

Sex Differences in Depression and Cognitive Impairment after Stroke The KOSCO Study

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Purpose

The primary purpose of this study was to investigate whether there were differences in prevalence and severity of depression or cognitive impairment between male and female patients with stroke. In addition to that, early features of depression or cognitive impairment associated with long term depression or cognitive impairment were studied for male and female stroke patients respectively.

Methods

This study was an interim analysis of the Korean Stroke Cohort for Functioning and Rehabilitation (KOSCO) designed as 10 years long-term follow-up study of stroke patients. All patients who admitted to the representative hospitals in 9 distinct areas of Korea with their acute first-ever stroke (from August 2012 to May 2015) were recruited. In this study, a total of 7,166 patients with depression scale or cognitive test score at least at one time point until 30 months after onset were included. Score of Korean Version of Geriatric Depression Scale Short Form (K-GDS-SF) and Performance on Korean Version of Mini-Mental State Examination (K-MMSE) was analyzed with ANCOVA and logistic regression.

Results

The prevalence of depression (K-GDS-SF \geq 8) and cognitive impairment (K-MMSE $<$ 16%ile) was higher in female stroke patients (61.4% to 25.5% for depression and 53.7% to 31.5% for cognitive impairment) than male stroke patients (53% to 19.6% for depression and 39.6% to 17.2% for cognitive impairment) at every time points. As a result of ANCOVA, depression and cognitive impairment were more severe in female stroke patients than in male stroke patients at every time points ($p<0.05$). In logistic regression analysis, female stroke patients were at increased risk for depression at discharge, 6 months and 18 months after stroke and for cognitive impairment at every time points except at transfer to rehabilitation ($p<0.05$). In sub scores analysis, high score of the 'lowered affect' factor in the K-GDS-SF at acute phase increased the risk of depression at 30 months and low score of the 'orientation' domain in K-MMSE at acute phase increased the risk of cognitive impairment at 30 months only in female stroke patients. In male stroke patients, high score of the 'cognitive inefficiency and a lack of motivation' factor in K-GDS-SF increased the risk of depression at 30

months and low score of 'memory' domain in K-MMSE increased the risk of cognitive impairment at 30 months. High score of the 'Negative judgment' factor in the K-GDS-SF, and low score of the 'attention' or 'construction' domain of the K-MMSE were common risk factors in both male and female stroke patients.

Conclusion

There was sex difference in the prevalence and severity of depression or cognitive impairment after stroke, and in the effect of sub scores on the prediction of long term depression or cognitive impairment. These results are consistent with the traditional view that female patients have more severe emotional or cognitive outcomes after stroke than male patients.

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