



The quality of life of lumbar radiculopathy patients under conservative treatment

Kvalitet života konzervativno lečenih bolesnika sa lumbalnom radikulopatijom

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Abstract

Background/Aim. The quality of life of lumbar radiculopathy patients conditioned by their health status is a result of both their subjective perception of the disease and their objective health status. The aim of this study was to evaluate the quality of life of lumbar radiculopathy patients under conservative treatment by means of generic and another lumbar syndrome specific questionnaires. **Methods.** A total of 50 patients (33 males, 17 females average age 46.1 years,) under conservative treatment in a hospital over four weeks were included in the study. They were interviewed using two questionnaires: the SF36 (Short form (36) Health Survey) generic questionnaire measuring eight domains of their quality of life summarized into two main ones (i.e. overall physical and overall mental health), and the lumbar syndrome specific North American Spine Society – Low Back Pain Outcome Instrument (NASS LBP), a questionnaire measuring four domains (functional limitations, motor and sensitive neurological symptoms, expectations from the treatment and satisfaction with it). **Results.** The values of physical health domain was low as 31.1 at the beginning of the treatment, were rising over the following six months and dropped insignificantly after four years (42.1/48.7/47.0) The mental health values (47.2) did not alter as compared to that of the general population. A values of the quality of life stabilized within six months. The neurological symptoms domain did not correlate with other value scales and domains. **Conclusion.** The quality of life of lumbar radiculopathy patients was impaired only from its physical aspect, but after conservative treatment it improved over the following six months. After four years there is an insignificant drop of all quality of life values, indicating a need for a longer term monitoring of there patients.

Key words: radiculopathy; therapy; quality of life; questionnaires.

Apstrakt

Uvod/Cilj. Zdravljem uslovljen kvalitet života bolesnika sa lumbalnom radikulopatijom rezultat je subjektivnog doživljaja bolesti i objektivnog stanja bolesnika. Cilj ove studije bio je da se proceni kvalitet života konzervativno lečenih bolesnika sa lumbalnom radikulopatijom primenom generičkog upitnika i upitnika specifičnog za lumbalni sindrom. **Metode.** Ova studija obuhvatila je 50 bolesnika, 33 muškarca i 17 žena prosečne starosti 46,1 godinu, koji su bili odvrgnuti konzervativnom lečenju u bolnici tokom četiri nedelje. Za intervjuisanje bolesnika korišćen je upitnik SF36 (Short Form 36 Health Survey), generički upitnik za utvrđivanje osam aspekata kvaliteta života ovih bolesnika (gru-pisanih u dva glavna, t.j. opšte fizičko i opšte mentalno zdravlje), kao i upitnik specifičnog za lumbalni sindrom (North American Spine Society – Low Back Pain Outcome Instrument, NASS LBP) za određivanje četiri parametra, t.j. funkcijskih ograničenja, motoričkih i senzitivnih neuroloških simptoma, očekivanih rezultata lečenja i zadovoljstvo lečenjem). **Rezultati.** Vrednosti iz domena fizičkog zdravlja bile su niske, t.j. 3,1 na početku lečenja, povišene su tokom narednih šest meseci i neznatno snižene posle perioda od četiri godine (42,1/48,7/47,0). Vrednosti za mentalno zdravlje (47,2) nisu se bile izmenjene u poređenju sa vrednostima za opštu populaciju. Sve vrednosti za kvalitet života stabilizovane su tokom šest meseci. Oblast neuroloških simptoma nije bila u korelaciji sa drugim vrednostima i oblastima. **Zaključak.** Kvalitet života bolesnika sa lumbalnom radikulopatijom bio je umanjen samo u domenu fizičkog, ali je poboljšan konzervativnim lečenjem tokom narednih šest meseci. Posle četiri godine postojalo je neznatno sniženje vrednosti svih parametara za procenu kvaliteta života, zbog čega je potrebno duže pratiti ove bolesnike.

Ključne reči: radikulitis; lečenje, konzervativno; kvalitet života; upitnici.

Introduction

Lumbar radiculopathy is a frequently reoccurring disease with significant socioeconomical repercussions. The discal origin/genesis lumbar radiculopathy incidence is around 2%. Out of 12.9% incidence of low back complaints within working population, 11% is due to lumbar radiculopathy^{1,2}.

The quality of life of lumbar radiculopathy patients conditioned by their health status is a result of both their subjective perception of the disease and their objective health status^{3,4}. This quality of life segment varies depending on the efficiency of the applied treatment methods^{5,6}.

In spite of the advancement of medical science there is still no defined optimal strategy for lumbar radiculopathy patients treatment⁷. Therapy approaches are set in different ways from medication, choice of physical agents and even in kinesitherapy⁸⁻¹¹. There are also no convincing evidence on the advantages of conservative vs. surgical treatment outcomes¹²⁻¹⁶.

Measurement of lumbar radiculopathy patients treatment outcome encompasses a huge number of aspects (symptoms, functionality, general health, working inability level, satisfaction with the treatment)¹⁷. Standardized quality of life evaluation methods are used for these purposes (generic and standardized questionnaires)¹⁸⁻²⁵. Lumbar radiculopathy patients feedback consequently influences the quality of medical work and services offered²⁶.

The aim of this study was to evaluate the quality of life of lumbar radiculopathy patients at the beginning of physical treatment, and after three and six months, as well as four years after the treatment by means of a generic questionnaire and a lumbar pain specific questionnaire.

Methods

This prospective clinical study involved 50 discal genesis lumbar radiculopathy patients. Their clinical diagnosis was confirmed by magnetic resonance imaging (MRI) examination and neurophysiological methods.

A criterion for including patients in this survey was to have the diagnosis of lumbar radiculopathy, lumbar disc herniation and not to be previously surgically treated. In addition, they all received the same medications (ibuprofen, paracetamol).

A criterion for excluding patients from this survey was the diagnosis of some other specific diseases followed by lumbar radiculopathy.

It is important to emphasise that none of the patients left the study.

The conservative physical treatment was done in a hospital over a four-week period (laser therapy 75 Hz, 5 minutes; wide applicator for lumbar segment; low-frequency pulsing magnetic field 72 Hz single aerial tape down the painful leg, 30 minutes; diadynamic currents /DF-CP-LP/ for lumbar segment; longitudinal galvanization 0.1 mA, 15 minutes down the painful leg).

After the therapy, the patients were advised to stick to the ergonomic rules and go on exercising at home within the observing treatment.

The study included interviewing the patients using a unique methodology and two standardized questionnaires: a generic and a disease specific one. The interviews were conducted at four points in time from the beginning of the lumbar radiculopathy patients treatment: I – at the beginning of the treatment, II - after three months, III – after six months, IV – four years from the beginning of the treatment.

The generic questionnaire Short Form Health Survey (SF-36) contains 36 questions grouped in eight domains (pain, physical functioning, the role of physical functioning, the role of emotional functioning, mental health, social relations, vitality, general health status)^{18,19}. Further domain grouping provides two summary scores describing lumbar radiculopathy patients physical and mental health.

The questionnaire specific for evaluation of lumbar pain treatment, devised by the North American Spine Society as a Low Back Pain Outcome Instrument (NASS LBP) contains 61 questions and offers a comprehensive evaluation of four segments: patients' functional limitations, motor and sensory neurological symptoms, expectations from the treatment and satisfaction with it²⁰⁻²⁵.

The data collected were processed and analyzed by using an SPSS for Windows programme. The statistical analysis included standard methods of descriptive and analytical statistics (Student's *t*-test, χ^2 test, analysis of variance-ANOVA). In addition, the correlating analysis was used to compare the resulting values. Although we contemplated including the propensity score, we decided not to use it at this time²⁶.

Results

The general characteristics of the patients included in the study are given in Table 1. Their average age was 46.1 (SD = 9.9, range from 24–60 years) and there were 34% females, and 66% males.

The average values of the parameters measured at the beginning of the treatment as well as during the treatment are given in Table 2.

The value of the overall physical health at the beginning of the treatment evaluated by the SF36 generic questionnaire was 31.1. It was significantly lower ($p < 0.001$) as compared to the overall population standard. The mental health value of 47.2 was not significantly lower ($p > 0.05$) as compared to the overall population standard.

After three months the values of the overall physical health of 42.1 increased significantly ($p < 0.001$). The increase trend continued after six months as well (48.7). After four years an insignificant decrease in values was evident (47.0).

Figure 1 shows an identical pain domain value change trend and the role of physical functioning over four years. The changes of physical functioning values over six months followed the same trend.

Table 1
General characteristics of the patients (n = 50)

Patients characteristics	Values
Age (years), $\bar{x} \pm SD$	46.1 \pm 9.9
Sex (%)	
male	66
female	34
Earlier episodes (%)	84
The level of disc herniation (%)	
L3-L4	2
L4-L5	48
L5-S1	50
Education (%)	
illiterate	0
primary	12
high school	25
college	8
university degree	3
postgraduate	2
Marital status (%)	
marriage or steady partnership	80
divorced or separated	12
widowed	2
single	6
Dominant problem (%)	
pain in a leg	46
weakness of the leg	26
both pain and weakness in a leg	28

Table 2
Quality of life of lumbar radiculopathy patients at the beginning and after the treatment

Questionares	At the beginning of the treatment	After the treatment			Standard value
		3 months	6 months	4 years	
<u>SF-36</u>					
Pain	30.1	56.8	79.3	73.1	75.5
Physical functioning	38.5	72.0	84.4	80.2	85.4
Role, physical	31.4	60.8	83.1	77.8	81.2
Role, emotional	64.3	80.8	90.8	86.0	81.3
Mental health	61.3	73.0	81.9	75.9	74.8
Vitality	51.9	70.4	80.2	73.0	61.0
General health status	57.9	61.3	65.7	62.2	72.2
Social relations	47.5	70.5	87.2	83.5	83.6
Overall physical health	31.1	42.1	48.7	47.0	50 \pm 10
Overall mental health	47.2	51.8	55.6	53.0	50 \pm 10
<u>NASS LBP</u>					
Pain and inability	3.46	2.62	1.65	1.91	3.1
Neurological symptoms	3.96	3.44	2.86	3.02	3.0
Expectations fulfilled	–	2.98	3.38	3.39	5.1
Satisfaction with treatment	–	3.39	3.66	3.72	2.7

SF-36 - Standard values of Short Form Health Survey, Minnessota

NASS LBP - North American Spine Society – Low Back pain Outcome Instrument, Deltroy

The overall mental health value of 51.8 after three months significantly increased ($p < 0.001$) and the ascending trend to 55.6 went on during six months, with an insignificant drop of values to 53.0 by the end of four years.

Figure 2 indicates a steady and significant ($p < 0.001$) increase of values of the mental health domain to 73.0 and the role of the emotional functioning to 80.8 in the first three months. After six months the increase of the role of the emo-

tional functioning was rapid amounting to 90.8. Four years later there was a decrease of both parameters values ($p > 0.05$).

The resulting values concerning pain and disability evaluated with the NASS LBP questionnaire at the beginning of the treatment of 3.46 and those of neurological symptoms of 3.96 matched the normative values (Figure 3).

Three months upon beginning of the treatment the values of the neurological symptoms of 3.44, as well as of pain

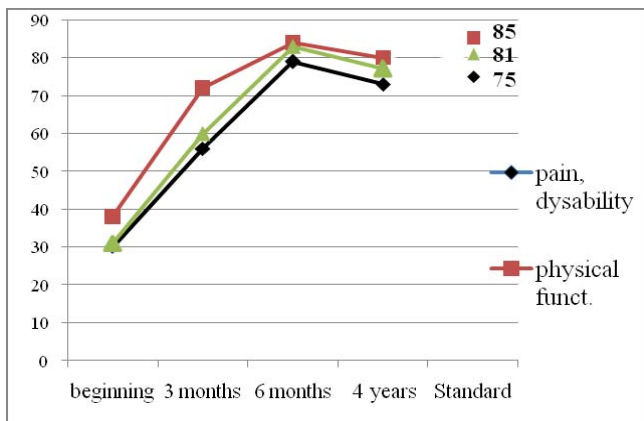


Fig. 1 – Pain and physical functioning (values within four years)

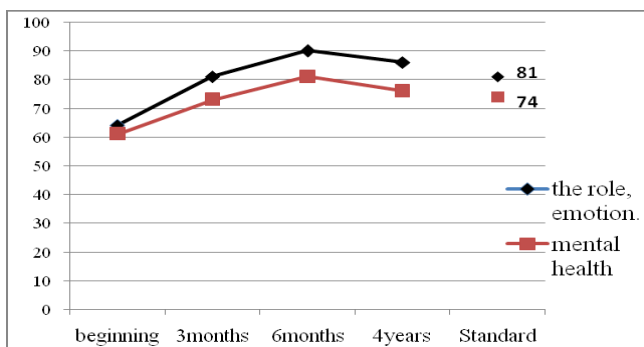


Fig. 2 – Mental health and role of emotional functioning (values within four years)

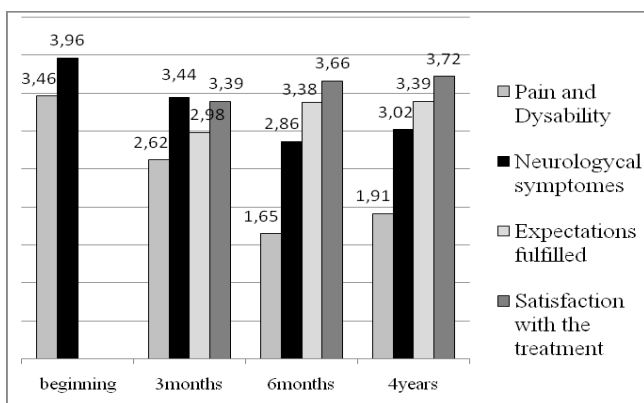


Fig. 3 – Results of the NASS LBP questionnaire within four years

and disability of 2.62, significantly decreased ($p < 0.001$). The same trend went on for six months. After four years there was an insignificant increase in these values. The expectations fulfillment of 2.98 over the three months was significantly lower ($p < 0.001$) than the normative amounting to 5.1. Although it was increasing significantly, after six months (3.38), the value remained low through the monitoring time (3.39). Satisfaction with the treatment was signifi-

cantly increased values ($p < 0.001$) as compared to the normative of 2.7, with an increasing trend within the monitoring period (3.39; 3.66; 3.72).

The quality of life evaluation measured with the generic and the specific questionnaire were compared by correlating the resulting values. The highest correlation index ($r = -0.814$) was after six months of monitoring between the pain and inability values in NASS BN and physical functioning domain on SF36.

A correlation of the NASS-NS domain (neurological symptoms) with other scales and domains was very small.

Discussion

Considering the lumbar radiculopathy problem in a comprehensive manner poses several opposite questions. There are the epidemiological, psychosocial and economical aspects on one hand, and the moderate nature of the disease and good treatment outcome on the other. The disease prevalence ranges from 1–3%, and it is the most frequent within the ages of 30–50^{1,2}. Most patients have a good prognosis. In 20–30% the disease related problems persist for 1–2 years. In around 10% of them a need for a surgery is considered. In six months 2/3 of the cases reach partial or complete resolution of the protruding disc⁷. It is logical that most studies would deal with the treatment problems. Surgical treatment provides faster relief of difficulties than physical one or treatment with medications, but there is no clear evidence on the advantages of one treatment method as opposed to the other^{20–25}. There is no consensus regarding this issue, nor there is a common and generally accepted treatment of lumbar radiculopathy^{7,9}. There is an evident need for studies that would evaluate the efficiency of treatment of this normally exhausting and expensive disease using valid instruments. This is a reason of evaluating the quality of life as an all-encompassing measure of the treatment outcome, including patients’ more responsible participation in the treatment¹⁷.

This study included patients with disc herniation and acute radicular damage, intensive pain and limited functionality. At the beginning of the treatment there was a significant damage to physical quality of life segment. Mental health was not jeopardized by the disease, though the opposite was expected, presupposing pain and inability repercussions on the patients’ psychological status^{3,27,28}.

Both questionnaires, applied comparatively, reported adequately on the physical health damages. They were manifested by pain and it influenced disability of strenuous and moderately strenuous physical activities (e.g. lifting and carrying weights, bending over during work, walking for over 1 km). The condition improved six months after the beginning of the conservative treatment. It was only in that period that one could argue the existence of discomfort of lumbar radiculopathy patients under conservative treatment. After four years there was a tendency of mild deterioration of all elements of physical functioning. This deterioration trend is statistically insignificant, but very interesting from the clinical standpoint. Was it deterioration of

just a small number of patients or the 'floor phenomenon'^{18,19?}. No answer was found by analysing the results from the lumbar disease specific NASS LBP questionnaire: the highest correlation was with values of patients with lumbar stenosis (3.1;3.9)²¹. The neurological symptoms segment of the NASS-NS questionnaire is especially significant in evaluation of treatment outcome because it focuses on the dominant symptomatology of the lumbar radiculopathy^{1,2,7}. Neurological symptoms are faster to recover at the beginning of treatment, while at later stages their healing gets slower gradually⁸. A low NASS-NS domain correlation with other scales and domains, except for that with NASS-BN (pain and disability), tells about the specificity of this domain and an evident need to use tests or questionnaires set, both generic and specific, in order to estimate and evaluate the condition of lumbar radiculopathy^{25,29}. Generic ones are needed to offer an adequate

evaluation of the patients' quality of life as compared to that of the healthy population, or that of patients suffering from different diseases. Specific ones are needed to measure more precisely special characteristics of health status and quality of life of lumbar radiculopathy patients.

Conclusion

Health conditioned quality of life of discal genesis lumbar radiculopathy patients changed from the physical functioning aspect. Their mental health remained unchanged.

The conservative physical treatment contributed to the improvement of physical health over the first six months of monitoring. After four years there was an insignificant drop of all quality of life values, indicating a need for a longer-term monitoring of these patients.

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