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Quality of life in multiple sclerosis – association with clinical features, fatigue and depressive syndrome

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Summary

Introduction. The aim of the study was to assess the health related quality of life in patients suffering from multiple sclerosis (MS) in association with clinical features, fatigue and depressive symptoms.

Material and methods. The examined group consisted of 61 patients (45 women and 16 men) in the mean age of 38.6 ± 11.4 . The mean duration of disease was 7.1 ± 6.1 years. The control group consisted of 30 healthy volunteers. The following questionnaires were used: EuroQol (EQ5D) with visual scale EuroQol-VAS, Modified Impact Fatigue Scale (MIFS) and Beck Depression Inventory (BDI).

Results. The quality of life in the examined group of MS patients was significantly lower in comparison to the control group. Results of EQ-5D and EQ-VAS were influenced by age, disease course, level of disability and carried treatment. Statistically significant association was also found between results of the questionnaires assessing quality of life and either fatigue or depressive symptoms.

Conclusion. The used questionnaires confirmed that quality of life in patients with MS is significantly worse, especially in the older people with secondary progressive course of the disease, more disabled and not treated. Presence of fatigue and depressive symptoms influenced self-assessment of quality of life. Complex care of MS patient should consider diagnosis and treatment of fatigue and depression what could improve their quality of life.

Key words: quality of life, multiple sclerosis, fatigue, depression

Background

Multiple sclerosis (MS) is a chronic inflammatory disease of the central nervous system that affects about 2.5 million people worldwide [1]. Usually it appears at the young age, during the most active working, social and family life. In most people symptoms occur suddenly in the form of relapse. Symptomatology of MS varies widely and results from location of damage. There could be present movement disorders (limb paresis, ataxia), sensory abnormalities (hypoesthesia, paraesthesia), damage of cranial

nerves (ophthalmoplegia, blurred vision, trigeminal neuralgia), vegetative, and psychological symptoms (cognitive and mood disorders) [2, 3]. One of the underestimated, but very distressing symptoms of MS is fatigue, which is reported in up to 90% of patients [4-13]. It is the most common cause of absence from work and one of the main reasons for limitation of professional activity. In most people, the disease gradually leads to malfunction, causing limitations in different spheres of life. The quality of life in MS patients is reduced by dysfunction resulting from increasing disability, but fatigue and mood disorders also have a significant impact on the welfare of patients.

The term quality of life is defined in different ways, but most often it is understood as the general satisfaction of life and the feeling of welfare that concerns the physical, mental, emotional and social aspects of functioning [14]. It has a subjective character. The concept of health-related quality of life was introduced by Schipper [14]. It indicated that health status significantly affected the life and human functioning, thereby the quality of life.

Firstly, the quality of life in MS was evaluated in 1990 [15]. The studies carried since then aimed not only to evaluate the quality of life, but also search for factors reducing or improving it. Most often questionnaires are used, both generic (universal), as well as disease specific [16].

The aim of this study was to evaluate the quality of life in patients with multiple sclerosis according to clinical features of the disease, coexisting fatigue syndrome and depressive symptoms.

Material and methods

Subjects were recruited among 188 MS patients treated at the Neurological Outpatient Clinic in Zabrze. From this group, 61 patients (32.4%) agreed to participate in the study and signed the written consent. The research was conducted during the period from 1 April to 30 June 2011.

The control group consisted of 30 healthy volunteers recruited among students of the Faculty of Medicine of the Silesian Medical University and employees of the Independent Public Clinical Hospital No. 1 in Zabrze.

Each patient was interviewed using an author's questionnaire including questions about age, course of the disease (age of diagnosis, symptoms, frequency of relapses, treatment), education, professional activity and marital status. Next, neurological examination was performed. Physical disability was assessed by Expanded Disability Status Scale (EDSS) [17]. Course of the disease was determined based on interviews and analysis of medical documentation. The following questionnaires were used in the study: Modified Fatigue Impact Scale (MFIS) [18], questionnaires assessing the quality of life EuroQol 5D (EQ5D) and EuroQol-VAS [19-21] and the Beck Depression Inventory (BDI) [22].

The Modified Fatigue Impact Scale (MFIS) consists of 21 items and assesses the impact of fatigue on three dimensions of patient's quality of life: physical (Physical MFIS, Ph-MFIS), cognitive (Cognitive MFIS, C-MFIS) and psychosocial (Psychosocial MFIS, Ps-MFIS). Each item is scored from 0 to 4 points, the respondent may obtain

a maximum of 84 points. The higher is the score, the greater is impact of fatigue on quality of life. This scale was created by modifying the Fatigue Severity Scale (FSS) [23]. The polish validation of MFIS was made by Gruszczak et al [18].

EuroQol 5D questionnaire was developed by an international group of experts affiliated to the WHO in 1987 and is used for self-assessment of the quality of life in chronic diseases. It consists of two parts: the EQ-5D and EQ-VAS. EQ-5D contains five questions relating to: motor skills, taking care of themselves, normal daily activities, the presence and severity of pain and mood disorders. For each question there are possible three responses. For purposes of this study, the following scoring was established: from 1 (no problem) to 3 points (big problems) for each question, and then the sum was calculated. The possible maximum score was 15 (the worst status of health) [19, 20]. A Polish validated version is also available [24].

EQ-VAS is an analogue visual scale, assessing the general health status and disease activity from 0 (the worst imaginable health) to 100 (the best possible health). Most often it is presented as the horizontal line 100 mm long, on which the patient marks the vertical line corresponding to his own judgment of the severity of the disease. The result is obtained by measuring (in millimeters) the distance from the beginning of the scale to the place selected by the patient.

The Beck Depression Inventory (BDI) is a 21-point questionnaire for the self-assessment of depressive symptoms. Each item is evaluated from 0 to 3 points depending on the severity of symptoms. The maximum score is 63 points. The interpretation of results is as follows: 0-9 - no depressive symptoms, 10-19 - mild depression, 20-25 - moderate depression, 26-63 - severe depression. The Polish standardization of BDI was made by Jernajczyk and Parnowski in 1977 [23].

Statistical analysis was performed by the use of STATISTICA v.9 package program. Data were expressed as mean \pm SD. A p value of <0.05 was taken as significant.

Results

The studied group consisted of 61 patients (45 female, 16 male) aged from 21 to 67 years (the mean age 38.6 ± 11.4 years). The control group consisted of 30 patients (20 female and 10 male) aged from 23 to 53 years (the mean age 32.5 ± 10.3 years).

In the studied group the mean disease duration was 7.1 ± 6.1 years, the mean age at diagnosis of MS - 31.9 ± 11.7 years. The relapsing-remitting course (RR) was established in 42 patients, the secondary progressive course (SP) – in 19 patients. The mean EDSS was 2.8 ± 1.7 points.

At the time of the study 35 patients were treated (57.4%). The following drugs were used: interferon beta 1a (2 persons), interferon beta-1b (22 patients), glatiramer acetate (3 persons), daclizumab (3 persons), mitoxantrone (3 patients), azathioprine (1 person), and fumaric acid (1 person).

Declared education was as follows: elementary – 2 patients (3.3%), vocational – 11 patients (18%), secondary – 29 patients (47.5%), and high (university) – 19 patients (31.2%). Among all the participants, there were 25 active professionally people (25%), and 36 inactive professionally ones (59%). Free marital status (maiden, bachelor, wi-

dow, widower, divorced) declared 23 people (37.7%), marriage or concubinage – 38 people (62.3%).

The results of the questionnaires are shown in Table 1. The quality of life in the examined MS patients was significantly worse in comparison to the control group. Level of depression and fatigue in the general, physical and psychosocial aspect was significantly increased in the MS patients. No statistical differences were observed for fatigue in the cognitive aspect (C-MFIS). (Table 1).

Table 1. Results of the questionnaires (in points, X±SD) in the examined and control group

	The examined group (MS patients) X±SD	The control group X±SD	p
EQ-5D	8.05±2.2	5.9±1.1	0.000003
EQ-VAS	66.65±23.7	77.34±19.3	0.04
MFIS	34.02±18,3	22.9±13.8	0.004
Ph-MFIS	16.33±9,1	9.07±6.2	0.0002
C-MFIS	14.31±8.6	11.97±7.2	0.2
Ps-MFIS	3.38±2.1	1.83±1.4	0.0006
BDI	13.02±10.3	8.3±6.8	0.027

Statistically significant association was found between results of the questionnaires assessing quality of life and either fatigue or depressive symptoms (Table 2).

Table 2. Association between results of the questionnaires in the examined group (Spearman coefficient R, significance of correlation P)

	EQ-5D	EQ-VAS	MFIS	BDI
EQ-5D	-	-	0.71 P=0.0000001	0.63 P=0.000001
EQ-VAS	-	-	-0.68 P=0.0000001	-0.77 P=0.0000001
MFIS	0.7 P=0.0000001	-0.68 P=0.0000001	-	0.49 P=0.000397
BDI	0.63 P=0.000001	-0.77 P=0.0000001	0.49 P=0.0004	-

The quality of life assessed in both EQ-5D and EQ-VAS scales significantly correlated with age, course of the disease, disability of the patients and carried treatment. The degree of disability also significantly affected the results of MFIS, C-MFIS, Ps-MFIS, and BDI (Table 3 – next page).

Table 3. Association between results of the questionnaires and age, sex, education, professional activity, marital status and clinical features of the disease

	EQ-5D	EQ-VAS	MFIS	Ph-MFIS	C-MFIS	Ps-MFIS	BDI
Age	0.025141	0.005707	NS	NS	NS	0.02152	NS
Sex	NS	NS	NS	NS	NS	NS	NS
Duration of the disease	NS	NS	NS	NS	NS	NS	NS
Course of the disease	0.035	0.002	NS	NS	NS	NS	NS
EDSS	0.001	0.001	0.012	NS	0.0028	0.037	0.001
Treatment	0.04	0.004	NS	NS	NS	NS	NS
Education	NS	NS	NS	NS	NS	NS	NS
Professional activity	NS	NS	NS	NS	NS	NS	NS
Marital status	NS	NS	NS	NS	NS	NS	NS

Discussion

The study showed that quality of life in MS patients is significantly worse in comparison to healthy subjects. Similar results were obtained by other investigators [25-37].

A significant correlation was observed between generic self-assessment scales of quality of life (EQoL-5D, EQoL-VAS) and MS-specific scale that assesses the impact of fatigue on quality of life in several aspects (MFIS). Generic scales are simple and fast to perform, they can be used in each patient. MFIS assesses the impact of fatigue on quality of life in several dimensions (physical, cognitive and psychosocial), but it is more time-consuming.

As it was shown in our study, the quality of life in MS patients depends on several clinical parameters such as age, course of the disease, degree of disability, and the treatment. Older people, with progressive course of the disease, more disable and not treated assessed their quality of life worse than younger people, with relapsing-remitting course, lower EDSS score and treated with immunomodulative or immunosuppressive therapy. Older age was associated with worse quality of life in MS also in other studies [38], but not all [25]. In most reports, patients with relapsing-remitting course much better assessed their quality of life than patients with progressive course of the disease [25]. Association of quality of life with physical efficiency in MS is also highlighted by other authors [25, 35]. Better self-assessment of quality of life in patients treated is probably associated with the hope of improving health. On the other hand, patients treated were younger, with relapsing-remitting course and received less points in EDSS scale.

We found no correlation between the disease duration and the quality of life, similarly to some authors [25]. The observations of other researchers were different [35,38]. We also noticed that such factors like education, marital status and professional activity did not influence the quality of life.

However, we observed that the quality of life in MS patients was associated with presence of non-motor symptoms – fatigue and depressive symptoms. It was confirmed by other authors [25,32]. Merkelbach et al. pointed to the fact that fatigue syndrome had a significant impact on the health related quality of life, independently from the degree of disability based on EDSS [38]. Fisk et al. noticed that among all the symptoms fatigue had the greatest impact on the negative evaluation of the quality of life [39]. A subjective assessment of the quality of life in MS patients may be the result of a negative perception of the reality in people with depressive syndrome. One could also not exclude the possibility that the low quality of life is caused by the presence of depression. Then the treatment of mood disorders - pharmacological intervention or psychotherapy - could improve the welfare of patients.

We also found that fatigue was associated with depressive symptoms as it was presented in our previous studies [40] and by some authors [9]. On the other hand, there are reports about lack of association between fatigue and depression since it was observed that fatigue – but not depression – reduced in lower temperature, after a night sleep or rest [30,41]. Moreover, fatigue might occur episodically while depression is more persistent.

Not only motor, but also non-motor symptoms like fatigue and depression have a significant impact on the quality of life in MS patients. In the questionnaires all the aspects of welfare should be evaluated: physical, psychological and social. Evaluation of the quality of life should be one of the elements of diagnostic and therapeutic process. The purpose of people engaged in care of MS patients should be improvement of their quality of life and reducing the negative impact of the disease on social, professional and family life. It is important to diagnose and treat also concomitant symptoms of MS like fatigue and depression which have significant impact on the quality of life.

Conclusions

1. The used questionnaires confirmed that the quality of life in MS patients is significantly worse, especially in older people with secondary progressive course of the disease, with greater disability, not treated with immunomodulative or immunosuppressive drugs.
2. The presence of fatigue or depressive symptoms influenced self-assessment of the quality of life in MS patients.
3. The complex care of MS patients should consider the diagnosis and treatment of fatigue and depression what could improve their quality of life.

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