

The Association Between Functional Status, Health Related Quality of Life and Depression After Stroke

Inme Sonrası Fonksiyonel Durum ve Sağlıkla İlişkili Yaşam Kalitesinin Depresyonla İlişkisi

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Summary

Objective: Stroke is a major cause of disability, and assessment of quality of life is important in patients after suffering a stroke. Psychological disorders may be associated with poor quality of life and lower functional status after stroke. The objective of the study was to determine the relation between health-related quality of life, functional status, and depressive symptoms in stroke patients.

Materials and Methods: Subjects consisted of forty patients who were being treated in the rehabilitation program in the Department of Physical Medicine and Rehabilitation at Harran University Research Hospital. Health-related quality of life was assessed using Short Form 36 (SF-36), functional status using the Stroke Adapted Sickness Impact Profile (SA-SIP), and depressive symptoms using Beck's Depression Inventory (BDI).

Results: BDI scores were negatively correlated with physical functioning, role limitations due to physical problems, emotional problems, and mental health subscales of SF-36 ($p=0.002$, $r=-0.474$; $p=0.008$, $r=-0.417$; $p=0.01$, $r=-0.369$; $p=0.03$, $r=-0.369$, respectively). Furthermore, BDI scores were positively correlated with Communication, Ambulation, and Emotional Behavior subscale scores of SA-SIP ($p=0.03$, $r=0.347$; $p=0.002$, $r=0.483$; $p=0.001$, $r=0.502$, respectively).

Conclusion: Depressive symptoms are common, and the severity of depression may be related to poor functional status and quality of life in stroke patients. Assessment, recognition and management of depression may facilitate the participation of stroke patients in rehabilitation programs. *Türk J Phys Med Rehab 2008;54:89-91.*

Key Words: Stroke, depression, quality of life

Özet

Amaç: İnme yeti yitiminin en önemli nedenlerinden birisidir ve inme sonrası hastalarda yaşam kalitesi ve fonksiyonel durumun değerlendirilmesi önemlidir. İnme sonrası psikolojik bozukluklar, fonksiyonel kayıp ve düşük yaşam kalitesi ile birlikte olabilir. Bu çalışmanın amacı inme geçiren hastalarda yaşam kalitesi, fonksiyonel durum ve depresif belirtiler arasındaki ilişkinin araştırılmasıdır.

Gereç ve Yöntem: Çalışmaya, Harran Üniversitesi Araştırma Hastanesi Fiziksel Tıp ve Rehabilitasyon Kliniği'nde ayakta rehabilitasyon programına alınan 40 hasta dahil edildi. Sağlıkla ilgili yaşam kalitesi Kısa Form 36 (KF-36), fonksiyonel durum Hastalık Etki Profili (HEP), depresif belirtiler Beck Depresyon Ölçeği (BDÖ) ile değerlendirildi.

Bulgular: BDÖ skoru sonuçları KF-36'nın fiziksel fonksiyon, fiziksel problemlere bağlı rol kısıtlılığı, emosyonel problemler ve mental sağlık alt başlıkları ile negative korelasyon gösteriyordu ($p=0.002$, $r=-0.474$; $p=0.008$, $r=-0.417$; $p=0.01$, $r=-0.369$; $p=0.03$, $r=-0.369$, sırasıyla). Ayrıca, BDI skoru sonuçları, HEP'in iletişim kurma, ambulasyon ve emosyonel durum alt başlıkları ile pozitif korelasyon gösteriyordu ($p=0.03$, $r=0.347$; $p=0.002$, $r=0.483$; $p=0.001$, $r=0.502$, sırasıyla).

Sonuç: İnme geçiren hastalarda, depresif belirtiler sık görülmektedir ve depresif belirti şiddeti düşük yaşam kalitesi ve fonksiyonel kayıpla ilişkilidir. Bu hastalarda depresyonun değerlendirilmesi, tanınması ve tedavi edilmesi, hastanın rehabilitasyon programına katılımını artırabilir. *Türk Fiz Tıp Rehab Derg 2008;54:89-91.*

Anahtar Kelimeler: İnme, depresyon, yaşam kalitesi

Introduction

Stroke is a major cause of disability and has substantial adverse impact on the stroke survivor's health-related quality of life (HRQOL) (1). Evaluation of the quality of life mostly

comprises functional, physical, cognitive, psychological, and social elements. Factors that have been shown to be consistently associated with lower HRQOL include depression, functional status, and greater severity of paralysis (2). It has been suggested that depression, as well as stroke severity, low

level of functional ability and lack of social support are important negative predictors of poor HRQOL (3). However, some authors believe that there is no association between depression and HRQOL (4-6).

The aim of the study was to determine the relation between health-related quality of life, functional status, and depressive symptoms in stroke patients.

Materials and Methods

Subjects consisted of forty patients who attended the rehabilitation program in the Department of Physical Medicine and Rehabilitation at Harran University Research Hospital. Patients with significant cognitive problems and previous psychiatric history or alcoholism, and recurrent stroke were excluded from the study. Computed tomographic head scanning and clinical examination were used to confirm the diagnosis of stroke as defined by the World Health Organization (7). Severity of depressive symptoms was evaluated using Beck Depression Inventory (BDI) (8). Health-related quality of life was evaluated using the Short Form 36 (SF-36) (9), and functional status was evaluated by Stroke-Adapted Sickness Impact Profile (SA-SIP) (10).

SF-36 allows for assessment across eight health domains, namely: physical functioning, role limitations due to physical problems, bodily pain, general health, vitality, social functioning, role limitations due to emotional problems, and mental health. A score of 100 in physical functioning indicates an ability to function without personal or emotional problems and scores of 50 in the three remaining domains of general health, vitality and mental health indicate an absence of problems in these areas. The SF-36 has been well validated in the assessment of HRQOL in the stroke population.

Stroke adapted Sickness Impact Profile 30 (SA-SIP30) is a well-known scale for determining the health-related functional status. SA-SIP 30 consists of 8 subscales: Body Care and

Movement, Mobility, Ambulation, Social Interaction, Emotional Behavior, Alertness Behavior, Communication, and Household Management. The scores are presented as a percentage of maximal dysfunction, ranging from 0% to 100%.

Severity of depressive symptoms was evaluated by BDI (8). BDI contains 21 item sets, each with a series of four statements. Statements describe symptom severity along an ordinal continuum from absent or mild (a score of 0) to severe (a score of 3). Depression severity scores are created by summing the scores of the items endorsed from each item set. The most recent guidelines propose the following interpretation of severity scores: 0-9, minimal; 10-16, mild; 17-29, moderate; and 30-63, severe. Specifically, items reflect increase in appetite, increase in sleep, agitation, and psychomotor retardation. Therefore, the primary clinical use of the BDI is to assess severity of depressive symptoms in patients.

Statistical Analysis

Comparison of continuous variables was made using the Student's t test. Correlation between continuous variables was evaluated by calculating the Pearson correlation coefficient. All data are expressed as mean \pm standard deviation and a value of <0.05 was the criterion for statistical significance. Normality of quantitative data was checked using the Kolmogorov-Smirnov one-sample test. According to the results of this test, parametric tests were used for analysis of quantitative variables.

Results

The mean age of patients was 66.7 ± 2.7 years and mean time since stroke was 13.5 ± 3.2 months. The mean subscale scores of SF-36 are summarized in Table 1. The mean subscale scores of SA-SIP are summarized in Table 2. BDI scores shows that 12.2% of patients have mild, 36.6% patients have moderate, and 48.7% patients have severe depression. As can be seen in Table 3, BDI scores were negatively correlated with physical

Table 1. The mean subscale scores of SF-36 in patients.

	Mean	Standard Deviation
Physical functioning	43.9	10.0
Role limitations due to physical problems	30.1	7.4
Physical pain	32.4	6.4
General health	32.6	4.8
Vitality	40.7	9.6
Social functioning	44.5	9.2
Role limitations due to emotional problems	36.5	7.9
Mental health	34.0	7.2

Table 2. The mean subscale scores of SA-SIP in patients.

	Mean	Standard Deviation
Body Care and Movement	75.6	13.5
Mobility	79.7	9.3
Ambulation	77.0	2.8
Social Interaction	77.5	12.5
Emotional Behavior	73.2	8.8
Alertness Behavior	77.5	5.0
Communication	77.8	11.3
Household Management	76.4	4.8
BDI: Beck Depression Inventory		

functioning, role limitations due to physical problems, emotional problems, and mental health subscale scores of SF-36 ($p=0.002$, $r=-0.474$; $p=0.008$, $r=-0.417$; $p=0.01$, $r=-0.369$; $p=0.03$, $r=-0.369$, respectively). Furthermore, BDI scores were positively correlated with Communication, Ambulation, and Emotional Behavior subscale scores of SA-SIP ($p=0.03$, $r=0.347$; $p=0.002$, $r=0.483$; $p=0.001$, $r=0.502$, respectively).

Discussion

Stroke is a major health problem worldwide, and emotional distress is a frequent complication of stroke (11, 13). Post-stroke depression has been the topic of various studies, occurring in approximately 40% of stroke victims (14). Many authors proposed that post-stroke depression was related with poor functional status. Depression and physical disability were identified as the predictors of QOL by several authors (15, 16). Nydevik and Hulter-Asberg (17) investigated the association of depression and QOL in stroke patients, and they reported that depression is not related to deterioration of QOL in these patients. King (18) did not find any relationship between life satisfaction and severity of paralysis. The importance of our study is that it indicates the relation between depression, functional status and QOL. In the present study, 48.7% of stroke patients were diagnosed as suffering severe depression. Our results are consistent with previous studies (19-21).

Low physical functioning limits daily activities in stroke patients. The physical functioning domain of the SF-36 evaluates independent activities of daily living, which are more demanding physically. These include activities such as lifting heavy objects, walking, running - activities that most stroke patients find difficult to perform. Low physical functioning scores have been reported in some studies (2,22,23). The significant negative correlation between BDI and SF-36 subscales indicated that poor physical function affects the patient's psychological conditions.

Stroke related disability was measured using SA-SIP in our study. BDI correlated with certain subscales of SA-SIP in these patients. Therefore, we considered that stroke related functional failure may affect the QOL and emotional status. Ambulation seems to contribute to the prediction of functional QOL.

In summary, our results indicate a deterioration of QOL in stroke patients. They also indicate the presence of a depressive disorder related with various QOL predictors in these patients. Depression is a common psychiatric complication of stroke. However, it is often unrecognized and untreated. Numerous studies show that untreated depression after stroke impedes the rehabilitation process, jeopardizes QOL, and increases mortality. We suggest that successful management of depression may facilitate the attendance of stroke patients at the rehabilitation programs.

Table 3. Correlations between BDI and SA-SIP, SF-36 in stroke patients.

	BDI	
Communication (SA-SIP)	$p=0.03$	$r=0.347$
Ambulation (SA-SIP)	$p=0.002$	$r=0.483$
Emotional (SA-SIP)	$p=0.001$	$r=0.502$
Physical functioning (SF-36)	$p=0.002$	$r=-0.474$
Physical problems (SF-36)	$p=0.008$	$r=-0.417$
Emotional problems (SF-36)	$p=0.01$	$r=-0.369$
Mental health (SF-36)	$p=0.03$	$r=-0.369$

BDI: Beck Depression Inventory, SA-SIP: Stroke Adapted Sickness Impact Profile

References

1. Jaracz K, Jaracz J, Kozubski W, Rybakowski JK. Post-stroke Quality of Life and Depression. *Acta Neuropsychiatrica* 2002;14:219-25.
2. Kong KH, Yang SY. Health-related quality of life among chronic stroke survivors attending a rehabilitation clinic. *Singapore Med J* 2006;47:213-8.
3. Daina K, Daiva R. Measurement of quality of life in stroke patients *Medicina (Kaunas)* 2006;42:20-2.
4. Nydevik I, Hulter-Asberg K. Subjective dysfunction after stroke. A study with Sickness Impact Profile. *Scand J Prim Health Care* 1991;9:271-75.
5. Nydevik I, Hulter Asberg K. Subjective dysfunction after stroke. A study with sickness impact profile. *Scand J Prim Health Care* 1991;9:271-5.
6. Shimoda K, Robinson RG. The relationship between social impairment and recovery from stroke. *Psychiatry* 1998;61:101-11.
7. The World Health Organization MONICA Project (monitoring trends and determinants in cardiovascular disease): a major international collaboration. *J Clin Epidemiol* 1988;41:105-14.
8. Beck AT, Ward CH, Mendelson M, Mock J, Erbaugh J. An inventory for measuring depression. *Arch Gen Psychiatry* 1961;4:561-71.
9. Hacking HG, Post MW, Schepers VP, Visser-Meily JM, Lindeman E. A comparison of 3 generic health status questionnaires among stroke patients. *J Stroke Cerebrovasc Dis* 2006;15:235-40.
10. Bergner M, Bobbitt RA, Carter WB, Gilson BS. The Sickness Impact Profile: development and final revision of a health status measure. *Med Care* 1981;19:787-805.
11. Kalache A, Aboderin I. Stroke: the global burden. *Health Policy Plan* 1995;10:1-21.
12. Bogousslavsky J. William Feinberg lecture 2002: emotions, mood, and behavior after stroke. *Stroke* 2003;34:1046-50.
13. Gainotti G, Azzoni A, Marra C. Frequency, phenomenology and anatomical-clinical correlates of major post-stroke depression. *Br J Psychiatry* 1999;175:163-7.
14. Chemerinski E, Robinson RG, Kosier JT. Improved recovery in activities of daily living associated with remission of poststroke depression. *Stroke* 2001;32:113-7.
15. Singh A, Black SE, Herrmann N, Leibovitch FS, Ebert PL, Lawrence J, et al. Functional and neuroanatomic correlations in poststroke depression: the Sunnybrook Stroke Study. *Stroke* 2000;31:637-44.
16. Kauhanen ML, Korpelainen JT, Hiltunen P, Nieminen P, Sotaniemi KA, Myllylä VV. Domains and determinants of quality of life after stroke caused by brain infarction. *Arch Phys Med Rehabil* 2000;81:1541-6.
17. Nydevik I, Hulter-Asberg K. Sickness impact after stroke. A 3-year follow-up. *Scand J Prim Health Care* 1992;10:284-9.
18. King RB. Quality of life after stroke. *Stroke* 1996;27:1467-72.
19. Ali Gür, Remzi Çevik, Sevim Orkun, Safinaz Ataoğlu, Neşe Özgür, Ömer Satıcı. Hemiplejik Hastalarda Sakatlık Listesi ve Rehabilitasyon Sonuçları. *Türk Fiz Tıp Rehab Derg* 2001;47:24-6.
20. Berrin Durmaz, Funda Atamaz. İnme ve Hayat Kalitesi. *Türk Fiz Tıp Rehab Derg* 2006;52(Özel Ek B):45-9.
21. Ayşe Küçükdeveci Rehabilitasyonda Yaşam Kalitesi. *Türk Fiz Tıp Rehab Derg* 2005;51(Özel Ek B):23-9.
22. Mayo NE, Poissant L, Ahmed S, Finch L, Higgins J, Salbach NM, et al. Incorporating the International Classification of Functioning, Disability, and Health (ICF) into an electronic health record to create indicators of function: proof of concept using the SF-12. *J Am Med Inform Assoc* 2004; 11:514-22.
23. Hackett ML, Anderson CS. Auckland Regional Community Stroke (ARCOS) Study Group Frequency, management, and predictors of abnormal mood after stroke: the Auckland Regional Community Stroke (ARCOS) study, 2002 to 2003. *Stroke* 2006;37:2123-8.