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Quality of Life of Patients with Postoperative Hypothyroid and Hashimoto Thyroiditis

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Research Article

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ABSTRACT

Purpose: The symptoms and findings resulting from thyroid dysfunctions display a picture similar to mood disorders such as depression and anxiety, which are the most common psychiatric disorders in the community. Therefore, this study aims to examine patients with Hashimoto thyroiditis receiving L-thyroxine therapy and euthyroid patients with postoperative hypothyroidism receiving L-thyroxine therapy in terms of their susceptibility to anxiety and depression and the change in their quality of life, as well as determine the role of the thyroid gland in psychosocial life.

Material and method: For evaluating anxiety, depression, and quality of life, Beck depression and Beck anxiety inventories and SF-36 were administered to 120 people (20-80 years old) who were applied to the Department of Endocrinology of Sivas Cumhuriyet University. Forty of them had developed hypothyroidism after thyroid surgery, 40 were diagnosed with Hashimoto thyroiditis at some point in their life and are now in a euthyroid state after L-thyroxine treatment, and 40 were healthy people in the control group. Data were analyzed on SSPS.

Results: The reasons for these psychosocial effects on individuals were evaluated in multiple ways, such as thyroid dysfunction, having a chronic disease, the idea of constant drug use, the effect of autoimmunity, and endogenous hormone secretion. Thyroidectomy patients' anxiety and depression were higher, and their quality of life was poorer than both Hashimoto thyroiditis patients and the control group ($p<0.05$). In addition, patients with Hashimoto thyroiditis and thyroidectomy had higher anxiety and depression and poorer quality of life than the control group ($p<0.05$).

Conclusion: It was concluded that patients with Hashimoto thyroiditis are more depressed and anxious and have a lower quality of life than the control group due to the autoimmunity effect. On the other hand, patients with thyroidectomy were psychologically more affected than Hashimoto thyroiditis patients, and their quality of life was poorer due to the lack of endogenous hormone secretion and/or the undiscovered physiological effect of the thyroid gland. It was concluded that maximal protection of the thyroid gland is crucial.

Keywords: Hypothyroidism, Thyroidectomy, Beck Anxiety Inventory, Beck Depression Inventory, SF-36

Postoperatif Hipotiroidi ve Hashimoto Tiroiditi Olan Hastaların Yaşam Kalitesi

Süreç

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ÖZ

Amaç: Tiroid işlev bozukluklarına bağlı belirti ve bulgular toplumda en sık görülen psikiyatrik bozukluklar olan depresyon ve anksiyete gibi duygudurum bozukluklarına benzer bir tablo sergilemektedir. Bu nedenle bu çalışma, L-tiroksin tedavisi alan Hashimoto tiroiditli hastalar ile L-tiroksin tedavisi alan ötiroidili postoperatif hipotiroidili hastaların anksiyete ve depresyona yatkınlıkları ve yaşam kalitelerindeki değişimi incelemek ve tiroid bezinin psikososyal yaşamdaki rolü.

Gereç ve yöntem: Sivas Cumhuriyet Üniversitesi Endokrinoloji Anabilim Dalı'na başvuran 120 kişiye (20-80 yaş) anksiyete, depresyon ve yaşam kalitesini değerlendirmek için Beck depresyon ve Beck anksiyete envanterleri ve SF-36 uygulandı. 40'ı tiroid ameliyatından sonra hipotiroidizm geliştirmişti, 40'ı hayatının bir noktasında Hashimoto tiroiditi teşhisi kondu ve şimdi L-tiroksin tedavisinden sonra ötiroid durumda ve 40'ı kontrol grubundaki sağlıklı insanlardı. Veriler SSPS'de analiz edildi.

Bulgular: Bireyler üzerindeki bu psikososyal etkilerin nedenleri, tiroid disfonksiyonu, kronik bir hastalığa sahip olma, sürekli ilaç kullanma düşüncesi, otoimmünitenin etkisi ve endojen hormon salgılanması gibi birçok yönden değerlendirildi. Tiroidektomi hastalarının anksiyete ve depresyonları hem Hashimoto tiroiditi hastalarına hem de kontrol grubuna göre daha yüksek, yaşam kaliteleri daha kötüydü ($p<0,05$). Ayrıca Hashimoto tiroiditi ve tiroidektomili hastalarda kontrol grubuna göre daha yüksek anksiyete ve depresyon ve daha kötü yaşam kalitesi saptandı ($p<0.05$).

Sonuç: Hashimoto tiroiditli hastaların otoimmünite etkisinden dolayı kontrol grubuna göre daha depresif ve kaygılı oldukları ve yaşam kalitelerinin daha düşük olduğu sonucuna varıldı. Öte yandan, tiroidektomi yapılan hastalar, Hashimoto tiroiditi hastalarına göre psikolojik olarak daha fazla etkilenmiş ve endojen hormon salgılanamaması ve/veya tiroid bezinin keşfedilmemiş fizyolojik etkisi nedeniyle yaşam kaliteleri daha düşük olmuştur. Tiroid bezinin maksimum korunmasının çok önemli olduğu sonucuna varıldı.

Anahtar Kelimeler: Hipotiroidizm, Tiroidektomi, Beck Anksiyete Envanteri, Beck Depresyon Envanteri, SF-36

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Introduction

The most common disease related to the thyroid gland is hypothyroidism, which causes a slowing of metabolism due to thyroid hormone deficiency or dysfunction at the tissue level [1]. The symptoms observed in these patients include dry skin, feeling cold in the body, pale skin color, physical fatigue, muscle pain and cramps, changes in voice, especially coarseness and slow speech, constipation, rhythm disturbances, bradycardia, swelling in the eyes and face, enlargement of the tongue, loss of appetite and despite this weight gain, decrease in sweating, hair loss, decrease in hearing, and menstrual irregularities. Moreover, there may be signs such as slowing down in thinking, lack of concentration, mental fatigue, irritability, sleep disorders, and forgetfulness. Similar symptoms are also observed in mood disorders such as depression and anxiety, the most common psychiatric disorders in society. This study aimed to examine the susceptibility to anxiety and depression and the change in the quality of life of patients with Hashimoto thyroiditis receiving L-thyroxine treatment and postoperative hypothyroidism patients receiving L-thyroxine treatment and reveal the thyroid gland's role in psychosocial life [1-4]. Beck Depression Inventory was developed by Beck et al. in 1961 to measure behavioral symptoms of depression in adolescents and adults. In 1978, the scale was fully revised, and patients were asked to mark their last week's status, including today. The Beck Anxiety Inventory determines the frequency of anxiety symptoms experienced by individuals on a Likert scale. Its validity and reliability studies in Turkey have been performed. This test consists of 21 items; the responder is requested to answer as none, mild, moderate, and severe regarding their feelings and thoughts in the last week. The SF-36 is one of the most commonly used tools. It was developed and launched by the Rand Corporation in 1992. Koçyiğit et al. carried out the reliability and validity of its Turkish version. This survey is used to measure an individual's health status. It is a self-assessment tool; its short form consisting of 36 questions and eight subscales is known as SF-36 [5-8].

Method

Sample Groups

The study's sample group is patients who applied to Sivas Cumhuriyet University Faculty of Medicine Endocrinology Polyclinic. They were 20-80 years old, and their thyroid function tests were in the normal range. 40 patients were diagnosed with Hashimoto Thyroiditis, and 40 received L-thyroxine therapy for postoperative hypothyroidism; 40 were healthy people used as the control group. Individuals with thyroidectomy secondary to malignancy were excluded. The test and control groups had similar sociodemographic characteristics. Beck depression and Beck anxiety inventories and SF-36 were administered to these 120 people.

40 individuals who received postoperative L-thyroxine therapy, except for individuals who had secondary thyroidectomy for malignancy.

Required permission was granted from the ethics committee of Sivas Cumhuriyet University Faculty of Medicine, with the decision number 2017-07/23, dated 26.07.2017.

Materials

1. Sociodemographic Data Form: It was prepared by the doctor who conducted the study to collect patients' information such as age, gender, educational status, and BMI, to evaluate their clinical characteristics better.

2. Beck Depression Inventory: The scale consists of 21 statements sorted from mild to severe. Each statement is scored between 0-3. A score of 0–9 is considered the minimal range; 10–18 is mild, 19–29 is moderate, and 30–63 is severe depression[5,7].

3. Beck Anxiety Inventory: Each item is scored between 0 and 3. Evaluation of the scale; 0–7, normal or no anxiety; 8–15, mild to moderate anxiety; 16–25, moderate to severe anxiety; and 26–63, severe anxiety [6,7].

4. Quality of Life and SF-36: The subscales are physical functioning (10 items), role physical (4 items), role emotional (3 items), bodily pain (2 items), vitality (4 items), social functioning (2 items), mental health (5 items) and general health perceptions (5 items) Evaluation of the scale; Each subscale is scored between 0-100, where "0" indicates the poorest and "100" the best quality of life [8].

5. Statistical Method: The data was loaded into the SSPS=22.0 program; parametric test assumptions were tested and found to be met (Kolmogorov-Smirnov). The following tests were used to find the group/groups with significant differences: One-way ANOVA to compare measurements obtained from two and more independent groups, the Mann-Whitney U test to reveal the source of the significant difference, and the chi-square test for the data obtained by counting. The error level was taken as 0.05.

Results

83.3% of the participants were female, and 11.7% were male. In the group with Hashimoto Thyroiditis, the female percentage was significantly higher than in the groups. This result aligns with the literature and supports that Hashimoto thyroiditis is more common in women. The gender distribution of the groups was similar ($p>0.05$)(Table 1).

Table 1. Demographic Features

			Gender		
			Woman	Man	Total
Groups	Control	S	35	5	40
		%	87.5%	12.5%	100.0%
	Hashimoto	S	37	3	40
		%	92.5%	7.5%	100.0%
	Thyroidectomy	S	34	6	40
		%	85.0%	15.0%	100.0%
Total		S	106	14	120
		%	88.3%	11.7%	100.0%

According to the table, there are significant differences between groups Physical functioning, physical role functioning, bodily pain, and general health perceptions. The pairwise comparison showed that the differences between thyroidectomy & control groups and Hashimoto Thyroiditis & thyroidectomy groups were significant. Meanwhile, the differences between the control & Hashimoto thyroiditis groups were insignificant (p>0.05). The differences among groups were insignificant for emotional role functioning, vitality, mental health, and social functioning (p>0.05). Regarding the pairwise comparison between Beck Depression and Beck Anxiety Inventories between groups, the difference between the control & thyroidectomy groups was significant. In contrast, the differences between the control & Hashimoto thyroiditis and Hashimoto thyroiditis & thyroidectomy group were insignificant (p>0.05). (Table 2)

Table 2. Pairwise comparison between Beck Depression and Beck Anxiety Inventories between groups

		n	Average	Standard deviation	middle	Minimum	Maximum	Conclusion
SF-36	Control	40	90.13	12.42	95.00	50	100	KW=23.58
Physical	Hashimoto	40	79.25	20.86	85.00	20	100	**p=0.001***
Functioning	Thyroidectomy	40	64.13	26.57	65.00	5	100	
SF-36	Control	40	75.00	31.00	87.50	0	100	KW=10.72
Physical Role	Hashimoto	40	65.00	39.95	87.50	0	100	**p=0.005***
Functioning	Thyroidectomy	40	44.38	42.92	25.00	0	100	
SF-36	Control	40	63.33	39.80	66.67	0	100	KW=1.00
Emotional Role	Hashimoto	40	60.84	41.26	66.67	0	100	p=0.605
Functioning	Thyroidectomy	40	54.17	41.81	33.33	0	100	
SF-36	Control	40	55.87	16.63	55.00	20.00	90.00	KW=4.93
Vitality	Hashimoto	40	48.37	19.68	50.00	5.00	80.00	p=0.085
	Thyroidectomy	40	45.87	23.39	45.00	.00	95.00	
SF-36	Control	40	63.10	16.95		24.00	92.00	F=1.37
Emotional health	Hashimoto	40	59.00	17.55		4.00	92.00	p=0.258
	Thyroidectomy	40	56.40	20.06		12.00	96.00	
SF-36	Control	40	55.56	23.59	50.00	12.50	100.00	KW=4.04
Social Functioning	Hashimoto	40	64.06	19.85	62.50	25.00	100.00	p=0.132
	Thyroidectomy	40	61.25	22.07	62.50	12.50	100.00	
SF-36	Control	40	70.62	20.26	57.60	30.00	100.00	KW=7.47
Bodily Pain	Hashimoto	40	58.81	20.10	57.50	22.50	90.00	**p=0.024***
	Thyroidectomy	40	58.25	24.47	57.50	.00	100.00	
SF-36	Control	40	60.13	15.99		25.00	90.00	F=4.99
General Health	Hashimoto	40	54.87	17.59		10.00	80.00	**p=0.008***
Perception	Thyroidectomy	40	47.14	21.49		5.00	95.00	
Beck Depression	Control	40	9.10	9.55	7.50	.00	45.00	KW=5.74
	Hashimoto	40	12.60	10.80	11.00	.00	43.00	p=0.047
	Thyroidectomy	40	16.00	14.25	12.50	.00	49.00	
Beck Anxiety	Control	40	9.35	9.10	6.50	.00	36.00	KW=9.46
	Hashimoto	39	14.07	10.02	10.00	1.00	36.00	**p=0.009***
	Thyroidectomy	40	16.97	13.20	13.50	1.00	44.00	

Regarding the significance test of the Beck Depression Inventory, the difference was insignificant (p>0.05). Although the difference is insignificant, moderate and severe depression is more common in individuals with thyroidectomy (Table 3). The analysis of the Beck Anxiety Inventory revealed a significant difference (p<0.05). The control group was not anxious; individuals with Hashimoto thyroiditis tend to have mild anxiety, and those with thyroidectomy tend to have severe anxiety (Table 4).

Table 3. Comparison of the Groups' Depression Levels According to the Beck Depression Inventory

BECK DEPRESSION INVENTORY			0-9 Normal	10-18 Mild depression	19-29 Moderate Depression	30-63 Severe depression
Groups	Control	S	23	13	2	2
		%	57.5%	32.5%	5.0%	5.0%
	Hashimoto	S	17	15	4	4
		%	42.5%	37.5%	10.0%	10.0%
	Thyroidectomy	S	14	11	7	8
		%	35.0%	27.5%	**17.5%**	**20.0%**
Total		S	54	39	13	14
		%	45.0%	32.5%	10.8%	11.7%

Table 4. Beck Anxiety Inventory

BECK ANXIETY INVENTORY			0-7 minimal anxiety	8-15 mild anxiety	16-25 moderate anxiety	26-63 severe anxiety	Total
Groups	Control	S	25	7	3	5	40
		%	**62.5%**	17.5%	7.5%	12.5%	100.0%
	Hashimoto	S	12	14	8	6	40
		%	30.0%	35.0%	20.0%	15.0%	100.0%
	Thyroidectomy	S	14	8	8	10	40
		%	35.0%	20.0%	20.0%	**25.0%**	100.0%
Total		S	51	29	19	21	120
		%	42.5%	24.2%	15.8%	17.5%	100.0%

Discussion

Thyroid dysfunction is a common endocrinological pathology and creates some psychological effects in people. Many studies reported that anxiety and depression are closely related to thyroid dysfunctions. The study by Hickie et al. found that treatment-resistant depression could be caused by hypothyroidism [9]. Ordas et al. examined primary thyroid functions of people with major depression without any diagnosed thyroid dysfunction, and thyroid function problem was found in 21% of them [10]. Sapini et al. examined the relationship between hypothyroid and hyperthyroid patients' psychiatric diseases. Depression, psychosis, and cognitive dysfunction were more common in hypothyroid patients, while psychosis, aggression, anxiety, and cognitive impairment were more prominent in hyperthyroid patients [11]. Kathol et al. found that psychiatric diseases are associated with thyroid dysfunction in individuals. The incidence of depression increased from 9% to 44%; anxiety disorder increased from 6% to 47% [12]. In another study, the percentage of people diagnosed with depression during their lifetime was 10-25%, but

this rate was 5-12% in men [13]. In addition, depression can be seen in 31-69% of patients with thyroid dysfunction; on the other hand, thyroid dysfunctions were observed in 5-10% of patients diagnosed with depression [12]. Another study examined the patients applied to the nuclear medicine unit and followed up after the diagnosis of thyroid dysfunction. The effect of their past lives and the efficacy of the treatment for endocrinological diseases in the emergence of problems related to their mental states were questioned. 41% of hypothyroid patients had depression, and 59% had anxiety symptoms [14]. Similarly, in this study, the depression rate was two times higher among patients with Hashimoto thyroiditis and four times higher in patients with thyroidectomy compared to the control group. On the other hand, although anxiety was variable, it was higher in people with Hashimoto thyroiditis and thyroidectomy than in the control group. This study supports the relationship between thyroid dysfunction and psychiatric diseases. Therefore, in the clinic, care is needed for thyroid dysfunction in patients resistant to antidepressant treatment and psychological effects in noncompliant patients receiving hypothyroidism treatment.

Regarding the effects of having a chronic illness, it can be said that factors such as constant drug use, frequent doctor check-ups, and frequent blood tests affect patients' psychology, regardless of the illness. In Katon's study, depression rates were higher in chronic patients, and it was shown that a pre-existing medical disease could cause this symptom to increase. [15]. Rogers et al. examined the relationship between some medical diseases and anxiety, and the peptic ulcer was more common in people with anxiety. In addition, regarding gender, they reported that angina in men and thyroid diseases in women were associated with anxiety [16]. Numerous studies reported that constant drug use increases psychiatric disorders, especially anxiety disorders [17, 18]. In this study, anxiety and depression rates were higher in patients with Hashimoto thyroiditis and thyroidectomy than in the control group due to the adverse psychologic effects of having a chronic disease.

Studies examining the effectiveness of thyroid replacement therapy on mood and quality of life in patients with hypothyroidism did not reach a consensus. Hypotheses have been proposed for the effect of triiodothyronine on central noradrenergic receptors [19]. It is thought that its replacement would make improvements in central systems. However, some studies argue that psychological symptoms improve with treatment, while others show that the psychological effect is permanent and improvement with treatment is impossible [20,21]. Some studies reported partial improvements. Making the patient's euthyroid as soon as possible is very important; many studies focused on the dose and application forms required for this underlining the importance of early diagnosis [22,23].

As it is known, the L-thyroxine needs of hypothyroid people with and without thyroid tissue are not the same. The need for L-thyroxine depends on age, gender, and body weight. An endogenous thyroid hormone secretion occurs in patients with Hashimoto thyroiditis; their daily L-thyroxine need is 75-100 ug/day (1,6 ug/kg/day), while the daily L-thyroxine need of people with thyroidectomy is 100-250 ug/day[2]. In this study, there was no statistical difference between groups regarding age, gender, and BMI ($p<0.05$). Obviously, the need for thyroid replacement is proportional to the remaining thyroid tissue. Besides this, the dose difference and the unexplained effects of the remaining thyroid tissue are also mentioned. Ito et al. reported that the T3 values of people who recently undergone total thyroidectomy were lower than their preoperative levels, showing the role of the thyroid gland in regulating the hormonal balance. In addition, this study indicated that people with thyroidectomy were deprived of maintaining hormone balance [24]. In another study, Ito et al. examined the relatively low T3 levels in patients with thyroidectomy under L-thyroxine treatment and showed the effect of endogenous secretion [25]. Gullo et al. tested the knowledge that the patients receiving L-thyroxine monotherapy treatment meet their needs at the tissue level by transforming the thyroid hormone in the peripheral tissues. Regarding whether all patients can achieve adequate transformation, more than 20% of the patients' TSH was in the normal range. However, their T4 and T3 were outside the reference ranges, showing that peripheral deiodination was insufficient.

For this reason, it was thought that further physiological treatment is needed in some hypothyroid patients [26]. This study has led to considering whether it is possible to close the physiological deficit with the treatment given. It revealed that the depression and anxiety of patients with Hashimoto thyroiditis are lower than those with thyroidectomy. The unknown physiological effect of the existing thyroid tissue-derived endogenous hormone secretion or the presence of thyroid tissue that has not yet been elucidated may have a positive effect on psychology. The lack of thyroid tissue may not be felt at all in the future with treatment options that can complete this physiological deficiency.

Up to now, many studies have assessed the quality of life. As hypothyroidism symptoms reminded the diseases that impair the quality of life, these studies addressed hypothyroidism, one of society's most common endocrinological diseases. It affects people's quality of life due to the disease's symptoms and mental health deterioration [27,29]. Published studies show that some individuals' quality of life does not improve even with treatment [27,29]. Winter et al. administered the SF-36 to the patients with

hypothyroidism before the L-thyroxine treatment, during the sixth week of the treatment, and during the sixth month. After the treatment, some improvement was reported in the patient's quality of life [27]. McMillan et al. administered the Thyroid Dependent Quality of Life Questionnaire and the Thyroid Treatment Satisfaction Questionnaire to patients with hypothyroidism. Nevertheless, patients' quality of life did not increase after the treatment [29]. Samuel et al. reported no improvement in the symptoms of patients who received thyroid replacement therapy [30]. In this study, SF-36 sub-scales showed that patients with thyroidectomy had a poorer quality of life than patients with Hashimoto thyroiditis. Both groups' quality of life is poorer compared to the control group. This result shows that the diagnosis and treatment of hypothyroidism should be started without affecting the quality of life and psychological state.

Limitations Of The Study

Our study has the same limitations. The first is that since we are in the pandemic period, the number of our patients is limited. Another limitation is many factors that affect mental health. More extensive studies are needed on this subject.

Conclusion

The anxiety and depression of the patients with Hashimoto thyroiditis and thyroidectomy were higher than those in the control group. It may be related to the generic patient's psychology, chronic disease psychology, and continuous drug use. Mental health may have been affected during the period of thyroid dysfunction, which may have caused permanent problems, even if they are now euthyroid. It was concluded that patients with Hashimoto thyroiditis were more depressed and anxious and had a poorer quality of life than the control group due to the autoimmunity effect. On the other hand, people with thyroidectomy are more affected than those with Hashimoto's thyroiditis. Their quality of life is poorer due to the lack of endogenous hormone secretion and/or the undiscovered physiological effect of the thyroid gland. It has been concluded that maximal protection of the thyroid gland is vital.

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