

STROKE



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Dear Doctor,

Greetings from Micro Labs. We are happy to bring you “**Stroke Newsletter**” which contains latest and interesting news in the field of Neuropsychiatry.

This issue contains:

1. *Evaluation of Neuropsychological Change and its Neural Correlates in Chronic Stroke Aphasia*
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Evaluation of Neuropsychological Change and its Neural Correlates in Chronic Stroke Aphasia

Introduction: The comprehension and expression of speech, reading, and writing was impaired with Aphasia, so it directly showed a negative impact on the patient's mood and also alter their relationship with community and family members. Nearly more than one third of stroke survivors will suffer with this disorder and 30-43% were affected long term¹. Our understanding of how speech and language abilities map to the brain in normal and impaired participants, including the diverse, graded variations in post stroke aphasia was improved with the help of Neuroimaging². Recent studies reveal that after many years of stroke, alteration in the aphasia and neural changes continues to occur. Due to multi-dimensional nature of language, it is difficult to predict the changes in linguistic functions over time and whether any brain areas systematically related to these changes. The study aimed to investigate the understanding of linguistic abilities in chronic aphasia³

Methods: A total of Twenty-six stroke participants with chronic aphasia were participated in this study. Boston Diagnostic Aphasia Examination (BDAE) was used to determine participants' aphasic subtype. Adults with normal or corrected-to-normal hearing and vision, premorbid right handedness, and English as a native language were included in the study. Patients with multiple strokes, a previous history of neurological disorders, and having any metal-implants or contraindications for MRI scanning were excluded from the study.

Results: After completion of neuropsychological battery and the acquisition of detailed T1-weighted MRI scans, study results reveals that at individual level no patients were changed significantly in the single-word comprehension tasks and the digits forward, at group level Participants marginally improved in the non-word repetition test, so 14 patients improved, 8 declined and 4 remained stable. Voxel-based correlational methodology analyses of grey and white matter probability maps were used to enter the Normalised change per year scores in the linguistic cognitive tasks. As represented in the Figure 1 Naming change per year was associated with a cluster in the grey matter extending from the right frontal cortex to the temporal pole, along with the uncinate fasciculus and a positive correlation was found between Non-word repetition change per year with a cluster in the right caudate and its surrounding white matter.

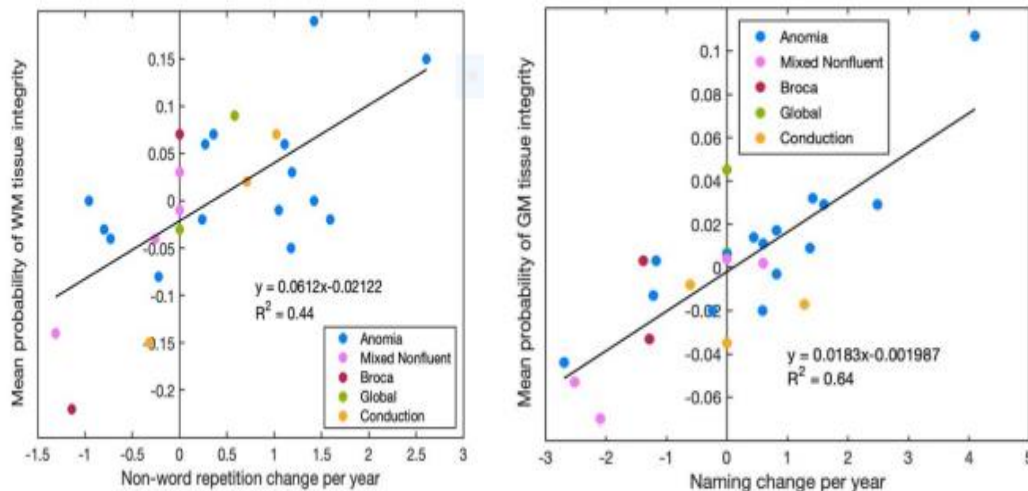


Fig: 1 Represents the Significant neural clusters associated with recovery and decline

Overall, our results are consistent with the view that the right hemisphere is implicated in cognitive and linguistic processes in aphasia, both in the subacute and chronic phases

Conclusion: The study concluded that linguistic processes have different recovery patterns in chronic aphasia and right hemisphere is implicated in cognitive and linguistic processes in aphasia, both in the subacute and chronic phases

Right hemisphere is implicated in cognitive and linguistic processes in aphasia, both in the subacute and chronic phases

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Impact of Evidence-Based Nursing on Psychological Status, Neurological Function, and Quality of Life in Patients with Acute Post-Stroke Depression

Introduction: Stroke stands as a devastating disease with significant personal, family, and health system impacts. According to World Stroke Organization Global Stroke Services Guidelines and Action Plan acute stroke or transient ischemic attack patient should be treated by an inter-professional stroke team consisting of at least a physician with training in stroke care, a nurse, and a rehabilitation specialist¹. Mental abnormalities, sensory, motor and cognitive impairment are most commonly seen in patients in neurology department which may lead to decreased patient satisfaction and increased patient nurse disputes as to avoid these clinically comfort nursing plus psychological care were utilised². Evidence-based nursing (EBN) is a care method able to improve the treatment effect while reducing the medical cost This study was conducted to evaluate the influence of evidence based nursing mode on the psychological status (PSY) and neurological function in patients with acute post-stroke depression (PSD), which is of great significance for improving patient's clinical symptoms and quality of life (QoL)³.

Methods: A total of 150 patients were enrolled in the study which were categorised as group A and group B, as group A treated with comprehensive Evidence based Nursing and Group B received routine nursing. Both groups were evaluated by using Anxiety and depression (Self-Rating Anxiety Scale [SAS] and Self-Rating Depression Scale [SDS] scores), neurological function (National Institutes of Health Stroke Scale [NIHSS] and Scandinavian Stroke Scale [SSS] scores), QoL (Generic Quality of Life Inventory-74 [GQOLI-74] score), and complication rate. The nursing satisfaction questionnaire prepared by their hospital was used to test the patients' satisfaction, and to compare the nursing satisfaction score between groups

Results: The study results show that NIHSS score of both groups decreased one month after intervention, and the score was lower in Group A than in Group B and after a One month the SSS score decreased in both groups and was lower in Group A. SAS and SDS scores of both group of patients were analysed as it was found that there were significant changes in these scores in the two groups after nursing, with evidently lower SAS and SDS scores in Group A compared with Group B. GQOLI-74 score after nursing was found that score of Group A was significantly higher than that of Group B and a lower complication rate was determined in Group A compared with Group B. It was found that patients in Group A were shown better treatment satisfaction as compared to those in Group B. This study has made comprehensive



analysis of the intervention effect of EBN from the aspects of neurological function, MH, QoL, complication rate, ORR, and treatment satisfaction that helps to determine its effectiveness and safety in patients with acute Post stroke depression and provides a new choice for the management patients.

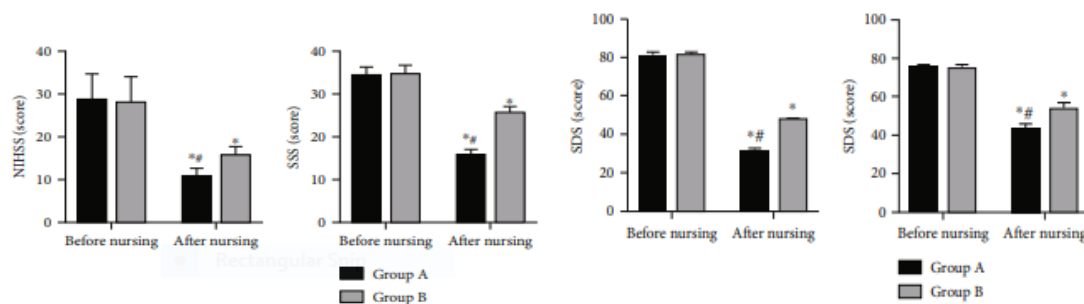


Figure 2 Neurological function of patients in two groups Figure 3 Mental health of patients in two groups

Conclusion: The study concludes that Evidence based nursing has showed a better improvement in psychiatric symptoms in patients who are suffering with acute post stroke depression and it also helps in restoring the neurological function and improve the quality of life of patients.

Evidence based nursing has showed a better improvement in psychiatric symptoms in patients who are suffering with acute post stroke depression

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**A study to evaluate the relation between prefrontal cortex
and limb motor function in stroke based on resting-state
functional near-infrared spectroscopy**

Introduction: Worldwide nearly 1/3rd of deaths are occurring due to stroke and 50% of stroke survivors are chronically disabled. Independent function and activity participation of stroke patients are affected by various factors like Cognitive and motor impairment and loss of balance and gait¹. So major goal of stroke is to restore the upper extremity functions in which various upper limb motor rehabilitative strategies have been employed to induce positive neuroplasticity in patients with stroke². For formulating effective rehabilitation strategies accurate assessment of motor function in stroke patients is the basic need. prefrontal cortex (PFC) plays a major role in motor control and in response to motor state changes. The aim of this study is to evaluate the relation between neural markers and limb motor function in stroke patients with limb motor dysfunction using functional near-infrared spectroscopy (fNIRS) which helps to provide information regarding the relation between brain neuroplasticity and cerebral haemodynamic³.

Methods: A total of 17 stroke patients with limb motor dysfunction and 9 healthy subjects were included in the study. fNIRS was used to collect 22 channels of cerebral blood oxygen signals in the PFC at resting state. The difference between prefrontal oxygenated haemoglobin (HbO) and deoxygenated haemoglobin (HbR) concentrations in stroke and healthy subjects was evaluated. lateralization index (LI) of HbO in stroke patients was calculated. In stroke patients Pearson's correlation analysis was carried between the LI and the scores of the Fugl-Meyer Assessment Scale (FMA) of motor function.

Results: Of 17 Stroke patients included 10 right-sided hemiplegia cases and 7 left-sided hemiplegia cases, with FMA scale scores ranging from 20 to 90. The included subjects were free from cognitive impairment, anxiety and depression. Compared with the healthy control group the concentration of HbO in the PFC of the stroke group was significantly increased. Compared with the healthy control group the concentration of HbR in the PFC of the stroke group did not change significantly. To evaluate the relationship between the PFC and stroke patient motor function, we calculated the LI of prefrontal HbO concentration in stroke patients according to Equation and performed Pearson's correlation analysis with each stroke patient's



FMA score and results showed a significant, positive correlation between the LI and the FMA score in the patient group

$$LI = \frac{\sum_{t \in \text{time interval}} [(\Delta \text{oxy Rt} - \Delta \text{oxy Rmin}) - (\Delta \text{oxy Lt} - \Delta \text{oxy Lmin})]}{\sum_{t \in \text{time interval}} [(\Delta \text{oxy Rt} - \Delta \text{oxy Rmin}) + (\Delta \text{oxy Lt} - \Delta \text{oxy Lmin})]}$$

Equation for calculating the LI of prefrontal HbO concentration in stroke patients

The results show that concentration of HbO in the PCF of stroke patients with limb motor dysfunction in the resting state was significantly reduced and also the concentration of HbR showed no significant changes so there by it determines that HbO as a most sensitive indicator of regional cerebral blood flow changes. increase in HbO was related to the increase in neuronal activity, and the decrease in HbO was related to the decrease in neuronal activity cerebral cortex causing arterioles and capillaries to dilate was detected with the fNIRS at resting phase, these can directly or indirectly lead to changes in local cerebral haemodynamic

Conclusion: The study concludes that concentration of HbO in the PFC of stroke patients with limb motor dysfunction was significantly decreased, demonstrates that limb motor dysfunction is related to the reduction in neuronal activity in this region after stroke. The severity of limb motor dysfunction was related to functional imbalance of the left and right PFC in the resting state.

The severity of limb motor dysfunction was related to functional imbalance of the left and right PFC in the resting state

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Psychosis: Complication of Post Stroke: A Case Report

Introduction: Worldwide, every year 16 million people suffer with stroke of which nearly 5.7 million people die and 5 million people were left with long term disabilities. at least 30% of stroke survivors suffer with neuropsychiatric symptoms and responsible for poor outcome in patient with stroke. The combination of stroke and psychosis was considered to be major threat of post stroke syndrome¹. Post stroke depression, euphoria, personality changes, and cognitive deterioration are common Psychiatric phenomena during the clinical evolution of patients who have had a stroke². Patients with post stroke psychosis are more likely to depend on assistance for their daily lives when compared to the other stroke survivors and they have increased risk of mortality. The aim of this study is to present a case of post stroke psychosis, that helps to add on to the literature and also raise awareness of this condition³.

A 77-year-old woman who had attended the primary school and worked as sewing professional has brought to the emergency department. Her history of illness reveals that from December 2020, the women has suffering with neuropsychiatric symptoms, as she started telling her son that many strangers have entered her house, partied and had not showered for months, because she was obsessed that some strangers were watching her remotely. She also reported that she has felt a snake, in which she is thinking that strangers have kept that. She locked the doors to protect herself from strangers and started being a prophet and divine protection with powers. She denied the appointment with psychiatrist.

On examination, the patient was aware and oriented, suspicious, persecutory and mystic delusion with great conviction. History of auditory hallucinations, tactile hallucinations were noted in the patient in which she had no insight about it. Almost all the investigations related to liver, kidney, blood test were normal and Computed tomographic imaging of the head revealed an old lacunar ischemic lesion in the right caudate nucleus. Patient was admitted to inpatient department and Treated with paliperidone 6mg/day was started and the dose was titrated to 9mg daily for 14 days and no adverse effects were noted.



Remission of hallucinatory activity and a marked decrease in delusional affective dynamism were noted in the patient with gradual clinical improvement. Table 1 summarises the Mini-Mental State Examination (MMSE) score on 14th day was 28 points out of the 30 and on the 29th day patient scored 28 points in the MMSE, 27 points in the Montreal Cognitive Assessment (MoCA) test, and 16 points in the Frontal Assessment Battery (FAB). As global clinical improvement was noted and social support by her son made her to discharge on the following day.

Table: 1 Cognitive assessment tests at day 14 and 29 post-admission

Days	MMSE	MoCA	FAB
D14	28/30		
D29	28/30	27/30	16/18

Conclusion: Psychosis stands as the common complication of stroke and is accompanied with impairment and increased mortality.

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Psychosis stands as the common complication of stroke and is accompanied with impairment and increased mortality.



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