



COGNITIVE IMPAIRMENT AND QUALITY OF LIFE IN PATIENTS WITH SECOND-DEGREE DYSCIRCULATORY ENCEPHALOPATHY.

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Abstract.

Background: Second-degree dyscirculatory encephalopathy (DE) represents an intermediate stage of chronic cerebral ischemia characterized by progressive cognitive, emotional, and neurological impairment. Despite preserved independence in daily activities, patients frequently experience reduced quality of life.

Keywords.

Dyscirculatory encephalopathy; chronic cerebral ischemia; cognitive impairment; frontal dysfunction; anxiety; depression; quality of life; SF-36; MMSE; MoCA; small vessel disease.

Introduction.

Dyscirculatory encephalopathy (DE) represents the principal clinical form of chronic cerebrovascular insufficiency and is characterized by progressive small-focal brain damage caused by long-standing cerebral hypoperfusion. The growing prevalence of cerebrovascular diseases, largely driven by population aging and increasing vascular risk factors, has led to a rise in chronic cognitive disorders and disability [1,6]. Second-degree DE occupies an intermediate position between mild subjective cognitive complaints and advanced vascular dementia. Patients at this stage are frequently hospitalized in neurological departments and often remain socially active and partially employable. Therefore, assessment of cognitive and affective disturbances, as well as quality of life (QoL), is clinically relevant [2-5].



Objective

To evaluate cognitive function, emotional disturbances, and quality of life in patients diagnosed with second-degree dyscirculatory encephalopathy undergoing inpatient neurological treatment.

Materials and Methods

A cross-sectional observational study included 40 patients treated in a neurological hospital. Randomization was achieved through non-repetitive random selection among admitted patients. Individuals with severe somatic comorbidity, impaired consciousness, or profound cognitive deficit preventing questionnaire completion were excluded.

The mean age of participants was 63.6 ± 9.7 years; 72.5% were female. Approximately 47.5% were employed, while 52.5% were unemployed, many due to disability status. All patients had confirmed second-degree DE based on clinical, laboratory, functional, and neuroimaging examinations.

Neurological evaluation included assessment of focal deficits and previous cerebrovascular events. Cognitive and emotional screening tools comprised:

- Mini-Mental State Examination (MMSE)
- Montreal Cognitive Assessment (MoCA)
- Frontal Assessment Battery (FAB)
- Schulte Table test
- Spielberger–Hanin Anxiety Scale
- CES-D Depression Scale
- Barthel Index



– SF-36 Quality of Life questionnaire

Statistical analysis involved calculation of means, standard deviations, confidence intervals, and nonparametric methods where appropriate.

Results

Neurological Characteristics

Vestibulocerebellar disturbances were observed in 92.5% of patients. A history of ischemic stroke was documented in 32.5%, and 5% had undergone carotid endarterectomy. All participants demonstrated varying degrees of focal neurological deficit.

Cognitive Assessment

The mean MMSE score was 27.4 ± 1.9 . Normal cognitive performance (≥ 25 points) was observed in 85% of patients. Mild dementia-range scores (21–24 points) were detected in 15%.

The mean MoCA score was 27.2 ± 2.6 ; 20% scored below 26, indicating cognitive decline. Notably, 75% of those with low MoCA scores had normal MMSE results, suggesting variability between cognitive screening tools.

The mean FAB score was 15.6 ± 1.9 . Moderate frontal dysfunction was identified in 45% of patients, while 55% had preserved frontal function. Patients with frontal dysfunction showed slightly lower MMSE scores.

Performance on the Schulte Table test indicated moderate slowing of attention and processing speed, with mean completion times ranging from 47 to 52 seconds across attempts.

Emotional Status



Mean trait anxiety score was 43.3 ± 10.8 . High trait anxiety was present in 40% of patients, moderate in 47.5%, and low in 12.5%. State anxiety levels were similarly elevated in a substantial proportion of participants.

The mean CES-D depression score was 13.4 ± 8.7 . Depression was absent in 70% of patients. Mild depressive symptoms were observed in 20%, moderate in 7.5%, and severe in 2.5%. Thus, anxiety symptoms were more prevalent than depressive disorders.

Functional Independence

The mean Barthel Index score was 99.4 ± 4 , indicating preserved independence in activities of daily living. Only 2.5% required partial assistance.

Quality of Life

SF-36 results revealed heterogeneous QoL outcomes. Physical health components were more affected than mental components.

Reduced physical functioning and role limitations due to physical health were observed in approximately half of the patients. Vitality and general health perception were decreased in nearly two-thirds of participants. Despite these findings, social functioning remained relatively preserved in most patients.

Mental health indicators showed moderate impairment, though severe psychological distress was uncommon. Overall, quality of life was moderately reduced, primarily due to physical limitations rather than emotional factors.

Discussion

Second-degree dyscirculatory encephalopathy represents a transitional stage between mild vascular brain changes and severe cognitive impairment. Importantly, the degree of DE does not strictly correlate with the severity of cognitive decline.



Some patients demonstrate preserved global cognition despite confirmed neurological deficits, while others exhibit discrepancies between different cognitive scales.

The variability between MMSE and MoCA results underscores the necessity of multidimensional neuropsychological assessment. Frontal dysfunction appears relatively common, reflecting subcortical-frontal disconnection mechanisms typical of small vessel disease.

Anxiety symptoms were more frequent than depressive disorders, suggesting that affective disturbances in this population may be predominantly anxiety-driven. Quality of life impairment was mainly associated with physical limitations and reduced vitality rather than profound mental health decline.

Conclusion

Second-degree dyscirculatory encephalopathy significantly affects cognitive functioning and quality of life, even in patients who remain socially active and functionally independent. Cognitive impairment at this stage is heterogeneous and may not always correspond to global screening scores. Emotional disturbances, particularly anxiety, are common and contribute to reduced well-being.

Comprehensive assessment using multiple cognitive and affective scales is essential for early detection of deficits. Timely intervention aimed at vascular risk modification, cognitive support, and emotional stabilization may prevent further neurological deterioration and improve quality of life.

Literature.

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