Quality of Life after Young Ischemic Stroke of Mild Severity Is Mainly Influenced by Psychological Factors

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Background: Long-term prognosis in terms of quality of life (QoL) in young stroke patients is of importance because they usually have a long life expectancy and extensive daily life demands. We aimed at determining which medical and psychological factors influence the QoL in young stroke patients (<50 years), after long-term follow-up. *Methods:* Young ischemic stroke patients admitted to the St. Elisabeth Hospital and the TweeSteden Hospital, Tilburg, the Netherlands, between 2000 and 2010 were included. One hundred seventy patients and 61 controls filled out the following questionnaires: (1) the Hospital Anxiety and Depression Scale, (2) the Fatigue Assessment Scale, and (3) the shortened World Health Organization Quality of Life scale. Using linear multiple regression analysis, we assessed the factors influencing QoL. *Results:* QoL did not differ significantly between patients (median modified Rankin Scale score at follow-up, 0) and controls after a mean follow-up of 4.5 (standard deviation, 2.8) years. The presence of excessive fatigue was associated with lower scores on all domains of the QoL ($P \leq .003$), but not for general health domain ($P = .010$). Similarly, depression was associated with worse QoL on the physical ($P = .004$) and psychological ($P = .001$) domains and anxiety with lower scores on the psychological ($P < .001$) QoL domain. No relationship was found between stroke-specific factors and QoL. *Conclusions:* Fatigue and to a lesser extent depression and anxiety affect the QoL in young adults after ischemic stroke of mild severity. Therefore, young stroke patients should be informed about, screened, and, if possible, treated for fatigue, depression, and anxiety. **Key Words:** Young stroke—prognosis—quality of life—fatigue.
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Up to 12% of all strokes occur in adults under the age of 45 years.[1] Short-term prognosis is considered more favorable in young than in older patients, because of lower mortality and better functional outcome.[2] Recently, more information has become available about the long-term mortality and recurrence rate.[3,4] Young stroke patients are more likely to be divorced, unemployed, and more often develop depression, anxiety, or fatigue.[5-8] This might be the result of the more severe impact of stroke on psychological and social functioning in this age category.

However, only limited information is available about long-term quality of life (QoL) after young stroke and which are the most important factors influencing QoL in this specific population. Most likely, QoL is influenced

not only by motor disabilities but also by coping style, mental capacities, and adjusting life purposes in relation to health changes. Stroke patients often experience fatigue and depression.[8-10] One previous study demonstrated the major role of these factors in QoL in young patients.[8]

In this study, we evaluated the factors affecting the QoL after ischemic stroke in young adults. We hypothesized that QoL after stroke is affected both by stroke-specific factors, like stroke severity, and by psychological factors. We attempted to define which of these factors influence QoL most.

Methods

Patient Selection

All consecutive patients who presented with an ischemic stroke in the St. Elisabeth Hospital and the TweeSteden Hospital, Tilburg, the Netherlands, between January 1, 2000, and December 31, 2010, were included if they met the following inclusion criteria: (1) clinical diagnosis of ischemic stroke (focal neurologic deficit persisting for more than 24 hours of presumably vascular origin) retrospectively confirmed by a stroke neurologist with or without radiological confirmation (computed tomography or magnetic resonance imaging) and (2) age between 18 and 49 years at the time of the index event. Patients with a history of ischemic stroke were excluded. We recruited appropriate cases retrospectively by searching in the Electronic Medical File and existing stroke databases. Follow-up was done between April 2011 and June 2011. All eligible patients were approached with an information letter. When necessary, we contacted the general practitioner to verify their vital status. When patients did not respond to the first letter and a second reminder, they were considered to be nonparticipants.

The Medical Research Ethics Committee of the St. Elisabeth Hospital approved the study protocol.

Baseline Data Ascertainment

All baseline data were retrospectively derived from patient files. We analyzed the following demographical and clinical characteristics: age of onset, sex, follow-up period, type of infarction (according to the Oxford Community Stroke Project criteria[11]: total anterior circulation infarction, partial anterior circulation infarction, lacunar infarction, and posterior circulation infarction), National Institutes of Health Stroke Scale (NIHSS) score (determined retrospectively based on clinical signs at presentation),[12] vital status (and if deceased, we identified the cause of death) and stroke recurrence. Information on stroke recurrence was derived from patient files in both hospitals.

Follow-up Assessment

Follow-up was done by the following standardized structured questionnaires that were sent out by mail:

(1) the shortened World Health Organization Quality of Life scale (WHOQOL-BREF 26). In the WHO QOL-BREF 26, 5 QoL domains are evaluated on a scale of 4 to 20: physical health, psychological functioning, social relationships, environment, and an additional domain for general QoL (Table 1).[13]
(2) the Fatigue Assessment Scale (FAS). The FAS is a 10-item questionnaire focusing on physical and mental fatigue. A score of more than 22 is considered indicative of excessive fatigue.[14,15]
(3) the Hospital Anxiety and Depression Scale (HADS). The HADS is divided into 2 components: 1 for depressive symptoms and 1 for anxiety symptoms. A score of more than 7 on one of these components is suggestive of a depression or anxiety disorder, respectively.[16,17]

Patients were contacted by phone to assess the modified Rankin Scale (mRS)[18] score and their current employment status.

Controls

Controls were recruited from the COMPlaints After Stroke (COMPAS) study,[17] a simultaneously running study in both hospitals. This study investigates poststroke subjective cognitive complaints. The control group consists of a sample from the nonstroke general

Table 1. *QoL domains as assessed with the WHOQOL-BREF 26*

Domain	Components
Physical health	Activities of daily living, dependence on medication and medicinal aids, energy and fatigue, mobility, pain and discomfort, sleep and rest, work capacity
Psychological	Bodily image and appearance, negative and positive feelings, self-esteem, spirituality, cognition
Social relationships	Personal relationships, social support, sexual activity
Environment	Financial resources, freedom, health and social care, home environment, opportunities for acquiring new information, participation in recreation, physical environment, transport
General health	Self-perception of health and quality of life

Abbreviation: WHOQOL-BREF 26, the shortened World Health Organization Quality of Life scale.

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