Quality of life and its relation with disease severity in Behçet's disease

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ABSTRACT

Objective. *Since Behçet's disease (BD) is a systemic vasculitis, it may deteriorate the quality of life of the patients. We aimed to investigate the relationship between the disease severity and the quality of life in patients with BD.*

Methods. *We studied 195 BD patients and 195 healthy controls who were matched with regard to age, gender and socio-economic status. Krause score was calculated to assess disease severity, while Short-form-36 (SF-36) and The World Health Organization Quality of Life (WHOQOL-100) were used to evaluate the quality of life in BD.*

Results. *The overall SF-36 and WHOQOL-100 scale scores, as well as their domains were significantly lower in BD patients. In BD patients, "general health", "role-physical", domains of SF-36, and "psychological", "level of independence", "environment", "environmental-public" domains of WHOQOL-100 showed significantly negative linear correlations with Krause scores. In BD patients with arthritis, the scores of "general health", "physical functioning", "role emotional" domains of SF-36, and the scores of "psychological", "level of independence" and "social relations" domains of WHOQOL-100 were significantly worse than without arthritis. The scores of "pain" domain of SF-36 and "level of independence" domain of WHOQOL-100 were significantly worse in BD patients with vascular involvement, while the scores of "mental health" domain of SF-36 and "psychological" domain of WHOQOL-100 were significantly worse in BD patients with eye involvement.*

Conclusion. *Based on the evaluation of SF-36 and WHOQOL-100 scores, quality of life is impaired and related with disease severity in BD. Arthritis, eye involvement and vascular involvement seem to contribute to this impairment.*

Introduction

The concept of "quality of life" is defined as the perception of a subject about his/her position in life according to cultural and valuation systems in which he/she lives, regarding to his/her objectives, expectations, standards and interests. Any systemic disease, having a considerable morbidity and mortality may readily affect the quality of life of the patients (1, 2). It has been reported that the prevalence of reported functional disability regarding its impact on Health Related Quality of Life (HRQOL) helps physicians to better understand patients' dependence, promote the analysis of health care needs and enhance the HRQOL of patients and their families (3). Behçet's disease (BD), first defined by Prof. Dr. Hulusi Behçet in 1937, is an unique systemic vasculitis, which may involve almost all organs and systems of the body (4). Since BD is a chronic disease having a relapsing course with many different clinical manifestations, the quality of life of the BD patients can be affected negatively. Likewise, psychiatric problems may appear during the disease, regardless of the presence of brain involvement (5, 6). However, the exact frequency of such psychiatric problems is not known. Calikoglu *et al.* previously studied depression, anxiety levels and general psychological profile in Behçet's disease, and showed that depression scales in BD were significantly worse than in psoriasis. On the other hand, Uguz *et al*, studied the impact of major depression on quality of life (QoL) in patients with BD and found that concurrent major depression had a negative impact on QoL of BD patients and that QoL was negatively correlated with the severity of depressive symptoms (6).

Psychiatric disturbances, general and oral health related life qualities were previously investigated in different studies performed in Turkey (6-12)

and in other countries (13, 14). In those previous studies, different scales were used to assess the quality of life. To our knowledge, however, there is no study investigating the quality of life in BD using Short-form-36 (SF-36) in combination with The World Health Organization Quality of Life (WHO-QOL-100).

Since these two scales are the most commonly used international scales, having been also translated into Turkish and validated, SF-36 and WHO-QOL-100 were used (15-17).

With this background, this study aimed to evaluate the level of quality of life in patients with BD, as well as to determine the relationship between the disease severity and quality of life.

Materials and methods

Patients and controls

This cross-sectional study was conducted by the collaboration of Departments of Dermatology, Rheumatology, Psychiatry and Biostatistics and Medical Informatics of Ege University School of Medicine. One hundred ninety five patients with BD, fulfilling International Study Group Criteria were enrolled. All the patients were being followed up by the dedicated Behçet's disease Out-patient Clinics of the Rheumatology and Dermatology Departments. The control group included 195 healthy Turkish subjects who were matched with regard to age, gender and socio-economic status. Individuals with chronic inflammatory and/or degenerative diseases were excluded from the study. This study was performed according to the principles of the Declaration of Helsinki and was approved by the Ethical Committee of Ege University Medical School. Informed consent was obtained from all the participants.

Since severe psychiatric and neurological disorders would affect the response of the patients and the total score, presence of these abnormalities were accepted as exclusion criteria. In this study, some BD patients with major depression were excluded.

Presence or absence of active disease was determined based upon clinical findings at the time of the evaluation. At the time of the clinical assessment, patients were included in the active group if they had at least two of the following clinical findings: mouth ulcers, genital ulceration, active uveitis, recent arthritis, thrombophlebitis and large, vessel involvement. In patients with BD, the total clinical severity score was calculated as defined by Krause (18).

Evaluation of Quality of Life

SF-36 and WHO-QOL100 were used as quality of life scales.

SF-36: Short-form 36 is a scale for quality of life which was developed and submitted for use by Rand Corporation in 1992, having a property of generic measure and providing a comprehensive measurement (19). One of the most important properties of SF-36 is to have a self-evaluation scale. It consists of 36 items that provide the measurement of eight subscales. These include the following domains: "physical functioning" (10 items), "social functioning" (2 items), and "role-physical" (4 items), "role-emotional" (3 items), "mental health" (5 items), "vitality" (4 items), "bodily pain" (2 items) and "general health" (5 items). This scale evaluates the last 4 weeks. These domains evaluate the health between 0 and 100 points; 0 point shows deleterious health status, while 100 points indicate good health status (15, 19). Turkish validation of SF-36 was performed by Kocyigit *et al*. (15).

WHOQOL-100 (Questionnaire of World Health Organization for Quality of Life Assessment)

This is a questionnaire which evaluates how the subject perceives his/her quality of life, during the last two weeks. It consists of 6 sections including "physical health", psychological", "level of independence", "social relationships", "environment" and "environmental-public (spirituality/religion/personal beliefs items) domains. For this scale, the scores are defined as subscores. The higher scores indicate the better quality of life. Other than the original WHOQOL including 100 questions, there is also a shortened form, known as WHOQOL-bref, including 26 questions. Turkish validations were performed both for WHOQOL-100 and WHOQOL-bref (16, 17).

Statistical analysis

The statistical analysis was performed using the SPSS 15.0 software package. Student t-test, Mann-Whitney-U test, ANOVA and Pearson correlation analysis were used. General Lineer Model (GLM) was used for further analysis to compare gender and activity differences. The Bonferroni test was used for post-Hoc analysis. *P*-values less than 0.05 were accepted as significant.

Results

One hundred and ninety-five patients with BD [mean age: 38.77±9.41, M/F: 102/93] and 195 healthy controls [mean age: 38.09±9.21, M/F: 99/96] were included in the study. 67% of the patients and 62% of the controls were high school graduate. The demographic features of the patients and healthy controls were given in Table I. Based upon Krause scores, 50 (25.8%) BD patients had clinically active disease.

Table I. The Socio-demographic features of the patients and controls.

Variables		BD		Controls	
		n	%	n	%
Gender					
	Male	102	50.7	99	49.3
	Female	93	49.2	96	50.8
Marital status					
	Married	164	84.5	145	74.4
	Single	30	15.5	50	25.6
Education					
	Primary school	42	46.7	48	53.3
	Secondary school	29	54.7	24	45.3
	High school	67	51.9	62	48.1
	College-University	48	48.5	60	60.6

Evaluation of SF-36 domains in BD

The overall SF-36 scores, as well as all the scores of its domains were significantly lower in BD patients compared with the control group (p=0.000) (Table II).

The overall SF-36 scores were significantly lower in patients with clinically active disease. When domains of SF-36 were evaluated, the scores of the "general health" (p=0.003), "vitality" (p=0.018) and "physical health" (p=0.006) domains were significantly lower in patients with clinically active disease. There were no differences in other domains of SF-36 between BD patients with and without clinical active disease (Table III).

In the next step, we evaluated whether there was a correlation between Krause severity score and SF-36 score in BD patients. We found, significant negative linear correlations between Krause score and the "general health" (r=-0.149, p=0.042) and "role-physical" (r= -0.161, p=0.035) domains.

Among the clinical features of BD, we found that the presence of arthritis, eye involvement and vascular involvement significantly affected the quality of life in SF-36. In BD patients with arthritis, the scores of "general health" (t=-3.158, p=0.002), "physical functioning" (t=-2.860, p=0.06) and "role emotional" (t=-2.098, p=0.04) domains were significantly lower compared with BD patients without arthritis. In BD patients with eye involvement, significantly lower scores were determined in "mental health" domain (p=0.045), while the score of "pain" domain was significantly lower in BD patients with vascular involvement (p=0.046).

Female BD patients had statistically significant lower scores in all SF-36 subscales compared with male patients, and overall controls (Table IV).

Evaluation of WHOQOL-100 domains in BD

The overall WHOQOL-100 scores of BD patients were significantly lower than the control group. Among the domains of WHOQOL-100, there was lack of a significant difference only in the score of "environment" domain (Table II).

Table II. The SF-36 and WHOQOL-100 scores of the patients and controls.

		BD		Controls		Statistics	
QOL	ITEM	n	Mean±SD	n	Mean±SD	*t*	*p*
SF36	*General health*	187	13.6 ± 3.8	193	19.7 ± 3.4	-16.398	0.000
	PhysicalfFunctioning	182	23.3 ± 4.9	191	28.5 ± 3.6	-11.587	0.000
	Role-physical	172	6.1 ± 1.8	194	7.6 ± 0.9	-10.197	0.000
	Role-emotional	167	4.6 ± 1.3	194	5.6 ± 0.8	-8.779	0.000
	Social functioning	185	7.3 ± 2.0	193	9 ± 1.4	-9.079	0.000
	Bodily pain	192	7 ± 1.4	194	8.4 ± 2.1	-7.974	0.000
	Vitality	192	11.7 ± 3.4	194	14.2 ± 2.7	-7.855	0.000
	Mental health	191	19.7 ± 4.6	192	23.1 ± 3.6	-7.907	0.000
WHOQOL 100	*Physical health*	194	13.1 ± 2.6	195	15.7 ± 2.3	-10.204	0.000
	Psychological	195	14.2 ± 2.2	195	15.7 ± 1.8	-7.219	0.000
	Level of independence	194	13.7 ± 2.8	195	16.8 ± 1.7	-13.363	0.000
	Social relations	194	14.5 ± 2.8	195	15.1 ± 2.2	-2.596	0.010
	Environment	194	13.9 ± 2.4	195	13.6 ± 2.0	1.264	0.207
	Environmental public domain	194	13.3 ± 2.1	195	12.9 ± 1.7	2.408	0.017

SD: Standard deviation.

Table III. SF-36 and WHOQOL-100 scores according to disease activity.

	Disease Activity	Active		Inactive		Statistics	
QOL	ITEM	n	Mean±SD	n	Mean±SD	*t*	*p*
SF36	*General health*	48	12.1 ± 3.7	138	14.0 ± 3.8	-3.027	0.003
	Physical functioning	46	22.7 ± 4.6	135	23.6 ± 5.0	-1.105	0.271
	Role-physical	42	5.7 ± 2.1	130	6.2 ± 1.7	-1.584	0.115
	Role-emotional	40	4.3 ± 1.3	127	4.7 ± 1.3	-1.532	0.127
	Social functioning	47	7.1 ± 2.3	137	7.4 ± 1.9	-0.764	0.446
	Bodily pain	49	6.8 ± 1.3	142	7.0 ± 1.4	-0.748	0.455
	Vitality	49	10.7 ± 3.4	142	12.0 ± 3.3	-2.381	0.018
	Mental health	50	18.6 ± 5.1	140	20.1 ± 4.3	-1.949	0.053
WHOQOL 100	*Physical health*	50	12.2 ± 2.9	143	13.4 ± 2.4	-2.766	0.006
	Psychological	50	13.6 ± 2.6	144	14.4 ± 2.0	-2.114	0.038
	Level of independence	50	12.6 ± 2.8	143	14.0 ± 2.7	-3.247	0.001
	Social relations	50	13.6 ± 3.1	143	14.8 ± 2.6	-2.316	0.023
	Environment	50	13.0 ± 2.6	143	14.2 ± 2.3	-3.013	0.003
	Environmental public domain	50	12.5 ± 2.2	143	13.6 ± 2.0	-3.184	0.002

SD: Standard deviation.

The overall WHOQOL-100 scores, as well as the individual scores of all domains were significantly lower in patients with active disease (Table III).

There were significantly negative linear correlations between Krause scores and the scores of "psychological" (r= -0.152, p=0.034), "level of independence" (r=-0.204, p=0.004), "environment" (r=-0.194, p=0.007) and "environmental-public" domains (r=-0.205, p=0.004) of the WHOQOL-100 scale.

Among various clinical features of BD, the presence of arthritis, eye involvement or vascular involvement was found to negatively affect the quality of life in WHOQOL-100 score. The scores of psychological" (t=-2.927, p=0.004), "level of independence" (t=-2.836, p=0.006) and "social relations" (t=-2.451, p=0.016) domains in WHOQOL-100 were significantly lower in BD patients with arthritis compared with those without arthritis. Similarly, significantly lower score was determined in "psychological" (p=0.032) domain in patients with eye involvement, while the score of "level of independence" (p=0.026) domain was significantly lower in patients with vascular involvement.

Female patients had significantly higher scores in the "level of independence" (p=0.000), "social relation" (p=0.032),

Table IV. The scores of SF-36 and WHOQOL-100 of the patients according to gender.

	Gender	Female		Male		Statistics	
QOL	*ITEM*	n	Mean±SD	n	Mean±SD	*t*	*p*
SF36	*General health*	93	52.8 ± 15.8	102	55.6 ± 14.8	-1.259	0.003
	Physical functioning	93	74.9 ± 16.0	102	80.5 ± 16.0	-2.353	0.271
	Role-physical	93	73.0 ± 22.6	102	78.3 ± 22.8	-1.538	0.115
	Role-emotional	93	73.2 ± 20.8	102	78.9 ± 21.5	-1.770	0.127
	Social functioning	93	71.0 ± 20.5	102	75.5 ± 19.6	-1.506	0.446
	Bodily pain	93	62.4 ± 13.5	102	64.6 ± 11.9	-1.184	0.455
	Vitality	93	59.2 ± 19.1	102	64.5 ± 15.9	-1.649	0.018
	Mental health	93	51.3 ± 13.5	102	52.9 ± 12.2	-0.918	0.053
WHOQOL 100	*Physical health*	93	12.8 ± 2.6	102	13.4 ± 2.6	-1.614	0.000
	Psychological	93	14.2 ± 2.0	102	14.2 ± 2.4	0.184	0.000
	Level of independence	93	13.8 ± 2.7	102	13.6 ± 2.8	0.482	0.000
	Social relations	93	14.7 ± 2.9	102	14.2 ± 2.6	1.284	0.032
	Environment	93	14.3 ± 2.5	102	13.6 ± 2.3	1.996	0.048
	Environmental public domain	93	13.6 ± 2.2	102	13.1 ± 1.9	1.859	0.009

"environment" (p=0.048) and "environmental-public" (p=0.009) domains. On the other hand, male patients had significantly higher scores in the rest of the domains (Table IV).

Discussion

In this study, we used the combination of WHOQOL-100 and SF-36 quality of life scales for assessing the quality of life as well as its relation with disease severity and disease activity in BD patients for the first time. We used these two scales because they were well respected and qualified scales reflecting the general health perception. Recently, a new quality of life scale specific to BD was introduced (14), however since this scale has not been validated in Turkey yet, we could not use it in our study

Consistent with the previous studies reporting impaired quality of life in BD, we also found that the overall SF-36 and WHOQOL-100 scale scores, as well as their domains were significantly lower in BD patients, compared with the control group. Furthermore, based on the Krause scores, we showed that "general health" and "role-physical" domains of SF-36, and "psychological", "level of independence", "environment" and "environmental-public" domains of WHOQOL-100 had significant negative correlations with disease severity in BD. In other words, these findings may implicate that as the disease severity increases; the quality of life becomes worse in BD.

In literature, there are many studies investigating not only the quality of life in BD, but also the effect of disease severity and/or disease activity on the quality of life in BD. Using Oral Health Impact Profile-14 (OHIP-14), Oral Health Related Quality of Life (OHQoL) and SF-36 questionnaires, Mumcu *et al*. reported that both oral and general life qualities were impaired in BD (10). As in our study, they also found that all SF-36 domains were significantly worse in BD patients than in controls. They also found that impairment in the quality of life was related with disease activity in BD. Bodur *et al*. investigated the relationship between the quality of life, life satisfaction and disease activity in 40 BD patients and compared with 40 controls by using Nottingham health profile, life satisfaction index, BD Current Activity Form (BDCAF). They found that life satisfaction index scores were significantly lower and Nottingham health profile scores were significantly worse in all dimensions in BD patients. So they reported that life satisfaction and quality were impaired in BD patients (12).

In this study, we also investigated the effect of individual clinical involvements of BD on the quality of life. Because, many of the individual clinical features of BD, including oral and genital ulcers, eye involvement, arthritis and vascular involvement may readily be expected to impair the quality of life in BD. For example, presence of arthritis causes pain and physical disability and this may lead to distress, negative feelings and dissatisfaction in life. We found that in patients with vascular involvement, "pain" and "level of independence" domains; in patients with eye involvement "psychological" and "mental health" domains of WHOQOL-100 were significantly worse. Similarly, in patients with arthritis "psychological", "level of independence" and "social relations" domains of WHOQOL-100, and "general health", "physical functioning" and "role emotional" domains of SF-36 were significantly worse. We believe that these findings may implicate that presence of vascular involvement, eye involvement and arthritis contribute considerably to impaired quality of life in BD. Interestingly, we could not show that genital ulcers impaired the quality of life in BD. This is probably the result of the embarrassment that our patients felt while talking about the effects of the genital ulcers on their quality of life due to social and religious factors. Perhaps they concealed the true answers in this aspect. However, the negative effect of the genital ulcers on the quality of life in BD was previously shown by Blackford *et al*. using postal questionnaires consisting of Dermatology Life Quality Index (DLQI) (13). In other previous studies, Bodur *et al*. reported that arthritis, fatigue and genital ulcer scores of BDCAF were the most important factors impairing the quality of life in BD (12). Gur *et al*. also reported that arthritis had a negative affect on the quality of life in BD (9).

Since defining disease activity in BD may be difficult, it is not easy to define a relation between quality of life and disease activity in BD. Previously, Mumcu *et al*. used SF-36 and they found that the "role-physical", "role-emotional" and "vitality" domains were significantly worse in patients with active BD (10). In our study, we also found that all domains of WHOQOL-100, and "general health" "vitality" and "physical health" domains of SF-36 were significantly worse in patients with active BD. On the other hand, Bodur *et al*. could not show an association between disease activity and the negative feelings and reduction of social contact (12).

Women are generally more prone to mood disorders (20, 21). Uguz *et al*. found that "physical health" domain score of WHOQOL-bref was significantly lower in females (7). We also found that female patients had statistically significant lower scores in all domains of SF-36 and "mental health" and "physical health" domains of WHOQOL-100. On the other hand, Bodur *et al*. found no difference between genders regarding the quality of life and life satisfaction except the Nottingham Health Profile "pain" domain (12).

Depression scales were also used in some previous studies in BD. Uguz *et al*. studied 73 BD patients and 34 healthy controls using Beck's depression scale, Beck's anxiety scale, psychological symptom checklist (Scl-90-R) and WHOQOL-bref. They reported that "physical health" and "psychological health" domains of the WHOQOL-bref were significantly worse in BD (7). However, similar to our finding, they also found no difference in the scores of "social relationships" and "environment" domains. Tanriverdi *et al*. used SF-36, Beck depression inventory, Beck anxiety inventory in 45 BD patients and 45 controls. They reported that the tendency for anxiety and depression was greater in BD patients and commented that mental status might have triggered the development of ocular attacks in BD. They reported that BD patients with ocular involvement had significantly more susceptibility to anxiety and depression (11). Similarly, we also found significantly lower scores in "mental health" domain of SF-36 and "psychological" domain of WHOQOL-100 scales in BD patients with eye involvement. Taner *et al*. used Beck depression and Beck anxiety inventory in 112 BD patients and 95 psoriasis patients. Although the psoriatic skin lesions might be expected to deteriorate the quality of life considerably, they reported that the quality of life of BD patients were even worse than that of the psoriasis patients (8).

In conclusion, based on the evaluation of SF-36 and WHOQOL-100 scores, quality of life is impaired in BD, and this impairment is related with disease severity. Presence of arthritis, eye involvement and vascular involvement seem to contribute the impairment of quality of life in BD.

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