Quality of Life and acceptance of illness in patients who underwent total thyroidectomy

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INTRODUCTION: *In 2015, 3,529 new thyroid cancer cases were reported, including 605 in men (0.7%) and 2,924 in women (3.6%) in Poland. The need of a holistic approach to patient care arouse interest in the issue of quality of life and acceptance of illness.*
The aim of the study was the evaluation of the quality of life and the acceptance of illness in patients undergoing total thyroidectomy.
MATERIAL AND METHODS: *100 subsequent patients (90 women and 10 men) of mean age 50.9 years were enrolled into the study. They were operated due to goiter in General Surgery Department of Regional Hospital in Leszno between October 2017 and February 2018. The questionnaires WHO-QoL-BREF and the acceptance of illness (AIS) were applied in the study.*
RESULTS: *The significant worsening of QoL in both physical (p=0.007) and psychological (p<0.001) domains after the thyroidectomy was revealed. Quality of life in all the domains both before and after the thyroidectomy was significantly worse in the elderly (p<0.05). The acceptance of illness before surgery was good (30 points) and after the surgery was moderate (28 points) (p<0.001). Both before and after the thyroidectomy the older the patients were, the worse their acceptance of illness was (p<0.001). Only before surgery the patients with higher education accepted better their illness than the patients with secondary education (p=0.009). After surgery the acceptance of illness did not depend on education level.*
CONCLUSIONS: *Quality of life and acceptance of illness of the patients were significantly better before than after the thyroidectomy. Quality of life and acceptance of illness were significantly worse both in the elderly and in less educated patients.*

KEY WORDS: Acceptance of illness Quality of Life, Thyroidectomy, Thyroid surgery

Introduction

The incidence of thyroid gland cancer is still increasing. In 2015, 3,529 new cancer cases were reported, including 605 in men (0.7%) and 2,924 in women (3.6%) [1]. There were 292 deaths due to thyroid cancer, 201 in women (0.4%) and 91 in men (0.2%), in Poland. The prognosis of thyroid cancer is quite good. There are several types of thyroid cancer: the most common papillary carcinoma (80%), the second most common follicular carcinoma (10%), medullary carcinoma (4%) and the most undifferentiated anaplastic carcinoma (2%) [2]. The increase in the incidence of thyroid cancers may be caused by the widespread use of imaging studies, such as ultrasounds, which are followed by the fine needle aspiration (FNA) biopsy [3,4]. Thyroid cancer treatments include surgery, radiation therapy, radioactive iodine therapy, chemotherapy, hormone therapy, and targeted therapy [5]. Total thyroidectomy with regional lymph node removal is now the standard therapy of thyroid cancer [6]. However,

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total thyroidectomy is also indicated in case of the diffuse multinodular goiter.

The quality of life and the acceptance of illness are particularly important in case of thyroid cancer. The perception of the quality of life is the subjective feeling, which depends on many different factors, i.e. mental state, personality traits, personal preferences or value system [7]. The current medicine focuses not only on the life extension, but also on the improvement of the quality of life. The acceptance of illness plays the crucial role in adaptation to a new traumatic life event. Due to serious disease the patients change their whole lifestyle. It is also a challenge for the patients' relatives who should give them the best possible support.

The aim of the study was the evaluation of the quality of life and the acceptance of illness in patients undergoing total thyroidectomy

Material and Methods

The questionnaire survey was performed in General Surgery Department of Regional Hospital in Leszno between October 2017 and February 2018. 100 subsequent patients, including 90 women and 10 men, who underwent total thyroidectomy due to the diffuse multinodular goiter according to national guidelines were enrolled into the study. The gradual introduction of thyroid hormones was commenced postoperatively, up to doses of 50 or 100 mcg daily. The pathology examination of formalin-fixed paraffin-embedded (FFPE) revealed benign non-neoplastic tissue in all the cases. The two questionnaires: World Health Organization Qualty of Life Bref (WHO-QoL-BREF) and the acceptance of illness (AIS) were filled in before and after the surgery. All the respondents were adult. The mean age of patients entering the study was 50.9 years (SD 13.5), the youngest was 23 and the oldest was 81. The majority of respondents had secondary education (45%), lived in urban area (53%), and were married (68%). The only exclusion criterion was the presence of mental disorders. The positive opinion of Bioethics Committee of Wroclaw Medical University was obtained (No KB-47/2018). The study was fully anonymous.

The acceptance of illness was measured with the AIS which was introduced by Felton, Revenson and Hinrichsen in 1984 and adapted to Polish conditions by Zygfryd Juczyński [8,9]. The scale consists of 8 statements which are related to the limitations imposed by the illness, lack of independence due the illness, the feeling of being dependent of others, and reduced self-esteem. Participants indicated on a 5-point scale whether they agree (1 point) or disagree (5 points) with these statements. The total score ranged from 8 to 40 points; the lower score, the worse acceptance of illness. Three groups were identified: low acceptance of illness (8-18 points); moderate acceptance of illness (19-29 points); and good acceptance of illness (30-40 points). Questionnaire WHO Quality of Life Bref (WHO-QoL-BREF) was introduced in 1991. It consists of 26 items, which measure the following four domains: physical health (7 items), psychological health (6 items), social relationships (3 items), and environment (8 items). The WHO-QoL-BREF includes two stand-alone questions to assess overall QoL and satisfaction with health. Items are rated on a 5-point Likert scale ranging from 1 (not at all) to 5 (completely). In each domain the raw score is multiplied by 4, so the final scores range between 4 and 20. Norms are available for different groups [10].

Statistical Methods

Nor the variations of quality of life or the acceptance of illness were normally distributed ($p<0.05$ in Shapiro-Wilk W test). Statistical analysis of QoL and acceptance of illness was performed by Wilcoxon test for dependent (repeated) measurements. The medians, quartiles and ranges of values of individual variables were displayed on the graph. The QoL was not normally distributed ($p<0.05$ in Shapiro-Wilk W test), so the Spearman's rank correlation was applied for the analysis of association between age and QoL and Kruskal-Wallis test – for the analysis of association between education and QoL. Pearson's correlation coefficient was used for the analysis of association between age and acceptance of illness. Analysis of variance (ANOVA) was used for the analysis of association between education and acceptance of illness. Significance level of $p<0.05$ was assumed.

Results

Quality of Life

The significant differences were revealed for overall QoL ($p<0.001$), for physical health ($p=0.007$) and for psychological health ($p<0.001$). In these domains the QoL after the surgery was worse than QoL before surgery. However, the satisfaction with health and other domains of QoL did not change before and after surgery (Table I).

Acceptance of illness

The median of acceptance of illness before the surgery was 30 points (first-third quartiles, 27-34), which meant good acceptance. The median of AIS after the surgery was 28 points (first-third quartiles, 25-32), which meant moderate acceptance. The difference in acceptance of illness was significant ($p<0.001$) (Table II).

Table I - *Quality of life before and after the thyroidectomy.*

WHO-QoL BREF	Measurement	N	Mean	SD	Me-dian	Min	Max	Q1	Q3	p
overall QoL	Before	100	3.87	0.68	4	2	5	4	4	<0.001
	After	100	3.62	0.58	4	2	5	3	4	
satisfaction with health	Before	100	3.21	0.78	3	1	5	3	4	0.054
	After	100	3.08	0.76	3	1	4	3	4	
Physical health	Before	100	14.11	2.37	14	7	19	13	15	0.007
	After	100	13.72	2.18	14	7	18	12.75	15	
Psychological health	Before	100	15.51	1.98	16	9	19	14	17	<0.001
	After	100	15.1	1.81	15	10	19	14	16	
Social relationship	Before	100	16.28	1.97	16	8	20	15.75	17	0.07
	After	100	16.08	1.93	16	8	20	15	17	
Environment	Before	100	15.06	1.78	15	10	19	14	16	0.915
	After	100	15.04	1.68	15	10	18	14	16	

Table II - *Acceptance of illness before and after the thyroidectomy.*

			AIS [points]					
Measurement	N	Mean	SD	Median	Min	Max	Q1	Q3	p
Before	100	29.81	5.49	30	15	40	27	34	<0.001
After	100	28.31	4.87	28	15	38	25	32	

Table III - *The impact of age on QoL before thyroidectomy.*

	Correlation with age			
WHO-QoL BREF	Correlation coefficient	P	Direction of correlation	Strength of correlation
overall QoL	-0.262	0.009	negative	very weak
satisfaction with health	-0.198	0.048	negative	very weak
Physical health	-0.485	<0.001	negative	weak
Psychological health	-0.375	<0.001	negative	weak
Social relationship	-0.301	0.002	negative	weak
Environment	-0.247	0.013	negative	very weak

Table IV - *The impact of age on QoL after thyroidectomy.*

	Correlation with age			
WHO-QoL BREF	Correlation coefficient	P	Direction of correlation	Strength of correlation
overall QoL	-0.164	0.104	–	–
satisfaction with health	-0.297	0.003	negative	very weak
Physical health	-0.452	<0.001	negative	weak
Psychological health	-0.336	0.001	negative	weak
Social relationship	-0.312	0.002	negative	weak
Environment	-0.293	0.003	negative	very weak

The analysis of the association between some variables and QoL:

Age - Before thyroidectomy

Before thyroidectomy quality of life in all the domains ($p<0.05$) was found to be significantly worse in the elderly (Table III).

Age - After thyroidectomy

After thyroidectomy quality of life in almost all the domains, except for "overall QoL", was found to be significantly worse in the elderly ($p<0.05$) (Table IV).

TABLE V - *The impact of education on QoL before thyroidectomy.*

WHO-QoL BREF	Education	N	Mean	SD	Median	Min	Max	Q1	Q3	p
overall QoL	Vocational	28	3.75	0.7	4	2	5	3.75	4	0.683
	Secondary	45	3.91	0.7	4	2	5	4	4	
	Higher	27	3.93	0.62	4	3	5	4	4	
satisfaction with health	Vocational	28	3.32	0.61	3	2	4	3	4	0.062
	Secondary	45	3.02	0.87	3	1	5	2	4	
	Higher	27	3.41	0.75	4	2	4	3	4	
Physical health	Vocational	28	13.36	1.57	14	10	16	12.75	14	0.001
	Secondary	45	13.78	2.82	14	7	19	12	15	H>SV
	Higher	27	15.44	1.67	15	13	19	14.5	16,5	
Psychological health	Vocational	28	14.89	1.57	15	12	18	14	16	0.066
	Secondary	45	15.62	2.27	16	9	19	14	17	
	Higher	27	15.96	1.72	16	13	19	15	17	
Social relationship	Vocational	28	16.14	1.74	16	12	19	15	17	0.149
	Secondary	45	15.96	2.24	16	8	20	15	17	
	Higher	27	16.96	1.58	16	15	20	16	17	
Environment	Vocational	28	14.29	1.63	14	10	16	13.75	16	0.029
	Secondary	45	15.24	1.97	16	10	19	14	16	HS>V
	Higher	27	15.56	1.34	16	14	18	14	16	

TABLE VI - *The impact of education on QoL after thyroidectomy.*

WHO-QoL-BREF	Education	N	Mean	SD	Median	Min	Max	Q1	Q3	p *
overall QoL	Vocational	28	3.61	0.5	4	3	4	3	4	0.659
	Secondary	45	3.58	0.58	4	2	5	3	4	
	Higher	27	3.7	0.67	4	2	5	3	4	
satisfaction with health	Vocational	28	3	0.54	3	2	4	3	3	0.049
	Secondary	45	2.96	0.8	3	1	4	2	4	H>S
	Higher	27	3.37	0.84	4	2	4	3	4	
Physical health	Vocational	28	13.11	1.37	13	11	15	12	14	0.006
	Secondary	45	13.47	2.62	13	7	18	11	15	H>SV
	Higher	27	14.78	1.72	15	11	18	14	15	
Psychological health	Vocational	28	14.32	1.12	14.5	12	17	14	15	0.007
	Secondary	45	15.29	2.01	15	10	19	14	17	HS>V
	Higher	27	15.59	1.85	16	11	19	14	17	
Social relationship	Vocational	28	15.93	1.36	16	13	19	15	17	0.067
	Secondary	45	15.76	2.29	16	8	20	15	17	
	Higher	27	16.78	1.63	16	13	20	16	17	
Environment	Vocational	28	14.46	1.43	14	12	16	14	16	0.034
	Secondary	45	15.13	1.79	15	10	18	14	16	H>V
	Higher	27	15.48	1.6	16	10	18	15	16	

EDUCATION - BEFORE THYROIDECTOMY (ONLY TWO DOMAINS)

QoL in domain "physical health" of patients with higher education was significantly better than QoL of patients with secondary or vocational education (p=0.001). QoL in domain "environment" of patients with higher or secondary education was significantly better than QoL of patients with vocational education (p=0.029) (Table V).

EDUCATION - AFTER THYROIDECTOMY (FOUR DOMAINS)

QoL in domain "satisfaction with health" of patients with higher education was significantly better than qol of patients with secondary education (p=0.049). Qol in domain "physical health" of patients with higher education was significantly better than qol of patients with secondary or vocational education (p=0.006). Qol in domain "psychological health" of patients with higher or secondary education was significantly better than qol of patients with vocational education (p=0.007). Qol in domain "environment" of patients with higher education was significantly better than qol of patients with vocational education (p=0.034) (Table VI).

Table VII - *The age and the acceptance of illness before thyroidectomy.*

Variable	Correlation coefficient	p	Direction of correlation	Strength of correlation
Age and the acceptance of illness before thyroidectomy	-0.433	<0.001	negative	weak

Table VIII - *The age and the acceptance of illness after thyroidectomy.*

Variable	Correlation coefficient	p	Direction of correlation	Strength of correlation
Age and the acceptance of illness after thyroidectomy	-0.373	<0.001	negative	weak

Table IX- *The education level and the acceptance of illness before thyroidectomy.*

				AIS before surgery [points]					
Education	N	Mean	SD	Median	Min	Max	Q1	Q3	p
Vocational	28	29.39	5.15	29.5	20	39	26	32.75	0.009
Secondary	45	28.47	5.59	29	15	39	24	32	H>S
Higher	27	32.48	4.84	32	20	40	29,5	36.5	

Table X - *The education level and the acceptance of illness after thyroidectomy.*

				AIS before surgery [points]					
Education	N	Mean	SD	Median	Min	Max	Q1	Q3	p
Vocational	28	27.93	3.97	28	21	36	25.25	30.25	0.102
Secondary	45	27.53	5.15	27	15	37	25	31	
Higher	27	30	5.01	31	19	38	26.5	34	

The analysis of the association between some variables and acceptance of illness

Age Before Thyroidectomy

Acceptance of illness before surgery significantly depend on age ($p<0.001$). The correlation coefficient is negative, which means that the older the person is, the worse he/she accepts the illness (Table VII).

Age – After Thyroidectomy

Acceptance of illness after surgery significantly depend on age as well ($p<0.001$). The correlation coefficient is negative, which means that the older the person is, the worse he/she accepts the illness (Table VIII).

Education – Before Thyroidectomy

Acceptance of illness before surgery significantly depend on education level ($p=0.009$). Patients with higher education accepted better their illness before surgery than patients with secondary education (Table IX).

Education – After Thyroidectomy

Acceptance of illness after surgery significantly does not depend on education level ($p>0.05$).

Discussion

This is one of the first such studies in the literature evaluating quality of life and acceptance of illness post thyroidectomy. In our opinion this problem is very important, but often ignored by medical professionals. Such a research usually concentrates only on the frequency of postoperative complications. In the literature there are no studies performed on the patients with thyroid pathology by means of the questionnaire WHO QoL-BREF. It was proved that the emotional status is an important prognostic factor for the further course of illness. Kozinski et al confirmed that the hormonal disturbances significantly decrease the quality of life, and

the psychological and financial problems regard the majority of patients [11]. The patients who are not supported by the relatives might present the negative attitude towards the disease despite the lack of the symptoms of progression. Cashman et al evaluated health related quality of life post thyroidectomy for hyperthyroidism and concluded that QoL was significantly improved in physical, mental and social dimensions in the majority of patients [12]. In our study QoL after thyroidectomy was proved to be worse, especially in physical and psychological domains. It was probably due to the measurement was done too shortly after the surgery. The similar observation was reported in the study of Gou et al, who demonstrated the worse QoL measured by means of SF-36 questionnaire in comparison with the control general population with its lowest level at the first 6 months [13]. In the present study the respondents before the thyroid surgery defined their quality of life as good, and their general health as average (moderate). As regards the questionnaire WHO-QoL-BREF the most difficulties were reported in physical and psychological domains.

Mazurek et al analysed the recent publications on the acceptance of illness in patients with chronic diseases in years 1990-2013. They concluded that illness acceptance was the predictor (the prognostic factor) of quality of life and the important element in the holistic medical and nonmedical care [14]. In our study the acceptance of illness before surgery was at good level (30 points), but after the surgery it worsened and was at moderate level (28 points). Similarly, Nowicki et al examined 87 patients operated on lung cancer in 2016, and found that the mean acceptance of illness score was 26.2 points before surgery, and 20.9 points after surgery [15]. In another publication Nowicki et al analysed 100 women who underwent surgery for breast cancer and found that the mean score of illness acceptance was at moderate level (25.5 points) [16]. Also Kurowska et al assessed 99 women after mastectomy and revealed the moderate acceptance of illness (29.4 points) [17]. Similarly, Bak-Sosnowska in 32 women who underwent mastectomy demonstrated the illness acceptance of moderate level (24.5 points) [18].

The present study focuses on the impact of the age on the quality of life. Rzatkowska et al confirmed that gender, age, education level and marital status influenced the quality of life of the 60 studied patients with hypothyreoidism [19]. Similarly in our study, the age was significantly associated with the quality of life. The quality of life in almost all the domains was found to be significantly worse in the elderly.

We found that both before and after the thyroidectomy the older the patients were, the worse their acceptance of illness was ($p<0.001$). However, in one study Nowicki et al revealed that both after and before lung surgery the patients had acceptance of illness scores regardless of their gender, age, education, place of residence or occupational activity [15] In another publication Nowicki et al revealed that acceptance of illness after breast surgery did not depend on age, but it was better in women with university education [16]. In the present study it was revealed that only before surgery the patients with higher education accepted the illness better than the patients with secondary education ($p=0.009$). As regards education our observation was not in line with the study of Nowicki et al on lung cancer, but it was in accordance with their another study of Nowicki et al on breast cancer [15,16]. Some authors did not observe relation between educational level and level of acceptance of illness [17,18].

We acknowledge that our present study has some limitations. The study group was rather small, and the study was a single-center analysis that may not entirely reflect the Polish population. Future studies should focus, preferably in a randomized prospective fashion, on quality of life after thyroid surgery to allow for adequate evaluation.

Conclusions

Quality of life and acceptance of illness of the patients were significantly better before than after the thyroidectomy. Quality of life and acceptance of illness were significantly worse both in the elderly and in less educated patients.

Riassunto

Nel 2015 in Polonia sono stati segnalati 3.529 nuovi casi di cancro alla tiroide, di cui 605 negli uomini (0,7%) e 2.924 nelle donne (3,6%). La necessità di un approccio olistico alla cura del paziente suscita interesse nel problema della qualità della vita e dell'accettazione della malattia.

Lo scopo dello studio era la valutazione della qualità della vita e l'accettazione della malattia nei pazienti sottoposti a tiroidectomia totale, e pertanto sono stati arruolati nello studio 100 pazienti consecutivi - 90 donne e 10 uomini – di età media 50,9 anni, operati per gozzo nel Dipartimento di Chirurgia Generale dell'Ospedale Regionale di Leszno tra ottobre 2017 e febbraio 2018. Nello studio sono stati applicati i questionari WHO-QoL-BREF e l'accettazione della malattia (AIS).

Come risultato si è evidenziato il significativo peggioramento della QoL dopo la tiroidectomia in entrambi gli aspetti, fisico ($p = 0,007$) e psicologico ($p <0,001$). La qualità della vita in tutti i settori sia prima che dopo la tiroidectomia è risultata significativamente peggiore negli anziani ($p <0,05$). L'accettazione della malattia che prima dell'intervento era buona (30 punti), dopo l'intervento è diventata moderata (28 punti) ($p <0,001$). Sia prima che dopo la tiroidectomia a maggiore anzianità dei pazienti corrisponde una peggiore accettazione della malattia ($p <0,001$). Solo prima dell'intervento i pazi-

enti con istruzione superiore accettavano meglio la loro malattia rispetto ai pazienti con istruzione secondaria (p = 0,009). Dopo l'intervento chirurgico l'accettazione della malattia non è risultata dipendente dal livello di istruzione.
In conclusione la qualità della vita e l'accettazione della malattia in tutti i pazienti erano significativamente migliori prima della tiroidectomia rispetto al periodo successivo all'intervento. Qualità della vita e accettazione della malattia sono risultate significativamente peggiori sia negli anziani che nei pazienti meno istruiti.

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