimoto's Disease):

Hashimoto's thyroiditis develops due to autoantibodies against thyroid proteins. The diagnosis is made by serological tests. Lymphocyte and plasma cells infiltrated into the thyroid gland produce a fibrotic reaction. Hashimoto thyroiditis is shown among the most common factors of hypothyroidism.[18,19]

6.b. Subacute granulomatous thyroiditis (De Quervain thyroiditis)

It is a thyroid infection that develops due to acute viral infection[20]

6.c. Subacute lymphocytic disease:

It is a type of thyroiditis that appears in the third and fourth months of the postpartum period. It is a disease that begins with hyperthyroidism clinically, then develops temporary hypothyroidism, and eventually heals with the return to the euthyroid state. Autoimmunity is held responsible for the etiology of the disease.[19,21]

6.d. Acute suppurative thyroiditis:

It is suppurative thyroiditis created by bacteria that reach the thyroid through blood or a traumatic way and is very rare. It is painful, its internal structure is heterogeneous, indefinite limited, and its vascularization and abscess areas with increased vascularization can be diagnosed.[17,19,21]

6.e. Invasive Fibrosis Thyroiditis (Riedel Thyroiditis):

It is a rare disease characterized by fibrosis starting from thyroid parenchymal cells and continuing with other neck structures. It is seen 3 times more in women in the entire population and occurs between the ages of 30-60[21]

MATERIAL and METHODS

This study was carried out by retrospectively collecting systemic anamnesis records of patients who consulted to Zonguldak Bülent Ecevit University Faculty of Dentistry, Department of Oral and Maxillofacial Radiology in 2019. The study group consisted of 28950 patients, 12726 males, and 16224 females, aged between 13 and 95.

In the routine dental examination workflow, medical anamnesis, systemic diseases (heart-circulation, respiratory, endocrine, etc.), drug allergies, pregnancy conditions, whether there is an existing or operated cancer are digitally recorded before the intraoral and extraoral examinations.

The anamnesis of all patients included in our study was evaluated by examining the digital patient archive for thyroid diseases In addition to the known thyroid diseases of patients, thyroid diseases learned with indirect questions were brought together and classification was made. Thyroid disorders of all patients included in the study group were classified into 4 groups as hypothyroidism, hyperthyroidism, Hashimoto thyroiditis, and thyroid cancers (present and operated together).

The study was presented to the Bulent Ecevit University Institutional Review Board (IRB) with the guidelines of the Helsinki Declaration as revised in 1975 and found appropriate for the method and purpose. The ethics committee approval was obtained from Zonguldak Bülent Ecevit University's non-invasive Clinical Research Ethics Committee with the conclusion 2020/07 dated 01/04/2020.

Statistical analysis

Medical anamneses were noted to create a data set with gender and age, along with the disease determined by classification results. Frequency and explanatory statistics methods were used to determine the age distribution on the collected data, and a chi-square test was performed to look at the relationship between gender and thyroid disease. In all statistical tests, SPSS 20.0 (IBM SPSS Inc., IL, USA) program was used and the significance value was accepted as $p < 0.05$.

RESULTS

Considering the frequency of thyroid diseases of the patients included in the study, 26152 (90.3%) of all patients did not have any thyroid disease, while hypothyroidism in 2551 (8.8%), hyperthyroidism in 185 (0.6%), 27 (0,1%) Hashimoto thyroiditis, 35 (0.1%) history of thyroid cancer was detected (Figure 1 Considering the statistical analyzes, the highest rate among thyroid diseases was taking hypothyroidism 2551(8.8%), while the lowest number was detected as Hashimoto thyroiditis. 1959 patients with thyroid disease were female and 839 were male. The incidence of thyroid diseases was determined 2-3

times more in women than in men. While the incidence of hypothyroidism was 2-3 times higher in women, the frequency of hyperthyroidism was 5-6 times higher. Again, the incidence of thyroid cancers and Hashimoto thyroiditis was 3-4 times higher in women. Distribution of thyroid diseases and frequencies according to average age are given in Table 1. Considering the results, a significant result was found in favor of women in thyroid disease anamnesis of women compared to men in all thyroid diseases within the classification. (p <0.001) Besides, the average age of hyperthyroidism was 26.69 when the mean age of hypothyroidism, Hashimoto thyroiditis, and thyroid cancers was 45 and above.

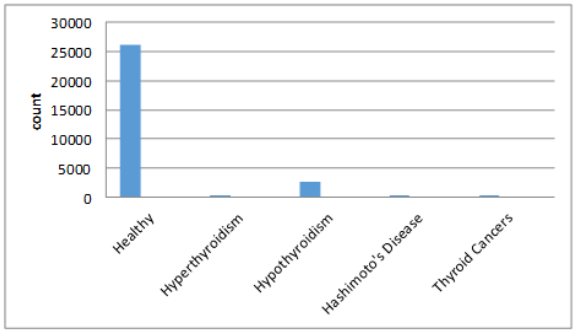

Figure 1. Distribution of thyroid diseases of patients admitted to the faculty of dentistry

Table 1. Age distributions and frequencies of thyroid diseases (p <0. 0001)

Medical Condition in Terms of Thyroid	Age (Mean ± SD)	Number of Patients (Female: Male)	Total Patient
Hyperthyroidism	26,69±20,65	155: 30	185(0,6%)
Hypothyroidism	45,61±19,72	1755:796	2551(8,8%)
HashimotoThyroiditis	48,04±13,03	21: 6	27(0,1%)
Thyroid cancer	53,09±16,43	28: 7	35(0,1%)
Healthy	45,13±19,92	14265:11887	26152(90,3%)
Total	45,19±19,90	16224:12726	28950(100%)

DISCUSSION

By paying attention to the systemic symptoms of thyroid diseases, avoiding complications in the patient's dental treatments and directing the patient to the necessary centers constitutes an important place in the treatment protocols. In this study, the patients who admitted to the Oral and Maxillofacial Radiology clinic were classified according to thyroid disorders. Thyroid diseases are common in the Black Sea region of Turkey and the results of the work we do to support that view.[3]

Hashimoto's thyroiditis is the most common cause of goiter and acquired hypothyroidism in areas where iodine is sufficient.[22,23] In different studies, the incidence of hashimoto thyroiditis was found to be 2.7%, and all of these patients were above 50 years old and 80% were women.[24] In another study, the average age of the disease in 119 adult female patients diagnosed with hashimoto thyroiditis was 44.6.[25] In Samet Özer et al. study, hashimoto thyroiditis was found to be 2.6 times more in women.[26] In our study, 28950 patients were examined and the incidence of hashimoto thyroiditis was found to be 0.1%. 21 of these patients were female and 6 were male, the female / male ratio was 3.5 and the average age was 48. Although the average age is compatible with the literature, we think that the low prevalence of Hashimoto thyroiditis is due to the fact that patients state it as a hypothyroidism in their anamnesis even if they have Hashimoto thyroiditis.

Hypothyroidism is a disease that expresses insufficient thyroid hormone production.[27,28] The incidence is 1 in 3,000-4,000.[29,30] However, its incidence is higher in our country.[31,32] Devdhar et al. in their studies, they found that the incidence of hypothyroidism increases with age and is 5-10 times higher in women than in men.[33] Considering the statistical analysis in our study, the frequency of hypothyroidism was 2-3 times higher in women, while the average age was 45.6 years.

After the Chernobyl accident, radioactive iodine spread to the Black Sea region, an increased risk of thyroid cancer occurred. The risk of thyroid cancer has increased in children after the accident, and especially more than 4000 cases of thyroid cancer have been detected from the months after the accident until 2002. The detected thyroid cancers were more aggressive than normal.[34] In the study conducted by Ali Sürmelioğlu et al. in 'Fındıklı' goiter research and treatment center, 332 patients were operated due to goiter. As a result, they found that the thyroid cancer incidence of patients operated for goiter was higher compared to other series and thought that the reason might be related to the Chernobyl nuclear accident that occurred in 1986.[35] In the study of Çağlı et al., 80 patients were evaluated and 68 patients had

malignant thyroid gland tumors. 39 (57%) of these patients were female and 29 (43%) were male. While the average age of patients with thyroid mass was 46, they found the average age as 48.1 in the group with malignant tumor.[36] In the study conducted by Canda et al., the average age was 46.8 and 123 (77.4%) of the cases were female and 36 (22.6%) were male (37). In our study, 35 people had thyroid malignancy, 28 (80%) were female and 7 (20%) were male, and the mean age of the patients was 53. As seen in systemic diseases such as blood pressure, diabetes and hepatitis in the study of Canger et al., In our study, the incidence of female thyroid diseases was higher. The prevalence and average age of thyroid cancers found in our study were found to be compatible with the literatüre.[38]

The most serious postoperative complication in patients with hyperthyroidism is thyroid crisis. Thyrotoxicosis is an emergency with severe symptoms and requiring aggressive treatment. This situation usually occurs between the sixth and eighteenth hours postoperatively.[39,40] Key clinical signs of thyrotoxicosis are fever above 38.5 ° C, tachycardia, findings of the central nervous system (anxiety, agitation, delirium, acute psychosis and coma) and gastrointestinal manifestations (nausea, vomiting, abdominal pain, diarrhea, jaundice).[41] In our study, a history of hyperthyroidism was found in 185 patients. It was aimed to take necessary precautions against thyroid crisis that may occur due to local anesthesia during tooth extraction in patients with hyperthyroid disease and to raise the necessary and sufficient awareness to carry out treatment protocols accordingly.

CONCLUSION

Although the follow-up and treatment of thyroid diseases, which are common in our country and especially in the Black Sea region, are done adequately, care should be taken in terms of not being exposed to negative results in dental practices. Especially in patients with hyperthyroidism, sensitivity to substances such as adrenaline and noradrenaline may increase. In these patients, acute thyroid crisis may occur when adrenaline in local anesthetic agents used during surgery is combined with stress. In such patients, the use of local anesthetics without adrenaline should be preferred. Since infection, trauma and surgical interventions can trigger a thyroid crisis, surgical intervention is not considered appropriate without the necessary medical treatment in these patients.

Although patients with hypothyroidism have central nervous system depression, their tolerance to sedatives, narcotic analgesics and tranquilizers is low. Unconscious use of these drugs can lead the patient to respiratory failure, myxedema coma, and death due to cardiovascular insufficiency.[42,43]

In our study, medical history of 28950 patients who referred to Zonguldak Bülent Ecevit University Faculty of Dentistry was examined. It was observed that the prevalence of female individuals was significantly higher than male individuals in all thyroid diseases classified. It was found that hyperthyroidism, where serious complications can be observed, is most common in the third decade. The mean age was 45 in hypothyroidism, hashimoto thyroiditis and thyroid cancers. It is vital to take a detailed anamnesis and establish appropriate treatment protocols before dental treatments, considering the prevalence of thyroid disorders in young adult individuals, especially female patients.

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The authors declare that there were no other contributors involved in this work.
Conflicts of interest statement
The authors declare no conflict of interest

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