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Evaluation of factors affecting quality of life in acromegaly

Ocena czynników wpływających na jakość życia w akromegalii

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Słowa kluczowe

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Summary

Introduction. Acromegaly is a chronic, rare disease caused by excessive secretion of growth hormone, usually by a pituitary tumor. This disease causes multisystem complications, which lead to shortened life expectancy of patients and also affect their Quality of Life.

Aim. Aim of the study was to evaluate factors influencing Quality of Life in acromegaly.

Material and methods. The material consisted of 52 patients (29 women and 23 men) with acromegaly aging from 25 to 91 (average 50.6 years old). Quality of life was evaluated with the use of AcroQoL survey which contains three symptom scales: "Physical", "Appearance" and "Social relations". Statistical analysis was performed using SPSS software.

Results. Average proclaimed duration of disease was 12.3 years, 43 patients had surgery, 6 underwent radiotherapy. Among declared complications, osteoarticular changes occurred in 32 (62%) patients, snoring 32 (62%), hypertension 24 (46%), diabetes 16 (31%), 8 (15%) suffered from cancer. Majority of people reported more than one disease complication. Most of respondents felt sick (63%). Frequency of physical ailments: tiredness (48%), weakness (40%), arthralgia (37%), 3/4 subjects were critical about their appearance.

Conclusions. In the studied group: 1) factors with the greatest impact on the Quality of Life were: osteoarticular complications (pain), respiratory dysfunctions (snoring) and changed appearance; 2) no disease influence on social relations was found; 3) Quality of Life was not correlated with age of patients and duration of the disease; 4) pensioners reported significantly the largest number of Quality of Life restrictions in terms of physical symptoms, while working people had significantly better Quality of Life.

Streszczenie

Wstęp. Akromegalia jest to przewlekła, rzadka choroba spowodowana nadmiernym wydzielaniem hormonu wzrostu, najczęściej przez guz przysadki. Choroba prowadzi do powikłań wielonarządowych, czego wynikiem jest skrócenie średniej długości życia chorych oraz pogorszenie jego jakości.

Cel pracy. Celem pracy była ocena czynników wpływających na jakość życia w akromegalii.

Materiał i metody. Materiał stanowiło 52 chorych (29 kobiet i 23 mężczyzn) z akromegalią w wieku 25-91 lat (średnia 50,6 roku). Jakość życia oceniano przy użyciu formularza AcroQoL zawierającego trzy obszary objawów: „Objawy fizyczne”, „Wygląd zewnętrzny” oraz „Relacje społeczne”. Analizę statystyczną przeprowadzono przy użyciu programu SPSS.

Wyniki. Średni czas trwania akromegalii szacowany przez pacjentów wynosił 12,3 roku, 43 chorych leczono operacyjnie, a 6 poddano radioterapii. Wśród deklarowanych powikłań choroby zmiany zwyrodnieniowe układu kostno-stawowego występowały u 32 (62%) osób, chrapanie u 32 (62%), nadciśnienie tętnicze u 24 (46%), cukrzyca u 16 (31%), a chorobę nowotworową przeżyło 8 (15%) badanych. Większość osób zgłosiła obecność więcej niż jednego z ocenianych powikłań akromegalii. Większość ankietowanych (63%) czuło się osobą chorą, z dolegliwości fizycznych najczęściej zgłaszali: zmęczenie (48%), uczucie osłabienia (40%), bóle stawów (37%), w 3/4 pacjenci byli krytyczni w stosunku do swojego wyglądu zewnętrznego.

Conflict of interest

Konflikt interesów

None

Brak konfliktu interesów

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Wnioski. W badanej grupie chorych z akromegalią: 1) czynnikami o największym wpływie na jakość życia były dolegliwości ze strony układu kostno-stawowego (ból), oddechowego (chrapanie podczas snu) oraz zmieniony wygląd zewnętrzny; 2) nie stwierdzono wpływu choroby na relacje społeczne; 3) nie wykazano wpływu wieku pacjentów oraz długości trwania choroby na jakość życia; 4) renciści zgłaszali istotnie największe ograniczenia jakości życia z zakresu objawów fizycznych, natomiast u osób czynnych zawodowo wykazano istotnie lepszą jakość życia.

INTRODUCTION

Acromegaly is a chronic disease resulting from hypersecretion of growth hormone (GH). The most common cause of GH autonomic secretion is pituitary adenoma, found even in 99% patients. Other cases are related to the secretion of growth hormone-releasing hormone (GHRH) by neuroendocrine tumors (1). Acromegaly is classified as a rare disease with a prevalence of 40-70 cases per million (2). However, this number seems to be underestimated. In some foreign studies, nearly 130 cases per million are being reported (3).

Excessive secretion of GH leads to increased synthesis of insulin-like growth factor 1 (IGF-1). IGF-1 stimulates growth of soft tissues and bones, which leads to numerous complications from almost all body systems. Changes in external appearance like enlargement of face, hands and feet are also being observed in patients with acromegaly. Most of them suffer from cardiovascular, respiratory, and rheumatologic dysfunctions. All these complications lead to shortened life expectancy of patients and affect their Quality of Life (QoL) (1). Impaired QoL is mostly associated with headache and osteoarticular pain, lack of mobility affecting daily functioning, decreased libido, low self-esteem or lowered mood associated with the presence of chronic disease. Difficulties in diagnosing process can also affect patient's QoL (4). The average delay of identifying this disease is 6-10 years (3). Acromegaly not only affect patient's life, but also has an impact on family members (5). What is more, this disease is also associated with sleeping problems (6, 7), anxiety (8, 9), and even depression (10).

AIM

Aim of the study was to evaluate factors influencing Quality of Life in acromegaly.

MATERIAL AND METHODS

We have collected data from a total sample of 52 patients with acromegaly under care of Endocrinology Department, Center of Postgraduate Medical Education (CMKP), Bielański Hospital, Warsaw, during 2017. We have evaluated the course of patient's disease, its duration, occurrence of complications and treatment methods. We asked subjects about their age, marital status, education, employment and children.

QoL was evaluated with the use of AcroQoL (Acromegaly Quality of Life) questionnaire, which was specifically designed for this purpose in Spain in 2001 (11). This form contains 22 questions graduated

in a 1-5 Likert-type scale, divided into two groups. In the first one severity of a given symptom was taken into account (answers: always, most of the time, sometimes, rarely, never). The second group contained respondents opinion with the presented wording (answers: completely agree, moderately agree, neither agree nor disagree, moderately disagree, completely disagree).

Questions included in AcroQoL survey are divided into three main scales. First one "Physical" (eight items) evaluates aspects like: patient's efficiency, pain, fatigue, mood etc. Second one "Appearance" (seven items) contains questions about sense of own ugliness, changes in appearance or functioning etc. In the third one "Personal relationships" (seven items) respondents were asked, among others, about interpersonal contacts, assessment of their appearance by society and sexual problems.

The internal consistency of the AcroQoL questionnaire was evaluated in our research by calculating the Cronbach alpha (for all questions and three scales), Spearman-Brown (for equal parts) and Guttman coefficients. High values (exceeding 0.8) of all coefficients were obtained which indicates high internal consistency of the questionnaire and its subscales. The high internal coherence of the questionnaire as a whole is also indicated by the lack of a significant decrease in the value of the alpha coefficient after the removal of individual items of the scale. What is more the internal consistency of the first scale of the questionnaire ("Physical") turned out to be clearly higher ($\alpha > 0.9$) than the other two scales "Psychological/appearance" and "Psychological/personal relations" (α 0.6-0.85).

In the statistical calculations, we have used non-parametric Mann-Whitney and Kruskal-Wallis tests in order to assess intergroup differences. Correlations between individual variables were evaluated using Spearman's rho ($p < 0.01$). In our sample results of the AcroQoL questionnaire were not normally distributed, which was confirmed by Kolmogorov-Smirnov test. Statistical analysis was performed using SPSS software.

RESULTS

The studied group consisted of 52 people aged 25-91 (average 50.6 years old, $SD \pm 15$), 29 (56%) of them were women, and 23 (44%) men.

Most of them, 34 people (65%) had secondary education. The higher education was declared by 17 (33%) people, while primary education only by one person (2%).

In our group, 30 (58%) people were professionally active while 22 (42%) did not work. 11 (21%) subjects

were on pension and 9 (17%) of them were on retirement.

32 people were married (62%), 13 of them (25%) were single, 2 subjects were divorced (4%). 37 patients (72%) had children.

Duration of the disease estimated by patients ranged from 2 to 40 years (mean 12.3 years, SD \pm 8.23). 43 patients (83%) underwent pituitary gland surgery, of which 40 (93%) had one operation, two people had two (5%) and one person three (2%) operations. Six subjects (12%) underwent radiotherapy. Among declared complications of acromegaly dominated: degenerative changes of the osteoarticular system 32 (62%) and snoring 32 (62%). Twenty four (46%) patients had hypertension, 16 (31%) had type 2 diabetes mellitus (type 2 DM). 8 (15%) subjects suffered from cancer.

Most (63%) people reported the presence of more than one acromegaly complication. The most frequent of coexisting symptoms were osteoarticular changes and snoring – 37% patients (tab. 1).

Tab. 1. Coexistence of two acromegaly complications in the studied group

	Osteoarticular changes	Diabetes	Hypertension	Snoring	Cancer
Osteoarticular changes	–	14	16	19	5
Diabetes	14	–	12	10	2
Hypertension	16	10	–	14	5
Snoring	19	10	14	–	3
Cancer	5	2	5	3	–

18 (35%) people reported the coexistence of 3 symptoms. Most frequent of these were: osteoarticular changes, snoring and hypertension – 9 people. 8 people suffered from osteoarticular changes, snoring and type 2 DM. Six patients (12%) had co-existing 4 complications of acromegaly: osteoarticular changes, snoring, hypertension and type 2 DM.

Results of the AcroQoL questionnaire were calculated by obtaining percentages according to the formula proposed by questionnaire authors (11). Total percentage results ranged from 12 to 92% (average 41% SD \pm 15%).

In the AcroQoL questionnaire it was possible to choose one of five answers to each question. In the scale “Physical” answers “always” or “most of the time” occurred more often than answers “rarely” and “never” in relation to questions: “I feel like a sick person” (63%), “I am usually tired” (48%), “I feel weak” (40%), “My joints ache” (37%) and “The illness affects my performance at work or in my usual tasks” (33%).

In the scale “Appearance” answers “most of the time” or “always” occurred more often than options “rarely” and “never” in relation to questions: “Some parts of my body are too big” (77%), “I look awful in

photographs” (75%), “I feel ugly” (61%), “I look different in the mirror” (68%) and “I snore at night” (35%).

However in the scale “Personal relationships”, answers “most of the time” or “always” occurred more often than options “rarely” and “never” in relation only to one question: “The physical changes produced by my illness govern my life” (63%).

In the scale “Personal relationships”, patients denied (answers “rarely” or “never”) of the following: “I fell rejected by people because of my illness” (79%), “I avoid going out very much with friends because of my appearance” (75%), “I try to avoid socializing” (61%), “I have problems with sexual relationship” (54%) and “I have little sexual appetite” (49%).

In the scale “Physical” the answers “rarely” and “never” prevailed in relation to questions: “I have problems carrying out my usual activities” (42%), “My legs feel weak” (35%) and “I get depressed” (32%).

In the “Appearance” scale, patients more often denied (giving answers “rarely” and “never”) “I have problems doing things with my hands” (48%) and “It’s hard for me to articulate words due to size of my tongue” (51%).

Age of patients and gender did not have significant relation with any of the AcroQoL survey results. Similarly, no significant correlation was found between duration of the disease and obtained questionnaire results.

In our study it was shown that people professionally active reported significantly fewer factors from all three scales of the AcroQoL questionnaire ($p = 0.02$). On the other hand, those on pension reported significantly more limitations of QoL in the scale “Physical” ($p = 0.03$).

DISCUSSION

According to World Health Organisation (WHO), QoL is defined as multidimensional representation of the patient’s perception of the disease, its functional impact and treatment consequences. QoL improvement is one of the most important (apart from reducing morbidity and mortality) goals of chronic disease therapy (12). High QoL scores besides regulation of biochemical results, also appears in acromegaly management as one of the basic therapeutic targets (13-15). The importance of many aspects of the disease, such as body image, pain, depression, mood instability, physical and mental status are being emphasized in those patients. Impaired quality of life was observed also in patients with acromegaly during their long-term observation (16, 17).

However the correlation between IGF-1 and GH concentrations and QoL in patients with acromegaly is still unclear. Some studies showed that relation (18-20) while in other studies no relationship was found between hormone concentrations and perceived QoL (21-23). In case of lack of undeniable biochemical markers, the usage of questionnaire methods remains necessary. The AcroQoL survey, commonly used in the world is an effective and adequate tool in QoL evaluation in people

suffering from acromegaly (22, 23). What is more, AcroQoL form seem to be a better way to evaluate improvement in patient's functioning than using IGF-1 concentrations (24).

Nowadays, we do not know much about the influence of psychopathological factors on QoL in patients with acromegaly (25). In the studied group, symptoms associated with the body image appeared with high frequency. Moreover, symptoms affecting social life were less frequent. Similarly to other studies, in our group we have not found correlation between gender and QoL (26). Unemployed and patients on pension were characterized by a higher severity of symptoms belonging to the scales: "Physical" and "Personal relationship".

Previous studies emphasize that the factor that most drastically reduces the QoL in patients with acromegaly are ailments of the osteoarticular system. This complication causes chronic pain, decreased manual efficiency of hands and difficulties in everyday functioning (27). Osteoarthritis is observed in at least one joint in 99% of patients, especially in the spine, hip and palms (28). In our study, nearly two-thirds of respondents (62%) reported osteoarticular complications.

Insomnia in this group of patients can be caused by multiple factors. One of them is sleep apnea. In our study, snoring which is the dominant symptom of nocturnal respiratory disorder, occurred with high frequency.

So far, there have been no major studies devoted to the issue whether the QoL and perception of the disease evolve with the duration of the disease. In our study, duration of the disease did not correlate with the QoL. This could be due to a small number of studied subjects or an underestimation of the disease duration by the patients. However, some studies showed that early detection of the acromegaly determines a better assessment of the disease by patients (16).

Evaluation of individual factors affecting QoL in acromegaly is difficult because of frequent coexistence of its complications. In our study, majority of respondents had three or four complications among the following:

osteoarticular changes, snoring, hypertension, diabetes, or other neoplastic disease (tab. 1).

Gold standard in acromegaly is endonasal transphenoidal surgery in order to remove the pituitary tumor. However, this method is not effective in all patients. Therefore, the majority of them are treated with long-acting somatostatin analogs to lower GH secretion and size of the tumor. However, impaired QoL is also associated with the necessity of systematic disease control and also drugs administration (29). In the case of ineffectiveness of mentioned treatment, patients undergo radiotherapy which seems to reduce patients QL in the greatest extent. It may be caused by simple fact of radiotherapy, as well as pituitary dysfunction as a complication of this treatment method (30, 31).

In studied group, pensioners reported significantly larger number of QoL restrictions in terms of physical symptoms. It confirms that rehabilitation benefits were granted correctly. On the other hand, in people who work there were significantly fewer symptoms lowering QoL. Disease complications did not affect professional activity of patients.

QoL improvement in patients with acromegaly is an inherent element of effective treatment. Patients require coordinated, highly specialized and interdisciplinary care, including psychological treatment (31, 32).

CONCLUSIONS

In the studied group:

1. Factors with the greatest impact on the Quality of Life were: osteoarticular complications (pain), respiratory dysfunctions (snoring) and changed appearance.
2. No disease influence on social relations was found.
3. Quality Life was not correlated with age of patients and duration of the disease.
4. Pensioners reported significantly the largest number of Quality of Life restrictions in terms of physical symptoms, while working people had significantly better Quality of Life.

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