The Influence of Depressive Symptoms on Quality of Life after Stroke: A Prospective Study

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Background: Poststroke depressive symptoms have prospectively predicted impairment of health-related quality of life (HRQOL). However, it is not known whether such predictive effect is independent of HRQOL at 1 month after stroke. This study aimed to investigate the impact of depressive symptoms at 1 and 3 months after stroke on the 3-month poststroke HRQOL and to investigate the influence of the HRQOL measured at 1 month after stroke on these relationships. *Methods:* We prospectively evaluated 67 patients at 1 and 3 months after a first-ever ischemic stroke from 106 eligible patients who have been consecutively admitted to the neurology ward of a teaching hospital. A psychiatrist assessed the presence of depressive symptoms using the 31-item version of the Hamilton Rating Scale for Depression and the HRQOL was assessed with the 36-item Short-Form Health Survey from the Medical Outcomes Study. We used linear regression to measure the impact of depressive symptoms, HRQOL at 1 month, and potential confounders on HRQOL at 3 months. *Results:* We found an association between depressive symptoms at 1 month and HRQOL at 3 months after the stroke; however, this association was not significant when adjusting for the 1 month poststroke HRQOL. Depressive symptoms at 3 months were associated with HRQOL at 3 months after stroke, independently of the poststroke HRQOL at 1 month and potential confounders. *Conclusions:* Current depressive symptoms at 3 months are important for HRQOL at 3 months after stroke; however, regarding the prospective prediction, HRQOL at 1 month is the most relevant factor. **Key Words:** Stroke—depression—quality of life—prospective study.

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L.T. and R.F. participated in the design of the study, carried out the study, supervised the data collection, and revised the article. M.F.M.S., M.I.S., and G.T. have made substantial contribution to acquisition of data and carried out the study. M.S., D.V.I., and M.C.S.L. contributed to the design of the study and writing of article. V.D.G. developed the design of the study, developed the rationale of the statistical analysis, and drafted the article. All authors revised it critically for important intellectual content and gave final approval of the version to be published.

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Stroke affects 24%-54% of the population[1] and is one of the leading causes of mortality[2-5] with an estimated mortality rate between 15% and 25% in the first year after stroke.[6] In 2010, it has been reported to be the third cause of disability-adjusted life years, estimated as the sum of years of life lost and years lived with disability.[7]

Stroke's physical and psychiatric complications negatively impact the quality of life.[8] According to the World Health Organization, health-related quality of life (HRQOL) is defined as "the individual's perception of their position in life in the context of culture and value system in which they live and in relation to their goals, expectations, standards and concerns".[9] Stroke survivors have poor HRQOL[10,11]; it has been reported that up to 77% had poorer HRQOL 2 years after stroke when compared with a period before stroke.[12]

However, important aspects regarding the relationship between stroke complications and impairment of HRQOL are still not well understood.[13] Depression has been considered the most common psychiatric complication in this population with a reported prevalence ranging around 22%-31%.[8,14-19] Depression after stroke has been associated with a worse prognosis,[8] increased mortality,[20] impaired activities of daily living,[21] poor adherence to treatment, and impaired HRQOL.[22-24]

The association between impaired HRQOL and depression after stroke has been supported by several studies.[11,22,25,26] However, few prospective studies have investigated the characteristics of this relationship[27]; we did not find studies investigating whether the association of depression and HRQOL is influenced by the HRQOL at 1 month after stroke. Therefore, the objective of this study was to evaluate the impact of depressive symptoms at 1 month after stroke on HRQOL at 3 months after stroke and to investigate the influence of HRQOL at 1 month after stroke on this relationship.

Methods

Sample

We screened 343 male and female patients, age of 18 years or older, consecutively admitted to the Neurology Unit of a University Hospital with a diagnosis of ischemic stroke between August 2002 and November 2008. The diagnosis of stroke was made by a neurologist in accordance with the World Health Organization (1989) and confirmed by magnetic resonance imaging. A psychiatrist administered the modules for mood episodes, psychotic symptoms, and substance use disorders of the structured clinical interview for Diagnostic and Statistical Manual of Mental Disorders, fourth edition to investigate past and current psychiatric disorders (American Psychiatric Association 1994; First 1995). This interview was performed with the patient and a family member/caregiver present when possible. Patients with previous history of stroke or other central nervous system diseases (ie, amyotrophic lateral sclerosis, subarachnoid hemorrhage, Binswanger disease, brain tumors, or multiple sclerosis) were excluded from the study, as were those with infratentorial stroke, a severe clinical condition that impeded the interview, Cushing syndrome, alcohol or drug dependence in the last 12 months, previous history of major depressive episode or bipolar disorder, current major depressive episode or bipolar disorder with pre-stroke onset, psychotic disorder, dementia, or aphasia, who impeded the interview. On the basis of these criteria, we excluded 237 patients: 37 patients for aphasia who impeded the interview; 93 patients for history stroke, infratentorial stroke, greater than 2 week interval between stroke occurrence, and screening interview; 44 patients for psychiatric history; 21 patients for neurologic diseases; 36 patients for others reasons; and 6 patients refused to participate in the study. A total of 106 patients were eligible and were invited to perform 2 ambulatory assessments; of these, 31 patients did not attend the evaluation at 1 month after stroke at the follow-up.

The assessment at 1 month after stroke (T1) included the evaluation of 75 patients at their first ambulatory visit between 30 and 51 days (mean of 36 $\pm$ 6 days) after stroke, 67 of them were prospectively evaluated between 83 and 108 days (mean of 92.3 $\pm$ 54 days) after stroke (T2 Fig 1). We estimated that at least 62 patients would be necessary to detect a weak[28] correlation (ie, coefficient of .2/coefficient of variation R2 = .04) between 36-item Short-Form Health Survey from the Medical Outcomes Study (SF-36) and 31-item version of the Hamilton Rating Scale for Depression (HAM-D-31) scores with an alpha of .05, 2-tailed.

The study was approved by the hospital Committee of Ethics on Research, and all patients provided informed consent before enrollment.

Procedures and Instruments

In both visits we assessed patient's HRQOL with the SF-36 and the depressive symptoms with the HAM-D-31.[29]

The SF-36 is a self-administered scale, developed by Ware and Sherboune[29] and the Brazilian Portuguese version was validated by Ciconelli.[30] The SF-36 consists of 36 items and covers 8 subscales: physical functioning, role functioning physical, bodily pain, general health, vitality, social functioning, role emotional, and mental health (MH). Subscale scores range from 0 to 100; higher value represents better quality of life.

A psychiatrist assessed the severity of depressive symptoms using the HAM-D-31.[29,31] We used the full 31-item version because of its comprehensive assessment of depressive symptomatology including 5 "reverse vegetative" symptoms found in atypical depression, 2 additional retardation items, and other psychologic symptoms that are not covered in the original 17-item version.