

# ANXIETY AND DEPRESSIVE SYMPTOMS IN ACUTE ISCHEMIC STROKE

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**SUMMARY** – Inadequate attention is being paid to the anxiety and depressive symptoms in acute stroke, although these problems are known to influence the patients' neurological outcome. The aim of our study was to assess the prevalence of anxiety and depressive symptoms in the acute stage of ischemic stroke and to identify the factors associated with such problems. Anxiety and depressive symptoms were evaluated using the Hospital Anxiety and Depression Scale in 40 patients with acute ischemic stroke admitted during a period of one month. Statistical analyses were performed by the SigmaStat (Version 2.0) software. Study results showed 55% of study patients to suffer from depressive symptoms and 40% from both anxiety symptoms and depressive symptoms. There was a correlation of depressive symptoms (HADS-D score) with MMSE ( $p < 0.001$ ), age ( $p = 0.003$ ) and BI ( $p < 0.001$ ), and of anxiety symptoms (HADS-A score) with MMSE ( $p < 0.001$ ) and BI ( $p = 0.01$ ). There was no significant association of HADS-A and HADS-D score with other patient characteristics. In conclusion, depressive symptoms were more frequent in the acute stage of ischemic stroke. Study patients had a high prevalence of both groups of symptoms. Therefore, attention should be paid to the anxiety and depressive symptoms in stroke units and try to relieve the patients' emotional stress and personal suffering, which could improve their neurological outcome.

**Key words:** *Acute stroke; Anxiety symptoms; Depressive symptoms; Hospital Anxiety and Depression Scale (HADS)*

## Introduction

We are mostly focused on physical and cognitive problems occurring as a consequence of stroke and do not give enough concern to emotional problems, especially in the acute phase of stroke. Patients have themselves commented that more attention should be paid to emotional disorders.

Emotional changes related to cerebrovascular disease may be caused by patient's brain damage *per se* or by psychological reactions<sup>1,2</sup>. Emotional problems

may lead to a complicated clinical presentation, poor response to treatment, and sometimes unnecessary investigations. From previous studies we know that comorbid depressive disorders significantly increase medical costs, but it is not related to psychiatric consultation<sup>3</sup>. Emotional problems influence stroke patient recovery of motor and cognitive deficits as well as the mortality risk associated with stroke<sup>2,4</sup>, thus it is necessary to identify their existence at their early stages and institute appropriate treatment. Previous studies of emotional problems in stroke patients were focused on such symptoms occurring months or years after the onset of stroke symptoms<sup>1,2,4,5</sup>. The aim of our study was to assess the prevalence of anxiety and depressive symptoms in the acute stage of ischemic stroke and to identify the factors associated with such problems.

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## Patients and Methods

All patients admitted to our Department in May 2006 for the acute phase of first-ever ischemic stroke were included in the study, except for those with transient ischemic attack, previous emotional problems, severe aphasia, or clouding of consciousness. Acute ischemic stroke was diagnosed according to general and neurological examination and computed tomography scan. There were 40 patients included in the study. Neurological impairments were assessed by the National Institutes of Health Stroke Scale (NIHSS), which was performed at admission to the hospital. Mini Mental State Examination (MMSE) and Barthel Activities of Daily Living index (BI) were performed at discharge from the hospital. All assessments were made by neurologists. Anxiety and depressive symptoms were evaluated using the Hospital Anxiety and Depression Scale (HADS) between day 3 and day 5 of admission. This is a widely used scale measuring symptoms of anxiety and depression, which has been validated in clinical and healthy populations<sup>6,7</sup>. HADS comprises 14 questions of which 7 measure anxiety symptoms (q 1, 3, 5, 7, 9, 11, 13, named HADS-A) and 7 depressive symptoms (q 2, 4, 6, 8, 10, 12, 14, named HADS-D). For each question, the patient is asked to make a score ranging from 0 points (no symptoms) to 3 points (maximum impairment) considering his or her emotional state during the last 3-5 days. Cut off between normal and pathological functioning was set at 8 points in HADS-A and at 6 points in HADS-D<sup>8,9</sup>. The validity of HADS in the acute phase of stroke was evaluated<sup>10</sup>. To identify the factors associated with anxiety and depressive symptoms, we used the following variables: sex,

age, living conditions (single or not single), NIHSS, MMSE and BI. Statistical analyses were performed by the SigmaStat (Version 2.0) software. Descriptive statistics was used for demographic data. Analysis of variance and pair-wise multiple comparison procedures (Dunn's method) were used to assess the effects of the factors mentioned above on the anxiety and depressive symptoms. Associated risk for the anxiety and depressive symptoms was calculated using univariate and multivariate linear regression analysis. The level of significance was set at  $p < 0.05$ .

## Results

Out of 40 study patients, there were 20 (50%) male and female patients each, mean age  $71.1 \pm 9.7$ , 65% of them aged  $>70$  and 30% single. The characteristics of stroke patient assessments are shown in Table 1. According to the defined cut-offs, 22 (55%) patients had depressive symptoms and 16 (40%) patients had anxiety symptoms. All patients with anxiety symptoms also had depressive symptoms. Depressive symptoms (HADS-D score) showed correlation with MMS ( $p < 0.001$ ), age ( $p = 0.003$ ) and BI ( $p < 0.001$ ), whereas anxiety symptoms (HADS-A score) correlated with MMS ( $p < 0.001$ ) and BI ( $p = 0.01$ ). There was no significant association of HADS-A and HADS-D scores with other patient characteristics.

## Discussion

Depression is still under-recognized and under-treated, especially in stroke patients. Even though diagnosing anxiety and depression is impossible at this stage, we could identify anxiety and depressive symptoms. It is known from a previous study that comorbid depressive disorders increase the social and economic burdens to the individual and the society as a whole, and that effective treatment reduces disability and costs<sup>11</sup>. The psychological burden of the post-stroke depressed patients' family members is also a big problem that we have to be aware of<sup>12</sup>. The presence of post-stroke depression has been found to exert negative impact on the recovery of cognitive function, recovery of ability to perform activities of daily living and on the mortality risk. In-hospital post-stroke depression was the most important variable predicting

Table 1. Characteristics of stroke patient assessments

Assessment	Mean	SD
NIHSS at admission	8.5	5.0
BI	74.0	25.9
MMSE	27.5	3.9
HADS-D	10.9	5.0
HADS-A	9.2	3.9

NIHSS = National Institutes of Health Stroke Scale; BI = Barthel Activities of Daily Living index; MMSE = Mini Mental State Examination; HADS = Hospital Anxiety and Depression Scale (A, Anxiety; D, Depression)

poor recovery in the activities of daily living over a two-year period<sup>13</sup>. Early identification and appropriate pharmacological and supportive treatment may be useful and prevent more serious effects on neurological outcome in this patient group.

The present study indicated a rather high prevalence of emotional problems, especially depressive symptoms, in our patients with no previous emotional problems. It was higher than the prevalence reported from another acute hospital-based study<sup>10</sup> and a rehabilitation-based study<sup>14</sup>. It is probably even higher due to the excluded patients with aphasia, which is known to be associated with depressive symptoms and post-stroke depression<sup>15</sup> and also a well-known fact that one-third of acute stroke patients have 'modified mental processing', meaning no or only poor memory of recent events and their consequences<sup>16</sup>. It may have been the consequence of a rather high percentage of the elderly, severe neurological impairments, lower MMSE score and low BI score in the study group during the one-month period. The severity of post-stroke depression has been found to correlate with the degree of impairment of activities of daily living during the acute and chronic phase of stroke<sup>10-16</sup>. The prevalence of depression increases later in the post-stroke period<sup>10-16</sup>, so patients should be monitored closely for anxiety and depressive symptoms throughout the rehabilitation phase. We found correlation of depressive symptoms with MMS, age and BI, whereas anxiety symptoms correlated with MMS and BI. A previous study<sup>10</sup> found correlation between depression and BI, and of anxiety with MMS and living conditions. Depression should be considered as an expression of brain disease and not only a reactive psychological response to an adverse situation. In one study, it was suggested that anxiety is not probably linked to the organic lesion but occurs independently of depression and with no relation to the neurological impairment in stroke, which is in contrast to our results<sup>17</sup>.

In conclusion, we have to pay more attention to the anxiety and depressive symptoms in the acute stroke units to identify early their existence and treat them properly on time. The patients' emotional suffering may be relieved if more resources are directed to these problems in the acute stage of stroke. At long term, this may even improve their neurological disabilities and outcome. The elderly acute stroke patients with

lower scores on BI and MMSE are at a higher risk. HADS is very good in screening for anxiety and depressive symptoms in the acute stroke and later in their monitoring, and has to be performed periodically on a routine basis in stroke patients for early therapeutic response. A follow-up study of the anxiety and depressive symptoms in these patients and additional studies in a great number of patients are needed.

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### Sažetak

## ANKSIOZNI I DEPRESIVNI SIMPTOMI KOD BOLESNIKA S AKUTNIM ISHEMIJSKIM MOŽDANIM UDAROM

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Ne razmišlja se dovoljno o anksioznim i depresivnim simptomima kod bolesnika s akutnim moždanim udarom, iako se zna da ovi problemi utječu na neurološki ishod. Cilj studije bio je utvrditi učestalost anksioznih i depresivnih simptoma u akutnoj fazi ishemijskog moždanog udara te koji čimbenici utječu na ove probleme. Anksiozni i depresivni simptomi ocjenjivali su se pomoću Bolničke skale za anksioznost i depresiju kod 40 bolesnika s akutnim moždanim udarom primljenih tijekom jednog mjeseca. U statističkoj analizi primijenio se program SigmaStat (Version 2.0). Depresivni simptomi su bili prisutni kod 55%, a anksiozni simptomi kod 40% bolesnika, koji su svi istodobno imali i depresivne simptome. Nađena je korelacija depresivnih simptoma s MMSE ( $p < 0,001$ ), dobi ( $p = 0,003$ ) i BI ( $p < 0,001$ ), te anksioznih simptoma s MMSE ( $p < 0,001$ ) i BI ( $p = 0,01$ ). Nije bilo značajne povezanosti anksioznih i depresivnih simptoma s drugim osobinama bolesnika. Depresivni simptomi bili su češći u akutnoj fazi ishemijskog moždanog udara. Naši bolesnici imali su vrlo visoku učestalost obiju skupina simptoma. Znatno veću pozornost treba već u jedinicama moždanog udara posvetiti anksioznim i depresivnim simptomima i nastojati bolesnike osloboditi emocionalnog stresa i patnje, što će poboljšati njihov neurološki ishod.

Ključne riječi: *Moždani udar; Anksiozni simptomi; Depresivni simptomi; Bolnička ljestvica za anksioznost i depresiju (HADS)*