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PSYCHOMOTOR THERAPY COMBINED WITH COGNITIVE-BEHAVIORAL TECHNIQUES FOR NEUROTIC SYMPTOMS IN VASCULAR DEMENTIA: A PROSPECTIVE COMPARATIVE PILOT STUDY

Karakhonova Sarvinoz

Department of Neurology and Medical Psychology, Tashkent State Medical University, Tashkent, Uzbekistan. Email: s.karakhanova@tashmeduni.uz

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ABSTRACT

Neuropsychiatric symptoms are common in vascular cognitive impairment and can complicate rehabilitation and long-term care. This 30-day prospective comparative pilot study evaluated two multimodal regimens for neurotic symptoms in patients with mild-to-moderate vascular dementia. Forty-six patients were enrolled, and 42 had complete baseline and end-of-treatment records for comparative analysis: 20 received basic neuroprotective therapy, rational psychotherapy, and temgicoluril (Adaptol), whereas 22 received basic neuroprotective therapy, structured psychomotor therapy combined with cognitive-behavioral techniques, and the same temgicoluril regimen. The source manuscript contained internally inconsistent percentages and mislabeled figure rows; therefore, percentages were recalculated from stated denominators and post-treatment severity counts were provisionally reconstructed by matching group sample sizes and exact baseline distributions. Baseline distributions of the study-defined Heck-Hess symptom categories did not differ between groups, $\chi^2(2, N = 42) = 0.43$, $p = .806$, Cramér's $V = .10$. Reconstructed day-30 distributions also did not significantly differ, $\chi^2(2, N = 42) = 1.03$, $p = .597$, Cramér's $V = .16$; the proportion classified as normal was 70.0% in the rational-psychotherapy group and 77.3% in the psychomotor/cognitive-behavioral group (Fisher's exact $p = .730$). Both groups showed favorable descriptive shifts, but superiority of the psychomotor regimen was not established. These findings support further study of integrated motor-cognitive approaches using a preregistered, adequately powered randomized design with validated outcomes, standardized therapy exposure, blinded assessment, and longer follow-up.

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Keywords: *vascular dementia, vascular cognitive impairment, psychomotor therapy, neuropsychiatric symptoms, cognitive-behavioral therapy, temgicoluril.*

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Introduction

Vascular dementia is a major clinical form within the broader spectrum of vascular cognitive impairment (VCI), in which cerebrovascular disease contributes to decline in cognition and everyday functioning. Contemporary guidance emphasizes the heterogeneity of VCI and the need for individualized management that addresses vascular risk, cognition, mood, behavior, functional ability, and caregiver needs (Heart and Stroke Foundation of Canada, 2024; O'Brien & Thomas, 2015). The World Health Organization (2026a) also notes that dementia commonly includes changes in mood, emotional control, behavior, or motivation in addition to cognitive decline.

Behavioral and psychological symptoms can be substantial in vascular syndromes. A recent systematic review and meta-analysis found that apathy, depression, irritability, anxiety, sleep disturbance, and other neuropsychiatric manifestations occur across VCI subtypes, although prevalence varies by clinical phenotype (Santos et al., 2025). Such symptoms may amplify subjective somatic complaints, interfere with rehabilitation, reduce participation in care, and complicate communication when cognitive flexibility and verbal abstraction are already impaired.

Nonpharmacological interventions are therefore clinically attractive because they can target function and behavior without adding medication burden. Evidence in vascular cognitive disorders remains limited but suggests that structured exercise, cognitive stimulation, and combined motor-cognitive programs may produce benefits in selected cognitive, functional, or neuropsychiatric outcomes (Liu-Ambrose et al., 2016; Piras et al., 2017; Valencia-Quiroz et al., 2025). These approaches are consistent with broader recommendations to incorporate rehabilitation, physical activity, cognitive engagement, and person-centered nonpharmacological management into VCI care (Heart and Stroke Foundation of Canada, 2024; World Health Organization, 2026b).

Psychomotor therapy uses guided movement, breathing, relaxation, body awareness, and sensorimotor tasks to engage both motor and emotional regulation. Previous local work has also examined psychocorrection and psychodiagnostic approaches in psycho-emotional disorders and vascular dementia (Karakhonova, 2022; Karakhonova & Ernayeva, 2025). However, the independent efficacy of psychomotor therapy in vascular dementia has not been established, and interpretation is especially difficult when psychomotor techniques are delivered together with cognitive-behavioral methods and pharmacotherapy.

The present study compared rational psychotherapy plus temgicoluril with psychomotor therapy combined with cognitive-behavioral techniques plus the same temgicoluril regimen. The primary aim was to determine whether the two treatment approaches differed in neurotic symptom severity after 30 days. A secondary aim was to describe the autonomic and neurological findings observed at baseline.

Method

Design and Setting

This prospective comparative clinical study was conducted in the First and Second Neurological Departments of Clinic No. 1 of Tashkent Medical Academy. Treatment lasted 30 days, with assessments at baseline (Days 1-3) and at the end of treatment (Days 27-30). Details of random-sequence generation, allocation concealment, and assessor blinding were not described; therefore, the study is presented as a prospective comparative investigation.

Participants

Forty-six patients with vascular dementia and secondary neurotic symptoms were enrolled. Participants were 62-64 years of age, with a reported mean age of 63.5 years. Forty-two patients had complete baseline and follow-up assessments and were included in the comparative analysis. Four participants had incomplete follow-up records; their reasons for non-completion were not documented.

Inclusion criteria were (a) a diagnosis of mild-to-moderate vascular dementia according to ICD-10 criteria, (b) comorbid neurotic symptoms identified through medical-psychological screening, and (c) written informed consent from the patient or a legally authorized representative. Exclusion criteria were severe cognitive impairment defined as a Mini-Mental State Examination score below 10 with inability to communicate, acute cerebrovascular events or severe decompensated systemic disease, primary psychotic disorders, and severe endogenous depression.

Treatment Conditions

Group 1 (n = 20) received basic neuroprotective therapy, rational psychotherapy, and temgicoluril (Adaptol) 300-500 mg twice daily, with dose selected according to baseline anxiety intensity. Rational psychotherapy was delivered in 45- to 60-minute sessions once every 3-4 days, for a total of approximately 6-8 sessions during the 30-day course.

Group 2 (n = 22) received basic neuroprotective therapy, psychomotor therapy combined with cognitive-behavioral techniques, and the same temgicoluril dose range. Psychomotor components included breathing exercises, progressive muscle relaxation, sensorimotor coordination tasks, and structured movement-based emotional-regulation exercises. The number, frequency, and duration of Group 2 sessions were not recorded in sufficient detail to confirm equal therapist-contact time between the two treatment groups.

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Because both groups received temgicoluril, the study design cannot estimate the independent effect of that medication. Published evidence on temgicoluril/Adaptol remains largely observational and regionally conducted rather than based on a large international randomized evidence base (Taube et al., 2025). In this study, temgicoluril was therefore treated as a common co-intervention rather than as an independently evaluated treatment.

Measures

Neurological and autonomic examinations included tendon reflexes, skull-percussion tenderness, sensitivity at Vaale points, Danzig-Kunakov and Danini-Ashner signs, coordination tests, Romberg testing, dermographism, pupillary findings, sweating, and sensory symptoms. A medical-psychological questionnaire developed by Ibodullayev (Patent No. 001031) was also used, although sufficient validation information was not available for independent appraisal.

Neurotic symptoms were assessed with a 40-item binary Heck-Hess/BFB-type screening questionnaire. Scores were grouped into three study-defined categories: less than 13 (normal/non-neurotic), 13-24 (mild/situational), and 25-40 (pronounced). Because the exact language version and validation characteristics used in this cohort were not documented, these thresholds were used as analytic categories rather than as independent diagnostic criteria. Questionnaire categories were therefore interpreted as indicators of symptom severity and not as stand-alone clinical diagnoses.

Statistical Analysis

Categorical findings were summarized as absolute counts and percentages. Percentages for baseline autonomic and neurological findings were calculated using the enrolled cohort (N = 46). Descriptive baseline frequencies were reported without inferential p values when no prespecified comparison or null hypothesis was defined.

Neurotic symptom severity was analyzed in three categories at baseline and day 30 for Group 1 (n = 20) and Group 2 (n = 22). Analyses were based on the group-level counts available at each assessment. Because patient-level transition data were not available, within-person pre-post inferential testing was not performed.

Between-group differences in the three-category distributions were examined with Pearson chi-square tests and summarized with Cramér's V. Fisher's exact test was used for the dichotomous comparison of normal versus non-normal status because of small cell counts. Two-sided p values below .05 were considered statistically significant. Changes over time are described as shifts in group-level proportions rather than as statistically tested within-person change.

Ethical Considerations

Written informed consent was obtained from patients or their legally authorized representatives. The ethics committee approval number and date, trial registration identifier, capacity-assessment procedure, and formal adverse-event reporting plan were not reported.

Results

Participant Flow and Baseline Characteristics

Of 46 enrolled participants, 42 completed both baseline and end-of-treatment assessments and were included in the comparative analysis (Group 1, n = 20; Group 2, n = 22). The four incomplete cases represented 8.7% of the enrolled cohort. Their group assignments and reasons for missing follow-up were not reported, so attrition bias cannot be excluded. Participants were 62-64 years of age, with a reported mean age of 63.5 years.

Table 1

Baseline Autonomic Findings in the Enrolled Cohort

Finding	n	%
Red dermographism	34	73.9
White dermographism	8	17.4
Miosis	36	78.3
Mydriasis	6	13.0

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Finding	n	%
Hyperhidrosis	40	87.0
Danini-Ashner reflex change	37	80.4

Note. Percentages were calculated from the reported counts using the initially enrolled cohort (N = 46).

The most frequently recorded autonomic findings were hyperhidrosis (87.0%), Danini-Ashner reflex changes (80.4%), and miosis (78.3%). Red dermographism was recorded in 73.9% of the enrolled cohort. These findings are descriptive; the study did not include a healthy control group or a prespecified inferential comparison for baseline autonomic prevalence.

Table 2

Baseline Neurological and Sensory Findings in the Enrolled Cohort

Finding	n	%
Tenderness on skull percussion	44	95.7
Positive Danzig-Kunakov sign	33	71.7
Tenderness at Vaale points	22	47.8
Increased tendon reflexes	35	76.1
Mild intention tremor on coordination testing	19	41.3
Mild staggering in the Romberg position	25	54.3
Hyperesthesia	28	60.9
Paresthesia	25	54.3
Hyperhidrosis	18	39.1

Note. Percentages were recalculated using N = 46. The original table contained percentages and p values that were not supported by the stated counts or a defined comparison.

Tenderness on skull percussion (95.7%) and increased tendon reflexes (76.1%) were among the most frequently reported neurological signs. Hyperesthesia was recorded in 60.9% and paresthesia in 54.3% of enrolled participants when percentages were calculated using N = 46. These findings describe the neurological and sensory profile of the enrolled cohort and were not compared with a healthy control group.

Neurotic Symptom Categories

Table 3

Study-Defined Neurotic Symptom Categories at Baseline and Day 30

Time and group	Pronounced, n (%)	Mild, n (%)	Normal, n (%)
Group 1 baseline (n = 20)	4 (20.0)	7 (35.0)	9 (45.0)
Group 2 baseline (n = 22)	6 (27.3)	8 (36.4)	8 (36.4)
Group 1 day 30 (n = 20)	1 (5.0)	5 (25.0)	14 (70.0)
Group 2 day 30 (n = 22)	2 (9.1)	3 (13.6)	17 (77.3)

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Note. The category thresholds were study-defined. Day-30 counts are a provisional reconstruction from the embedded Figure 2 data after matching group sample sizes and exact narrative baseline distributions. Raw-data confirmation is required before submission.

At baseline, the three-category distribution did not differ significantly between groups, $\chi^2(2, N = 42) = 0.43$, $p = .806$, Cramér's $V = .10$. The proportion categorized as normal was 45.0% in Group 1 and 36.4% in Group 2; Fisher's exact comparison of normal versus non-normal status was not significant, $p = .754$.

At day 30, the three-category distribution did not differ significantly between groups, $\chi^2(2, N = 42) = 1.03$, $p = .597$, Cramér's $V = .16$. Normal-category status was present in 14 of 20 participants (70.0%) in Group 1 and 17 of 22 participants (77.3%) in Group 2. Fisher's exact test for normal versus non-normal status yielded $p = .730$. The corresponding odds ratio for normal status in Group 2 relative to Group 1 was 1.46 (approximate 95% CI [0.37, 5.80]), indicating substantial uncertainty around the between-group effect.

Descriptively, the proportion classified as normal increased by 25.0 percentage points in Group 1 and by 40.9 percentage points in Group 2, while pronounced-category proportions decreased in both groups. Because individual category transitions were not available, these changes should be interpreted as group-level descriptive shifts. The between-group analyses did not demonstrate statistically significant superiority of the psychomotor/cognitive-behavioral regimen over rational psychotherapy at 30 days.

Discussion

Both treatment regimens were associated with favorable descriptive shifts in neurotic symptom categories during the 30-day treatment period. However, the end-of-treatment difference between groups was not statistically significant. Normal-category status was observed in 70.0% of Group 1 and 77.3% of Group 2, and the effect estimate remained imprecise because of the small sample size. These results suggest a possible clinical benefit of both multimodal approaches while emphasizing the need for a larger study to determine whether the psychomotor/cognitive-behavioral program offers an additional advantage.

A cautious interpretation is still clinically plausible. Integrated motor-cognitive and cognitive stimulation interventions have shown potential in vascular cognitive disorders, although the evidence base is heterogeneous. Liu-Ambrose et al. (2016) reported cognitive benefits during a structured aerobic intervention in adults with mild VCI, while Piras et al. (2017) found benefits of cognitive stimulation therapy in vascular dementia. More recently, Valencia-Quiroz et al. (2025) described improvements or stability in cognitive, psychomotor, and selected neuropsychiatric outcomes after a combined psychomotor and cognitive stimulation program. These studies support continued investigation of body-based and cognitive interventions, but they do not justify assuming that any specific psychomotor protocol is superior without a properly controlled trial.

The current intervention contrast is also not a pure test of psychomotor therapy. Group 2 received psychomotor therapy combined with cognitive-behavioral techniques, whereas Group 1 received rational psychotherapy. Thus, any difference would reflect the entire psychotherapy package, not psychomotor therapy in isolation. In addition, Group 1 session exposure was described in detail, but Group 2 session frequency and duration were not. Unequal therapist contact is therefore a possible confounder. A future trial should manualize both interventions, match contact time, record therapist fidelity, and prespecify whether the scientific question concerns psychomotor therapy alone or an integrated psychomotor-CBT package.

The medication component requires similar caution. Both groups received temgicoluril, so the study cannot determine whether symptom changes were attributable to medication, psychotherapy, nonspecific treatment effects, or their combination. A 2025 noninterventional study reported improvement in anxiety and somatic symptoms during Adaptol use, but its observational design and disclosed manufacturer-related conflicts underscore the need for controlled evidence (Taube et al., 2025). For the present study, the medication is best treated as a common co-intervention rather than a tested causal factor.

Consistent use of the enrolled cohort denominator (N = 46) provided a clearer description of baseline autonomic and sensory findings. Hyperesthesia was present in 60.9% of participants and paresthesia in 54.3%. These frequencies indicate that sensory symptoms were common in the cohort, although their clinical significance should be interpreted within the broader neurological and psychological assessment.

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Measurement validity is another consideration. The study used a 40-item Heck-Hess/BFB-type questionnaire, but the language version, validation sample, reliability characteristics, and supporting citation for the three severity thresholds were not documented. Screening measures should not be treated as equivalent to clinical diagnoses. Future work should therefore use a validated neuropsychiatric or anxiety measure appropriate for older adults with cognitive impairment, report reliability in the study sample where feasible, and distinguish screening severity from diagnostic terminology. Contemporary VCI guidance also supports multidomain assessment rather than reliance on a single symptom scale (Heart and Stroke Foundation of Canada, 2024).

Limitations

The study has several limitations that constrain causal interpretation. The sample was small and follow-up lasted only 30 days. Four enrolled participants were not included in the complete-case comparison, and their group assignments and reasons for missing follow-up were not documented. Details of randomization, allocation concealment, and assessor blinding were unavailable. Group 2 treatment exposure was incompletely specified, and actual temgicoluril dose distributions by group were not reported. The Heck-Hess symptom categories were study-defined and were not linked to a documented validated language version. Functional adaptation, adherence, and quality of life were not measured with reported instruments, and adverse-event results were not available. In addition, the analysis relied on group-level outcome counts rather than patient-level transition data. These limitations make the findings exploratory and preclude a definitive efficacy conclusion.

Implications for Future Research

A confirmatory study should use a preregistered parallel-group randomized design with concealed allocation, blinded outcome assessment where feasible, and an a priori sample-size calculation. The psychomotor protocol should be manualized and matched to the comparison intervention for therapist-contact time. Outcomes should include a validated neuropsychiatric or anxiety measure, a global cognitive measure, activities of daily living, functional mobility, quality of life, treatment adherence, and adverse events. Follow-up of at least 3-6 months would help determine whether short-term symptom changes persist. Patient-level data should be retained in a form that permits intention-to-treat analysis and transparent reporting consistent with clinical-trial standards.

Conclusion

During 30 days of multimodal treatment, both groups showed descriptive shifts toward lower study-defined neurotic symptom categories. The end-of-treatment data did not demonstrate statistically significant superiority of psychomotor therapy combined with cognitive-behavioral techniques over rational psychotherapy when both regimens also included temgicoluril and basic neuroprotective treatment. Psychomotor and motor-cognitive approaches remain promising candidates for further study in vascular dementia. Larger randomized studies with validated outcomes, standardized treatment exposure, and longer follow-up are needed to determine the magnitude and durability of any additional benefit.

Declarations

Ethics approval and consent to participate. Written informed consent was obtained from participants or legally authorized representatives. The ethics committee name, approval number, approval date, and capacity-assessment procedure were not reported.

Trial registration. No trial registration identifier was reported.

Funding. Funding information was not reported.

Conflicts of interest. A conflict-of-interest statement was not reported.

Data availability. The analysis was based on group-level study data; patient-level data were not available for the present analysis.

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