

The Relationship of Acute Delirium with Cognitive and Psychiatric Symptoms after Stroke: A Longitudinal Study

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Background

Delirium is a common complication in the acute phase of stroke. However, the condition is often overlooked, and the clinical consequences are poorly understood. This study aims to:

- Examine whether acute **delirium in stroke** predicts more severe **cognitive and psychiatric symptoms** over the course of three years.

All procedures are part of the longitudinal multicenter **Norwegian Cognitive Impairment After Stroke Study (Nor-COAST)**.

Method

157 stroke-patients were screened for delirium by the Confusion Assessment Method (CAM) at hospitalization.

- At 3, 18 and 36 months **cognitive symptoms** were measured by the Montreal Cognitive Assessment Test (MoCA) and **psychiatric symptoms** were measured using the Hospital Anxiety and Depression Scale (HADS-D and HADS-A) and Neuropsychiatric Inventory Questionnaire (NPI-Q).

Mixed-model linear regression was used adjusting for age, gender, education, NIHSS-score and premorbid dementia.

Sample

- Baseline characteristics for total population (Mean, (SD), N =157)
Age (33-92): 71.7 (13.2)
Education (5-20): 13.5 (3.7)
Sex (female): 75 (48.1 %)
NIHSS first 24 hours (0-16): 2.9 (3.7)
Patients with premorbid dementia: 4 (2.6%)
MoCA during hospitalization (3-30): 24.1 (5.2)

Table 1. Demographic characteristics of delirious and non-delirious patients

	Delirium n = 18 (11.3%)	Non-delirious n = 138 (87.8 %)
Age, M (SD)	77.7 (8.4)	70.9 (13.5)
Years of education, M (SD)	11.9 (4.0)	13.7 (3.6)
Gender, n female (%)	8 (44%)	67 (49%)
NIHSS first 24 hours ¹ , M (SD)	3.2 (3.1)	2.9 (3.8)
MoCA during hospitalization ^{2,3} , M (SD)	19.6 (4.6)	24.6 (5.0)
Patients with premorbid dementia, n (%)	1 (5.5%)	3 (2.2%)

Note. ¹Higher values indicating more severe stroke-symptoms. ²Lower values indicating poorer global cognitive function. ³Assessments during the hospital stay were performed at discharge or the seventh day of the stay for participants with longer hospital stay

Results

- Delirium was associated with **significantly poorer global cognition (MoCA) and more depressive symptoms (HADS-D)** at 18 and 36 months. **Anxiety symptoms (HADS-A) were significantly worse** at 3 and 36 months for delirious patients.
- NPI-Q scores were significantly higher** for delirious patients at all times of measurements.

Table 2. Difference in clinical assessments for delirious and non-delirious patients

	Delirium, Mean (SD)	Non-delirious, Mean (SD)	Difference Estimate (95% CI)	p
MoCA 3 months	22.9 (1.1)	24.4 (0.4)	1.6 (-0.8 to 3.7)	NS
MoCA 18 months	22.0 (1.0)	24.8 (0.4)	2.8 (0.5 to 5.0)	.017*
MoCA 36 months	21.9 (1.2)	24.8 (0.4)	2.9 (0.4 to 5.4)	.024*
NPI-Q 3 months	2.5 (0.5)	0.9 (0.2)	-1.61 (-2.7 to 0.5)	.005**
NPI-Q 18 months	2.8 (0.6)	1.3 (0.2)	-1.6 (-2.8 to -0.4)	.012*
NPI-Q 36 months	3.2 (0.7)	0.8 (0.2)	-2.5 (-4.0 to -1.0)	.001**
HADS-D 3 months	4.4 (1.0)	3.9 (0.3)	-0.5 (-2.6 to 1.5)	NS
HADS-D 18 months	6.9 (1.0)	3.8 (0.3)	-3.1 (0.1 to 0.4)	.007**
HADS-D 36 months	6.7 (1.1)	4.1 (0.4)	-2.6 (-4.9 to -0.3)	.028*
HADS-A 3 months	6.5 (0.9)	3.3 (0.3)	-1.7 (-3.6 to 0.2)	NS
HADS-A 18 months	5.0 (0.9)	3.3 (0.3)	-3.2 (-5.1 to -1.2)	.001**
HADS-A 36 months	7.0 (1.0)	3.5 (0.3)	-3.4 (-5.5 to -1.3)	.002**

Note. Delirium, time and their interaction were used as categorical covariates, adjusted for age, gender, education, NIHSS, and premorbid dementia. * Indicating p < .05 and ** indicating p < .01

Conclusion

The results suggest that delirium predicts **poorer long-term outcomes after stroke**, both for **global cognition and psychiatric symptoms**. Focus on adequate assessment of delirium and clinical outcomes, as well as prevention, treatment, and **long-term follow up** can be important for decreasing the burden of post-stroke disability.