Quality of life, depressive symptoms and anxiety in hyperthyroid patients

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Abstract

Purpose: **The aim of the study was to evaluate quality of life and to assess frequency and severity of depressive and anxiety symptoms in hyperthyroid patients.**

Material and methods: **Forty-seven hyperthyroid patients (38 female, 9 male, mean age 51.4±13.0; 25-Graves disease, 22 – nodular goitre) and fifty-eight sex- and age-matched controls (40 female, 18 male, mean age 49.6±16.0) were studied. Quality of life was assessed by means of WHO QuoL Questionnaire. Psychometric evaluation included assessment of depressive symptoms (Hamilton Depression Rating Scale and Beck Depression Inventory) and anxiety level (State and Trait Anxiety Inventory – STAI).**

Results: **Patients presented significantly decreased perception of quality of life and health state, and scored worse in physical domain and global score of WHO QuoL. Nineteen patients showed depressive symptoms, remaining 28 were euthymic. Level of anxiety did not differ significantly between the patients group and controls. Free thyroxine plasma level correlated with psychological domain of QuoL. Depression severity correlated with anxiety (STAI 2). Anxiety as a state marker influenced psychological and environmental domains and global score of quality of life questionnaire.**

Conclusions: **The influence of hyperthyroidism on the quality of life was observed. Depressive symptoms are frequent in hyperthyroidism, occurring in 40% hyperthyroid patients. We found also the association between the anxiety level and the quality of life.**

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Introduction

Quality of life is of central concern in evaluative research; improved quality of life is probably the most desirable outcome of all health care policies. However, definitions of quality of life are as numerous and inconsistent as the methods of assessing it [1]. No consensus exists in the health care disciplines about what quality of life is or how it should be measured [2]. According to WHO quality of life is to be evaluated predominantly by the individual involved. World Health Organization defines Quality of Life as an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns. Quality of life depends on many factors, most important factors constitute the health state, social and economic situation and satisfaction with professional and personal life.

Hyperthyroidism results from overproduction of thyroid hormone by the thyroid gland. The most common causes are Graves' disease (accounting for 80 percent of cases) and toxic nodular goitre. Somatic symptoms of hyperthyroidism include increased pulse, arrhythmias, elevated blood pressure, fine tremor, heat intolerance, excessive sweating, increased appetite, weight loss, palpitations, tachycardia, frequent bowel movements, menstrual irregularities, muscle weakness, exophthalmos, lid lag, infrequent blinking, and hyperactive deep tendon reflexes [3]. Thyroid disorders may induce virtually any psychiatric symptom or syndrome, although regular associations of specific syndromes and thyroid conditions are not consistently found. Hyperthyroidism is commonly associated with fatigue, irritability, insomnia, anxiety, restlessness, and emotional lability; marked impairment in concentration and memory may also be evident [4].

Thyroid dysfunctions can cause mood changes, anxiety and influence quality of life of patients – even mild thyroid

Table 1. **Comparison of quality of life in hyperthyroid patients and healthy controls**

	Quality of life	Patients	Controls	
J1	perception of QuoL	3.68	4.12	*
J2	perception of health	2.63	3.79	*
D1	physical domain	13.29	16.52	*
D2	psychological domain	13.30	14.38	NS
D3	social domain	14.06	15.26	NS
D4	environmental domain	14.25	14.77	NS
Total score		55.83	61.07	*

* $p<0.03$

abnormalities may be associated with changes in mood and cognition [5]. Thyroid diseases (hypo- and hyperthyroidism) may induce almost any psychiatric symptom or syndrome. However, they do not cause symptoms typical of a specific diagnosis [6], and patients report various psychiatric symptoms [7]. In patients with hyperthyroidism anxiety and depression are the most commonly described [8]. Depression occurs in 23% of patients with Graves' disease, it appears in the prodromal phase in 14% of these patients [9].

The aim of our study was to evaluate the impact of the thyroid dysfunction on the quality of life of hyperthyroid patients and to assess frequency and severity of depressive symptoms occurring in this patients group.

Material and methods

Forty-seven hyperthyroid patients (9 male, 38 female, mean age 51.4±13.0). Twenty-five patients were diagnosed with Graves disease, twenty-two with nodular goitre) fifty-eight sex- and age-matched controls (18 male, 40 female, mean age 49.6±16.0) also were studied. Diagnosis was made according to ICD-10 [10] criteria on the basis of increased plasma concentration of free thyroxin (fT4) and decreased plasma concentration of thyroid stimulating hormone (TSH) and ultrasonography (USG) of thyroid gland, and in Graves disease – assessment of TSH-receptor antibodies.

Quality of life of patients and controls was assessed by the World Health Organization Quality of Life questionnaire [11]. WHOQOL-BREF is a valid and reliable tool in the assessment of quality of life [12]. It contains four domains: physical, psychological, social and environmental, and two importance questions: concerning individual general perception of quality of life and concerning individual general perception of own health.

Psychometric evaluation included the assessment of depressive symptoms (Hamilton Depression Rating Scale – HDRS [13], Beck Depression Inventory – BDI) [14] and anxiety level (State and Trait Anxiety Inventory – STAI).

Results

Patients presented significantly decreased perception of quality of life and health state, and scored worse in physical domain and global score of WHO QuoL (*Tab. 1*).

Table 2. **Comparison of anxiety levels in hyperthyroid patients and controls**

Anxiety	Patients	Controls
STAI – trait marker	47.62±14.96	39.93±11.64
STAI – state marker	46.75±9.35	43.35±17.05
Statistics	NS	NS

Table 3. **Correlations of indices of thyroid dysfunction, anxiety and depression and quality of life**

	STAI-2	D1	D2	D3	D4
HDRS	0.65	NS	NS	NS	NS
STAI state marker (STAI 1)		NS	-0.69		-0.67
freeT4		NS	0.58		

$P<0.05$

Mean depression level in BDI was 11.36±8.96, in HDRS – 5.67±5.92. Nineteen patients (40.4%) showed depressive symptoms. Only one hyperthyroid patient met criteria for major depressive episode, 28 patients were euthymic.

Patients showed higher level of anxiety as a trait marker, but the difference did not reach the statistical significance (*Tab. 2*).

In *Tab. 3* associations between free thyroxin, anxiety and depressive symptoms and quality of life are presented. FT4 plasma level correlated with the level of anxiety as a trait marker, a psychological domain of QuOL. Depression severity correlated with anxiety (STAI-2). Anxiety as a state marker influenced psychological and environmental domains and global score of quality of life (*Tab. 3*).

Discussion

Our study confirmed the results of previous reports on the association of endocrine disorders with mood changes and anxiety. Rockel et al. [15] in hyperthyroid patients observed a significant increase in anxiety, a sense of not feeling well, and emotional irritability as well as a tendency towards depressiveness, and an increased lack of vitality and activity comparing to healthy controls. In our study a trend towards increased anxiety level was observed. Similarly to Rockel in hyperthyroid patients we observed depressive symptoms which did not meet criteria for depressive syndroms. The rate of major depression in our study was much lower than that observed by Trzepacz et al. [16] and Kathol and Delahunt [17]. Kathol and Delahunt [17] stated that the number of patients with depression and anxiety in their group was felt to be artificially inflated by the concurrent presence of somatic thyroid symptoms. In the study by Engum et al. [18] hyperthyroidism was not risk factors for depression or anxiety, the authors found no statistical association between thyroid dysfunction, and the presence of depression or anxiety disorder. Trzepacz et al. [19] did not find any correlations between thyroid function indices and depression and anxiety in hyperthyroid patients.

Our results suggesting the association of fT4 concentration and anxiety level sould be confirmed in a larger patients

group. According to other authors hyperthyroid patients were more depressive, anxious, touchy and irritable; and showed a higher degree of emotional lability, excitement and irritability than euthyroid controls [20]. In the study by Sait Gonen et al. [21] patients with subclinical hyperthyroidism had significantly higher anxiety scores in Beck's Anxiety Inventory (BAI) than euthyroid group.

Our results are consistent with those of Sait Gonen et al. [21] that mood changes especially anxiety due to thyroid dysfunction may have an important impact on the patient's quality of life. The great majority of studies concerning quality of life in hyperthyroidism are focused on patients with Graves' ophthalmopathy. Different scales measuring quality of life are being used in these investigations. Patients reported limitations in daily activities such as hobbies, driving, watching television and reading, as well as impaired self confidence. Only about a quarter of patients indicated that education and counselling were adequate and helpful. In a study by Kahaly [22] general quality of life was assessed using the Medical Outcomes Study (MOS-36). Worse scores on the MOS-36 in hyperthyroid patients were found comparing to large reference group. Marked and significant differences from the control group were especially observed for the following items: vitality, social functioning, mental health, health perceptions, and body pain. Biondi et al. [23] reported notable impairment of quality of life in patients with subclinical hyperthyroidism. General health-related quality of life is markedly impaired in patients with Graves' ophthalmopathy, and even worse than in patients with other chronic conditions like diabetes, emphysema or heart failure [24].

In our study the influence of hyperthyroidism (not only Graves' ophthalmopathy) on the quality of life was investigated. Hyperthyroid patients in our study significantly worse perceived their quality of life and health state, hyperthyroidism worsened also the score in physical domain of quol and global score of quality of life.

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