A PROSPECTIVE STUDY TO EVALUATE THE PRESCRIBING PATTERN OF DRUGS IN PATIENTS WITH ISCHEMIC STROKE AND ROLE OF MEMANTINE IN POST-STROKE APHASIA.

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ABSTRACT

Stroke is a clinical syndrome characterized by rapidly developing clinical symptoms and / or signs of focal, and at times global (applied to patients in deep coma and those with subarachnoid hemorrhage), loss of cerebral function with symptoms lasting for more than 24 hours or leading to death, with no apparent cause other than that of vascular origin. This was a prospective observational study, which included 63 patients who were admitted in Pushpagiri Medical College Hospital. Patients prescribing pattern were evaluated from the case files and the clinical outcome were evaluated by using National Institute of Heart Stroke Scale (NIHSS) and Modified Rankin Scale (MRS). The language function of the aphasic patients were assessed by using Benson’s classification and their quality of life were evaluated by using Stroke Specific Quality of Life (SS-QOL). Majority of the stroke patients was prescribed with Antiplatelet, Neuroprotective, Antihypertensive and Dyslipidemics. The clinical outcome, language function and quality of life of the patients were improved, indicating the effectiveness of Memantine on the language of post-stroke aphasic patients. The study confirm that post-stroke aphasia treatment with memantine 5mg and 10mg could have significant valuable effects on the neurological consequences of stroke and language function improvement of the study population.
KEYWORDS: Stroke, Prescribing Pattern, Incidence, Clinical Outcome, Post-stroke Aphasia, Memantine.

INTRODUCTION
Stroke is a clinical syndrome characterized by rapidly developing clinical symptoms and/or signs of focal, and at times global (applied to patients in deep coma and those with subarachnoid hemorrhage), loss of cerebral function with symptoms lasting for more than 24 hours or leading to death, with no apparent cause other than that of vascular origin. Stroke can either be ischemic (88% of all strokes) or hemorrhagic (12% of all strokes).

Stroke are common in India. It is the leading cause of long term disability in adults, with 90% of survivors having residual deficits. Moderate to severe disability is seen in 70% of survivors. The American Heart Association estimates that there are 4.7 million survivors of strokes in the United States. Stroke incidence increases with age, especially after age 55, resulting in an increased stroke incidence due to aging of the population.

The physicians are often typically creating the choice on which drug to decide on during a patient-by-patient basis. In the present study, we have assessed the prescribing patterns of Neuro-physicians to identify the selection of a drug over another and what changes are made once a stroke happens in these patients. The rationality is of utmost importance because the irrational use will cause misuse, underuse or overuse of medications. The drug treatment strategy involved with choosing medication like thrombolytics, anticoagulants, antihypertensive (angiotensin converting enzyme inhibitors, angiotensin II receptor blockers, and diuretics), blood lipid lowering agents (statins), antiplatelet medication (aspirin and clopidogrel), and cerebral activators. It is also suggested to select a route and dosage form of medication to own the best therapeutic effects to manage stroke.

The AHCPR Post- Stroke Rehabilitation Clinical Practice Guidelines defines aphasia as “the loss of ability to communicate orally, through signs, or in writing, or the inability to understand such communications (Klein, 1995). Darley (1982) noted that aphasia is generally described as impairment of language as a result of focal brain damage to the language dominant cerebral hemisphere. The incidence of post- stroke aphasia ranges from 40 to 60 per 100,000 per annum. Roughly 250,000 persons live with aphasia in the UK. Post- stroke aphasia is associated with more severe strokes, higher mortality, decreased rate of functional
recovery, and health-care cost. Patients are more likely to seek medical help earlier, and to receive thrombolysis compared to patients with no aphasia."^^5]

Memantine is a non-competitive antagonist of the N-methyl D-aspartate (NMDA) type of glutamate receptor, which are located ubiquitously throughout the brain. It regulates activity throughout the brain by controlling the amount of calcium that enters the nerve cell, a process essential for establishing an environment required for information storage. Over stimulation of the NMDA receptor by excessive glutamate allows too much calcium into the cell, disrupting information process. Blocking NMDA receptor with memantine may protect the neurons from the effect of excessive glutamate without disrupting normal neurotransmission."^^6]

The present study was performed to assess the usefulness of memantine in post-stroke aphasia and to assess the quality of life and also the clinical outcome of acute ischemic stroke patients. Neurological function was assessed by the NIHSS (National Institute of Heart Stroke Scale) and MRS (Modified Rankin Scale) score. This scales could be used as a clinical stroke assessment tool to evaluate and document neurological status in acute stroke patients. The NIHSS and MRS is valid for predicting patient’s outcome and can serve as a measure of stroke severity. Additionally, this stroke scales may serve as a data collection tool for planning patient care and could provide a common language for information exchanges among healthcare providers."^^7]

The aim of the study is to evaluate the trends in prescribing pattern of drugs in patients with acute ischemic role and to assess the role of memantine in post-stroke aphasia.

Objectives include
- To assess the prescribing pattern of acute ischemic stroke
- To assess the clinical outcome of stroke
- To assess the usefulness of memantine in post-stroke aphasia and to assess the quality of life.
- To estimate the incidence of stroke.

REVIEW OF LITERATURE
Sara Ramezani et al., (2015)"^^8] conducted a study on the topic “Pharmacotherapy to improve the acquired aphasia following brain damages”. It is a review study. Using pharmaceutical
agents in the treatment of aphasia has caught the attention of many neurologist and neuroscientists. This short review study has sought the role of pharmacotherapy in treatment of aphasia, a linguistic impairment after acquired brain lesions. The pharmacological principles and mechanisms related to the effects of drugs used in aphasia rehabilitation are pointed. Then some evidence of clinical trials on different drugs in this field is presented. A comprehensive search in databases including MEDLINE, Cochrane, PubMed, Scopus, EMBASE, and Science Direct on experimental studies and clinical trials associated with pharmacotherapy of aphasia after neurological damages was performed. Pharmacological interventions through manipulating neurochemical levels in synapses, the pre- and postsynaptic spaces and even inside neurons start to modulate the distributed balance of neurotransmitters due to brain lesions. Pharmacotherapy is based on the principle that drugs via balancing the molecular signaling cascades triggered due to neuronal damage can restore the functions of neurons, facilitate the brain plasticity process and improve the linguistic deficits in aphasic patients. Among the drugs that have been studied in the treatment of aphasia, those acting on central cholinergic and glutamergic systems were more effective and led to better clinical outcomes. The study concluded that existing evidence has proved the pivotal role of pharmacotherapy in treatment of aphasia after acquired brain lesions in adults, further research is required to assure the clinicians in using pharmacotherapy as a standard approach in treatment of aphasia.

Bakhshayesh- Eghbali B et al., (2015)\(^9\) conducted a study on the topic “Comparing the effect of memantine and placebo on clinical outcome of intracranial hemorrhage: A randomized double blind clinical trial”. This double blind clinical trial was conducted in an academic hospital in northern Iran on patients with ICH allocated in memantine and placebo group through the random block method. The patient’s neurological status was assessed on admission, the seventh day, upon discharge and ultimately three months after the ICH onset, according to the National Institute of Health Stroke Scale (NIHSS), modified Rankin Scale (mRS), Barthel Index (BI) and Glasgow Coma Scale (GCS). The data analysis was done by using independent t-test, Chi-square and repeated measure tests in SPSS software version 21. A total of 64 patient’s haven allocated into two equal size groups with no significant differences in the terms of age or gender. The mean increase in the BI and the decrease in the mRS were significantly greater in the memantine group compared with the placebo group as measured from admission time until three months following the ICH onset. No significant differences were observed between the two groups in mortality rate and the means and
changes of the GCS and the NIHSS score. The study concluded that early administration of memantine to ICH patients can result in significant improvement of long-term motor function and functional independence.

Naseema Shifafiya M et al., (2014)\textsuperscript{[10]} conducted a study on the topic “To evaluate the prevalence and drug prescribing trends in stroke patients: A retrospective study”. The study conducted on a tertiary care hospital for 3 months the following results were obtained. The prevalence of ischemic stroke (60\%) was found to be greater as compared that of hemorrhagic stroke. The incidence of stroke was estimated higher in males (69\%) as compared to females (31\%). The occurrence of stroke was predominantly seen at the age of 51-60 years (27\%) followed by 41-50 years (22\%). The study conducted observed that the major and common risk factor for stroke is hypertension. Smoking (29\%) showed higher rate of incidence as compared to either alcoholic (16\%) nor both (22\%). The study concluded that the prevalence of ischemic stroke was higher as compared to hemorrhagic stroke. The incidence was seen higher in males with age group of 51-60 years. The major risk factor for stroke is hypertension, smoking, alcoholism. The study also reported the prescribing trends of antihypertensive, antiplatelet, neuroprotective and nootropics. The usage of drugs differs with hospitals and physicians. The prescribing pattern of drugs should be based on the specificity of the condition and the severity of stroke in order to facilitate rational use of drugs providing optimal care. Therefore, standard stroke prescribing guidelines should be adopted in Indian to provide rational therapy.

Sangram Vurumadla et al., (2014)\textsuperscript{[4]} conducted a study on the topic “Symptoms, risk factors and prescribing pattern of drugs used in stroke patients”. Out of 150 patients involved in the study, 100 (66.66\%) patients, presented with symptoms like slurred speech, followed by weakness on right side in 97 (64.66\%) patients, headache in 88 (58.66\%) patients, change in speech in 87 (58\%) patients, weakness on left side in 58 (38.66\%) patients and deviation of mouth in 48 (32\%) patients. The most common risk factors associated with the stroke was hypertension in 102 (68\%) patients, followed by dyslipidemia in 81 (54.2\%) patients, diabetes mellitus in 51 (34.6\%), heart disease in 49 (32.6\%) patients, smoking in 44 (29.3\%) patients, diet in 16 (10.6\%) and alcohol in 12 (8\%) patients. Majority of the stroke patients was prescribed with antiplatelet (85\%), dyslipidemics (75\%), anticoagulants (36\%), and mannitol (98.5\%). This study helped to identify the cases with predominant symptoms of stroke and to estimate various risk factors in such patients. The findings in this study stress
the need for early and appropriate management of stroke to prevent further complications of stroke. Combination therapy, lifestyle changes and better management of risk factors said to have a major effect on recovery of stroke with improved quality of life and symptoms.

Hamidreza Kafi et al. (2013)\(^7\) conducted a study on the topic “The neuroprotective effects of memantine in patients with mild to moderate ischemic stroke”. Patients were randomly allocated in control and memantine group. The control group included 15 (51.7%) women and 14 (49.3%) men with mean ± SD age of 70.78 ± 10.92 years and the memantine group consisted of 16 (66.7%) women, 8 (33.4%) men with mean ± SD age of 73.33 ± 9.35 years. No significant differences were observed between sex and age distribution of two study groups. Most common comorbidities in patients were diabetes mellitus, atrial fibrillation, angina pectoris, hypertension, and hyperlipidemia and migraine headache, with no significant differences between two groups. Also, no significant difference was observed between medications received by patients in two study groups. Most common administered drugs were captopril, enalapril, losartan, valsartan, aspirin, atorvastatin, atenolol, metoprolol, and clopidogrel. Within group analysis showed that in the control group, differences between baseline NIHSS score and that of the day 5 was significant. Similarly, in the memantine group there was a significant difference between baseline NIHSS score and that of the day. However, between groups comparison revealed that NIHSS score change from day 1 to 5 was significantly different between control and memantine group. So that patients in the memantine group have significantly greater reduction in the NIHSS score compared to that of the control group. This study confirmed that a five day post-stroke treatment with memantine 20 mg TID could have significant valuable effects on the neurological consequences of stroke and the neurologic function improvement of the study patients.

CONCLUSION
Stroke is a neurologic deficit and it occupies the top most burdens. The incidence rate of stroke was found to be 0.091. The use of medications differs with hospitals and physicians. Various types of drugs were used depending upon the illness. The study reported various medicines prescribed in acute ischemic stroke patients like antiplatelet, neuroprotective, antihypertensive, dyslipidemics, neurotonic and anticoagulants. The study showed that the cognitive functions and outcome of the acute ischemic stroke patients were improved. The study confirm that post-stroke treatment with memantine 5mg and 10mg could have
significant valuable effects on the neurological consequences of stroke and language function improvement of the study population, hence their quality of life also were improved.

REFERENCE