Quality of life after surgical treatment of thyroid gland diseases

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Abstract

Purpose: The aim of the work is to rate different factors specifying quality of life after surgical treatment of thyroid gland diseases.

Material and methods: Research was carried out on 93 people with recognition of nodular goitre treated surgically during the period 2000-2003 in 2nd Department of General and Oncological Surgery in Wrocław. 83 women and 10 men aged approximately 48 took part in the research. The research was carried out with a help of analysis of medical documentation as well as QL questionnaire including 25 features (clinical, emotional, social).

The results of the QL research were prepared on the basis of "SyntMed" Computer Medical Diagnostics programme (Krefft method). Every patient was given a certain QL quantity in the 0-1 range together with the importance of diagnostic features, indicating the strength of influence of the feature on QL quantity.

Results: The strongest influence on QL index had the following diagnostic features: subjective opinion of the quality of life (0.674), sensation of fear in connection with the health condition (0.631), physical efficiency (0.565). Among clinical features the strongest influence had a feeling of palpitation (0.405).

It was certified that together with the extension of the post-operation period medium value of QL index increases.

The most frequent clinical problems mentioned by the tested patients were: sleeping disorder (66.6%), nervousness (37.6%), sweating (36.5%), palpitation (24.7%).

36.6% of the tested patients are afraid of a setback and 77.4 % of them are worried about their health condition. The treatment did not have an influence on planning the future, sexuality and social life. 59.1 % of the tested patients defined their present health condition as satisfactory.

Key words: quality of life, thyroid gland, surgical treatment.

Introduction

Thyroid gland diseases apart from local symptoms are characterised by the possibility of occurring many general symptoms concerning state of nervous and psychical excitability, emotional instability, heart action disorder, weakening of skeletal muscles and skin changes.

In most cases the symptoms are nagging, leading to discomfort in personal, professional and social life of a patient. Because the majority of the patients are people in the 30-50 age range which is a group of significant life activity expected it seems essential to introduce research on the quality of life of those patients.

Material and methods

The research was carried out on 93 people with recognition of nodular goitre treated surgically during the period 2000-2002 in 2nd Department of General and Oncological Surgery in Wrocław.

83 women and 10 men in the 23 to 78 age bracket took part in the research. Average age was 48. Approximate period of time from symptoms of the disease to surgical treatment was 3 years.

It was notified that in the majority of the patients postoperative course had not been complicated, 5 people had experienced

longer period of wound healing, 2 people – change of timbre. All patients were operated in euthyreosis.

50 of the tested patients (54%) were within two years after the operation, 43 people (46%) – over two years.

For the purpose of the research the following were used:
– analysis of medical documentation describing clinical condition of the patient
– QL questionnaire of the quality of life consisting of two general groups of questions.

The first were general questions connected to a description of the tested patients: age, sex, place of living, source of income. The second group of questions was connected directly with estimating the quality of life.

The questionnaire was filled in by the patients in person.

The following parameters were distinguished and divided into groups, which describe the quality of life subjectively by the patient himself.
– Clinical symptoms (sleeping disorder, palpitation, sweating, nervousness) – feature x6÷x13.
– Emotional state (reaction on the disease and treatment) – feature x14÷x18.
– Physical efficiency (level of competence and efficiency defined by the mode of life lead) – feature x19÷x21.
– Sex life – feature x22.
– Subjective opinion of general feeling and global quality of life (need of planning the future, sensation of happiness) – feature x23÷x28.
– Social background (social contacts, family life) – feature x29÷x30.

The results of the research with a help of QL questionnaire of the quality of life were prepared on the basis of the Krefft mathematical method (SYNTMED computer programme).

Krefft mathematical method

Using Krefft method for analysing quality of life gives a great opportunity of transferring descriptive features into mathematical language: subjective opinion of suffering, physical efficiency, feeling of fear, self-esteem, psychical state of happiness.

It gives an opportunity of creating QL index of the quality of life as a single parameter describing a patient, which is based on information gathered from the research of diagnostic features. Thank to the method we get constant 0-1 quantities of the diagnostic function describing the importance of diagnostic features. In other words they are numbers expressing dynamics of the influence of certain features on Z function.

The method is a mathematical algorithm leading to the formula of synthesis function describing tested thing with a help of the function quantities on the basis of empiric base by using a computer technique.

The synthesis function defined for the features by Krefft method algorithm generally can be written down as follows:

$$Z = \varphi(X_1, X_2, \ldots\ldots X_k)$$

where $X_1, X_2, \ldots\ldots X_k$ – certain diagnostic features
k – number of diagnostic features
Z – index of the quality of life
φ – variable function symbol X
Z – QL variable is a function of many variables (diagnostic

features) and the quantity of the function vary within 0-1 range what helps in placing patients in order of the Z quantity, in other words – the quality of life. The higher quantity of the QL variable the better is the quality of the patient's life.

The results of the diagnostic features research and information of so called "directions of the influence" of the given features were basic information for the purpose of using Synt-Med computer programme. 25 diagnostic features describing subjective opinion of the quality of life patients after surgical treatment of thyroid gland diseases were introduced, numbered X6 to X30. The final result was a variable called QL index of the quality of life.

Every feature is ordered from the best to the worse situation of the quality of the patient's life. Data gives information about "directions of the influence" of the given diagnostic features in relation to the discussed quality of life. Information expresses "minus" direction (–) if a given feature is increasing together with the decrease of the quality of life and "plus" direction (+) if a given feature is increasing together with the increase of the quality of life. All the tested diagnostic features had minus direction of the influence.

χ^2 (chi square) test was used for the purpose of defining the importance of differences in frequency of qualitative features. It was used for parallel tests with Yotes' correction for four-fold tables.

Results

Medium quantity of QL index for the tested group using Krefft method was x0.51±14.

Having analysed medium value of QL index it was notified that it decreased with the age of the tested patients. And therefore the highest medium value of QL was found in the up-to-30 age group (x0.56±15), in the 31-40 age bracket (x0.54±12), QL index (x0.51±16) in the 51-60 age range. The lowest QL value was found in the over-61 age group (x0.46±12).

Value of QL index was analysed on 10 men and 83 women. The higher medium value of the index was found among women (x0.51±19), it was (x0.46±21) for men.

It was notified that the medium value of QL is higher among inhabitants of the town (x=0.52), compared to the inhabitants of the village (x0.43±21). As far as the education of the tested patients was concerned, the results were the following: 15 people had higher education, 42 people secondary education and 36 – primary. Having analysed statistically important value of QL it was notified that it increased with the level of education.

Medium value of QL among people with primary education was 0.36±17, with secondary education – 0.56±16, and with higher education – x=0.72±12.

The tested patients with post-operative period longer than 2 years (43 people) had higher medium QL index (0.54±22) compared to those with a shorter post-operative period (50 people) QL=x=0.47±18.

Analysis of the importance of diagnostic features calculated by Krefft method.

The influence of the diagnostic features on the quantity of

Table 1. **The Importance of Diagnostic Features**

No.	Quantity of feature	No. of feature	Description of Diagnostic Feature	Level of importance
1.	0.674	X27	Subjective opinion of the quality of life	P<0.05
2.	0.631	X18	Sensation of fear in connection with health condition	P<0.05
3.	0.565	X19	Physical efficiency	P<0.05
4.	0.534	X26	Subjective opinion of health	P<0.05
5.	0.521	X20	Mode of life (activity)	P<0.05
6.	0.501	X14	Fear of setback	P<0.05
7.	0.500	X15	Subjective sensation of fear level	P<0.05
8.	0.499	X24	Sensation of happiness	P<0.05
9.	0.494	X21	Way of spending free time	P<0.05
10.	0.461	X23	Aims for future	P<0.05
11.	0.424	X22	Sexual life	P<0.05
12.	0.405	X12	Feeling of palpitation	P<0.05
13.	0.388	X17	Influence of surgical treatment on quality of life	P<0.05
14.	0.384	X6	Cough	P<0.05
15.	0.353	X29	Social life	P<0.05
16.	0.352	X28	Satisfaction from undergoing operation	P<0.05
17.	0.347	X13	Sleeping disorder	P<0.05
18.	0.318	X11	Nervousness	P<0.05
19.	0.308	X9	Hoarseness	P<0.05
20.	0.280	X16	Postoperative scar as aesthetic defect	P<0.05
21.	0.269	X8	Easy tiredness	P<0.05
22.	0.262	X7	Enlargement of neck circumference	P<0.05
23.	0.226	X10	Sweating	P<0.05
24.	0.184	X30	Expectation of family support	Nstat
25.	0.116	X25	Influence of surgical treatment on planning future	Nstat

Table 2. **The Importance of Diagnostic Features – clinical features**

No.	Quantity of feature	No. of feature	Description of Diagnostic Feature	Level of importance
1.	0.727	X13	Sleeping disorder	P<0.05
2.	0.571	X11	Nervousness	P<0.05
3.	0.470	X12	Palpitation	P<0.05
4.	0.445	X10	Sweating	P<0.05
5.	0.415	X9	Hoarseness	P<0.05
6.	0.414	X6	Cough	P<0.05
7.	0.401	X7	Enlargement of neck circumference	P<0.05
8.	0.299	X8	Easy tiredness	P<0.05

QL index was estimated with a help of QL questionnaire and Krefft mathematic method. From 25 tested diagnostic features 23 were considered as statistically important on the QL quantity (*Tab. 1*).

Feature x27 describing subjective opinion of the quality of life was the most important in diagnostics. Feature x18 was the second – "sensation of fear in connection with health condition" (x18= 0.631).

The third and the fourth were the following features: x19 – "physical efficiency" with the quantity 0.565 and feature x26 – "subjective opinion of health" with the quantity 0.534.

It is worth mentioning that the first 10 are features which do not describe clinical condition of the tested patients.

The most important clinical feature in the chart was (x12=0.405) "feeling of palpitation", placed as 12th. It is essential to emphasize the quantity of diagnostic features describing clinical condition: feature "cough", "sleeping disorder" and "nervousness" placed as 14th, 17th and 18th with the quantity X6=0.384, X13=0.347, X11=0.318.

Two of the tested features had irrelevant statistically influence on the QL index of quality of life. One of them – "expectation of family support" X30=184 and "influence of surgical treatment on planning future" X25=0.116.

The most frequent clinical symptoms among tested ones are: nervousness – given by 37.6% of the tested patients, sweating – 36.5%, feeling of palpitation – 24.7%, easy tiredness – 26.9%, cough – 20.5%. Regular sleeping disorder is notified by 11.8% of the tested patients and periodic one by 54.8%.

A significant group of the tested patients – 34 people (36.6%) are worried of a setback. 19.3% of the tested patients define their fear as strong, 31.1% as moderate.

A separate analysis of the importance of diagnostic features describing clinical condition was also made – feature x6÷x13 (*Tab. 2*).

The most important feature among the tested diagnostic features describing clinical condition was number 13, sleeping disorder $X13=0.727$. Nervousness and feeling of palpitation were 2 and 3 with the quantity $X11=0.571$, $X12=0.470$.

The most irrelevant diagnostic feature among the clinical ones was $X8$ "easy tiredness" with the quantity $X8=0.299$.

Discussion

Wide understanding of the expression „quality of life" including various areas of human life is used in medicine for rating biological, psychical and social factors together with their relations. Decreasing of physical efficiency, disorders in emotional sphere and social life are thought to be very important consequences of surgical treatment and therefore many researchers are trying to define the influence of the disease and ways of treatment on the patients' quality of life.

There are many definitions of quality of life in the medical literature. Very often the expression is used as replaceable for defining health condition, feeling of health, life satisfaction, psychical state of happiness [2]. There are two, though, main definitions common for many researchers regarding the way of understanding the expression "quality of life":
1. Quality of life is a subjective conception;
2. Quality of life is a multidimensional conception [3,1].

The starting point to the research of quality of life patients after surgical treatment of thyroid gland diseases is defining QL quality of life and components used for defining quality of life of those patients.

The following definition of quality of life were used: "Quality of life is an opinion about life position of a patient and it is a global concept of physical, psychical and social aspects of well-being and negative effects of a disease and feeling unwell" [5].

According to advice of many experts, an index of importance was introduced to describe the results. In other words, index describing the importance of a given element of the research in a hierarchy [7]. The group of the tested patients is a small part of a vast number of patients with thyroid gland diseases treated surgically (in Poland approx. 10 000 annually).

No records have been found of a research on the quality of life of those patients. Despite significant progress in preventive therapy of thyroid gland diseases surgical treatment is still commonly recognised and used way of treatment [6,7], so the number of people surgically treated is going to be considerable.

It seems to be essential to carry on research on quality of life of those patients. According to the results the following diagnostic features had the strongest influence on QL index: subjective opinion of the quality of life, sensation of fear in connection with health condition, physical efficiency, feeling of palpitation.

The most frequent clinical problems mentioned by the tested patients were: sleeping disorder (66.6%), nervousness (37.6%), sweating (36.5%), feeling of palpitation (24.7%). A significant number of the tested patients (36.6%) is afraid of a setback. Majority of the tested patients (66.6%) seems to experience neither deterioration nor improvement of the quality of life in subjective opinion of the quality of life.

Very interesting is subjective opinion about the sensation of fear in connection with health condition. Majority of the tested patients (77.4%) declares a sensation of fear with various intensification. It leads to a conclusion that patients after surgical treatment of thyroid gland will require long medical as well as psychological care.

Conclusions

1. The most important diagnostic features in rating quality of life had: "subjective opinion of the quality of life", "sensation of fear in connection with health condition", "opinion about physical efficiency".

2. The most important diagnostic feature among clinical features had: "feeling of palpitation".

3. Together with the extension of the post-operation period medium value of QL index increased.

4. The most frequent clinical problems of the tested patients are: sleeping disorder, nervousness, sweating.

5. A large number of the tested patients is worried of a setback.

6. There is a need of farther and more complex research on quality of life after surgical treatment of thyroid gland diseases.

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