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Long Term Management of Stroke Patients with Drug Associated Problems

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ABSTRACT



A focused neurological impairment with a quick onset and a duration of more than 24 hours is referred to as a stroke. Transient ischemia attack, which is described as a focused neurological symptom lasting less than 24 hours, is not included in this classification. Identifies the complication of the patient and how those complications are addressed. A complication is an adverse event that occurs due to a medical treatment or surgical procedure. It is a form of therapy strategy utilised to improve outcome of the therapy for a disease or condition. An anticipated observational study carried out within the division of neurology as well as neurosurgery for a period of 6 months. The study was conducted by collecting information from patients suffering with stroke by using a patient consent form. It was a prospective observational study carried out in the department of neurology and Neurosurgery for 6 months. The total number of participants in the research we conducted were 150 out of which male patients were 93(60%)and females were 57(38%) are less likely present, the age group of the people carried out in our study were maximum between >66 that is 39 (24.4%) and minimum between 30-40 that is 10 (6.2%), all are suffering with stroke and the data is obtained and discussed. Our research showed that the majority of the patients having difficulty with different types of stroke was taken into consideration with their treatment modulations and assessment of their outcomes. Most of the people were recovered from the condition out of which it analyses the effects to make the life better; our study also estimates the complications and treatment to have a better therapeutic outcome.

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INTRODUCTION

Stroke is In India, a significant non-communicable disease (NCD) is to blame for 3.5% of the disability-adjusted life years. The occurrence of stroke is on the rise as a result of changes in lifestyle, behaviour, demographics, socio-cultural norms, and technology [1, 2]. Generally speaking, people can prevent the disease by making little modifications to the way they live. A stroke is a sudden loss of brain function brought on by an interruption in the blood flow to the brain. A stroke is referred to as a "BRAIN ATTACK" when the blood supply to a particular area of the brain is cut off [3]. 8,

00,000 primary (first-time) and secondary (recurrent) cases, respectively. Strokes occur annually in the United States, with the majority being primary strokes (about 6, 00,000), 87% being ischemic violations, 10% being main haemorrhages, and 3% subarachnoid hemorrhages [4]. Per year 17 million strokes were noted. For every 2 seconds, one stroke was noted. For every Year 6.5 million deaths were observed global estimations indicates that primary hemorrhage For 10% to 25% of all strokes, people of Asian, African, as well as Latin American ancestry tend to experience primary haemorrhage more frequently than people of European ancestry [5]. Additionally, primary haemorrhage causes 10 to 17% of all strokes, and its prevalence doubles every ten years after age 55. Stroke incidence ranges from 30 to 120 per 100,000 adults aged 35 to 44 and from 670 to 970 per 100,000 adults aged 65 to 74 per year [6]. Based on the cause of the stroke, it can be categorised as either ischemic (87%) or hemorrhagic (13%).

Ischaemic Stroke:

It is caused by the blocking of a cerebral artery (50%) by thrombus or atherosclerotic plaque, 25% by embolism, and 25% by micro-artery blockage, or "lacunar stroke") [7]. The most frequent type of stroke, an ischemic stroke, occurs when a brain artery is blocked. Ischemic stroke can come in two different forms [8].

Embolic Stroke

A blood clot or plague fragment usually develops in the heart or the major arteries that supply the brain during an embolic stroke and travels via the arteries to the brain. A stroke results from the clot blocking a blood artery in the brain [9].

Thrombotic Stroke

A blood clot inside an artery that supplies blood to the brain is known as a thrombotic stroke. The clot prevents blood flow, which results in a stroke [10].

Transient Ischemic Attack:

Blood flow slows or ceases if a brain artery or one that goes to the brain is temporarily stopped. A brief ischemia attack sometimes referred to as a "MINI STROKE" can result from this. When a TIA occurs, the artery either becomes unblocked quickly or a new channel opens up, restoring normal blood flow [11]. The symptoms only stay a short while before going away. A TIA is a severe indication that you could be having a stroke.

Hemorrhagic Stroke:

When a blood artery in the brain bursts, blood leaks into or around the brain, causing a hemorrhagic

stroke. Blood vessels can become weak enough to explode due to aneurysms and high blood pressure [12]. There are two types:

Intracerebral Hemorrhage:

A ruptured blood artery that bleeds into the brain tissue results in this particular type of stroke. As a result of the bleeding, the brain cells die and the damaged area of the brain becomes dysfunctional. The most frequent cause of this kind of stroke is hypertension [13].

Subarachnoid Hemorrhage:

A blood vessel close to the surface of the brain bursts in this form of stroke, allowing blood to flow into the gap between the brain and the skull. The pressure from the blood that builds up in this area puts strain on the brain's tissue and causes blood vessels to spasm. Aneurysms are typically the cause of this type of stroke [14].

Aneurysm:

It is a weak point of the artery's wall that protrudes into a thin bubble. As it grows, the wall could become weak as well as crack.

The goals of treatment of acute stroke are

The first is to lessen the ongoing brain damage, as well as to lower death and long-term disability.

Prevent complications brought on by neurological dysfunction and immobility.

Prevent stroke reoccurrence

Life Style Measures:

All patients who smoke should be encouraged to give up and to stay away from smoke-filled environments.

Everyone who is able to exercise regularly should be encouraged to do so for at least 30 minutes each day. It should be suggested to them that they begin with low-intensity exercise and build it gradually to moderate levels [15].

All patients should be urged to practise yoga, consume low-fat dairy products, foods made from vegetables, fruits, whole grains and plant oils, cut back on sweets and steer clear of red meat [16].

Diabetes should be checked for in all patients, and treatment should aim for an HbA1C of less than 6.5%.

It should be suggested to all patients to consume less salt.

Intravenous thrombolysis:

Poor prognostic indicators include the persistence of proximal arterial blockage following IV thrombolysis, which is frequently observed in patients

with baseline NIHSS scores >10. Additionally, the rate of partial or complete recanalization of the occluded proximal middle cerebral artery (MCA) with IV alteplase is only about 25%, as opposed to the higher rates of 50–60% that are frequently reported following intra-arterial (IA) therapy. In certain patients with acute strokes, IV rt PA showed a definite benefit, according to the National Institute of Neurological Disorders and Stroke (NINDS). In ischemic stroke within three hours of onset, the NINDS research utilised IV rt PA (0.9 kg to a 90 mg max; 10% as bolus, then the remaining over 60 min). Within 90 minutes, one-half of the patients received care [17].

Rehabilitation of Stroke Patients

A multidisciplinary team approach to stroke rehabilitation involves a doctor, a physiotherapist, an occupational therapist, a nurse, a speech and language therapist, a clinical psychologist, an orthotist, and a social worker [18].

Physiotherapeutic Management of Stroke Patients

Physical therapy after a stroke seeks to enhance motor coordination, upper extremity functions, gait, and daily living skills while promoting self-care and social inclusion.

General Recommendations

The first stroke Within the first 48 hours of admission, patients must be seen and evaluated by a physiotherapist. The assessment must be revisited every two weeks up to the time of discharge, every week for the first month, every month for the first six months, and then every two years after that, until the patient has reached maximum functional recovery [19].

Throughout the healing process, the patient and carers should be involved in choosing the goals and course of treatment.

At all phases of rehabilitation, functional use of the afflicted side should be promoted as much as feasible.

Patients and their carers should get education and encouragement to ensure that the skills they learn in therapy sessions are also practised at home.

Avoid aggressive stretching near joints that are more susceptible to flaccid muscles (shoulder, knee, wrist, as well as hand).

Every stroke patient should receive at least 45 minutes of supervised physical therapy five days a week until the patient meets the assessment's predetermined goals [10, 19].

MATERIALS AND METHODS

Place of study

The study “Long Term Management of Stroke Patients With Drug Associated Problems”, Which Was Carried out in the Department of Neurology of a tertiary care teaching hospital.

Study Design

The research was a prospective observational study carried out in the field of neuroscience and Neurosurgery ward of territory care teaching hospital.

Study Population

This study was done in 150 Patients who are suffering with stroke.

Study Duration

This study was conducted for 6 months.

Study Criteria /Patient enrollment

According to the study's inclusion and exclusion criteria, patients are enrolled.

Inclusion Criteria:

1. All the patients suffering with different types of stroke.
2. Patients age in between 35 – 70 years.
3. Patients of both sexes.
4. Patients with Comorbid conditions.
5. Who are willing to give Information?
6. History of trauma.
7. Patient with alcohol and Smoking habits.

Exclusion Criteria:

1. Pregnancy women.
2. Lack of Interest to give information.
3. Pediatrics.
4. Whose verbal communication was poor?
5. Unconsciousness patients.

Study Materials:

1. Patient informed consent form.
2. Patient Information data form.

Table 1: Glasgow Coma Scale

	1	2	3	4	5	6
Eye-opening	Does not open eyes in response to pain	Opens eyes in response to pain	Opens eyes in response to commands	Opens eyes spontaneously	N/A	N/A
Verbal	Makes no sounds	Makes incomprehensible sounds	Speaks inappropriate words	Confused, disoriented	Oriented, converses normally	N/A
Motor	Makes no movements	Extension to painful stimuli	Abnormal flexion to painful stimuli	Normal flexion/withdrawal to painful stimuli	Localizes to painful stimuli	Obeys commands

Table 2: Shows the demographic details of the patient with all the factors of age, sex, educational level, nutritional status, marital status and ethnicity

DEMOGRAPHICS	NO OF PATIENTS	PERCENTAGE
Age		
30-40	10	6.2
41-50	15	9.4
51-60	22	14
61-65	32	20
66-70	39	24.4
>70	32	21.3
Sex		
Male	93	60
Female	57	38
Marital Status		
Married	146	97.3
Unmarried	14	9.3
Educational		
Primary	78	52
Secondary	39	26
Tertiary	33	22
Nutritional level		
Excellent	29	19.3
Good	48	32
Poor	73	48.6
Surrounding		
Excellent	35	23.3
Good	65	43.3
Poor	50	33.3
Cleanliness		
Excellent	33	22
Good	68	45.3
Poor	49	32.6

Table 3: Shows the reason for admission in the hospital with primary symptoms

Reason for Admission	No of patients	Percentage (%)
Stroke	150	100
Stroke with Hypertension	59	39.3
Stroke with Diabetes Mellitus	47	31.3
Recurrent CVA	23	15.3
Stroke with HTN and DM	106	70.6
Stroke with CAD	15	10
Stroke with UTI, Sepsis, and AKI	06	04
Trauma	00	00
Post-traumatic stroke	00	00

Table 4: Shows the symptoms observed during the hospital stay after admission with stroke

Symptoms observed during hospital stay	No of Patients	Percentage (%)
Dysarthria	48	32
Descend	34	22.6
Not Obeying Commands	12	8
Facial asymmetry	24	16
Fever	12	8
Constipation	16	10.6
Mental Confusion	15	10

Table 5: Shows the scans performed to the patients to rule out the stroke and type of stroke

Scans Performed	No of Patients	Percentage (%)
Computed Tomography	150	100
Magnetic Resonance Imaging	150	100
Carotid Doppler	139	86.6
Single Photon Emission Computed Tomography	00	00
Positron Emission Tomography	00	00

Table 6: Shows the classes of Drugs Prescribed For The Patients in the hospital

Drugs prescribed	No of patients	Percentage
Anti-platelet Activator	146	97.3
Anti hyperlipidemic agents	65	43.3
Anti diabetic agents	47	31.3
Anti hypertensive drugs	59	39.3
Thrombolytic agents	150	100
Anti ulcer drugs	58	38.6
Anti coagulants	120	80
Anti emetics	48	32
Anti convulsant	138	92
Multivitamin supplements	67	44.6
Nonsteroidal anti-inflammatory drugs	54	36
Antibiotics	87	58

Table 7: Shows the symptom sobserved during Admission in ER Department

Symptoms observed during admission	No of Patients	Percentage (%)
Weakness of upper limbs, lower limbs	115	72
Slurring of speech	93	58
Deviation of angle of mouth	78	49
Loss of motor reflexes	24	15
Loss of consciousness	26	16.2
Unresponsiveness to commands	16	10
Seizures	14	09
Headache	08	05

Table 8: Shows the Lab test performed to the patients after admission

Lab Investigations	No of Patients	Percentage (%)
Complete blood profile	150	100
Liver function tests	142	89
Renal function tests	135	84.6
Lipid profile tests	150	100
Electrolytes	144	90
Urine analysis	144	90
Glycemic profile	150	100
Thyroid profile	08	05

Table 9: Shows treatment regimen for stroke patients mostly used in all patients

Drugs	No of Patients	Percentage (%)
Mannitol	150	100
Enoxaparin sodium	150	100
Aspirin	146	91
Clopidogrel	62	38.7
Cefaparazone + Salbactum	58	36.2
Paracetamol	45	28
Levetiracetam	38	24
Piperacillin + tazobactum	36	22.5
Nifedipine	33	20.6
Insulin R	30	18.75
Telmisartan	25	15.62
Hydrochlorthiazide	20	12.5
Metformin	20	12.5
Furosemide	20	12.5
Amlodipine	18	11.2
Pantoprazole	15	59.37
Ondonsetron	14	8.7
Glimepiride	10	6.25

Table 10: Shows complications occurred after stroke during hospital

Complications	No of patients	Percentage (%)
Recurrent seizures	05	3.1
Epileptic seizure	14	8.7
Urinary tract infections	36	22.5
Mobility-related falls	76	47.5
Pressure sores	12	7.5
Depression	28	17.5
Anxiety	56	35
Emotionalism	28	17.5
Confusion	90	56.25
Pain	126	78.7
Chest infections	00	00
Deep vein thrombosis	00	00
Pulmonary embolism	00	00

Table 11: Shows treatment complications in stroke patients

Treatment complications	No of patients	Percentage (%)
Pneumonia	23	14.3
Seizures	12	7.5
Decreased intracranial pressure	10	6.25
Intracerebral hemorrhage	06	3.7
Fibrosis of connective tissue	00	00
Cerebral swelling	00	00
Malnutrition	00	00

Table 12: Shows the drugs Used for Stroke Patients in Long term Therapy

Long term used Drugs in stroke Patients	No of Patients	Percentage (%)
Ecosprin	150	100
Inj.Alteplase	138	92
Aspirin	146	91
Clopidogrel	62	38.7
Heparin	48	32
Acenocoumarol	24	16
Dabigatran	15	10
Enoxaparin sodium	08	5.3
Dipyridamole	20	13.3

Table 13: Shows the Duration of drugs used in long-term management

Duration of drugs usage	No of Patients	Percentage (%)
Onset of stroke	150	100
3 weeks	150	100
3 months	120	80
6 months	68	45.3
8 months	43	28.6
12 months	22	14.6
Rehabilitation	Maximum	100

Table 14: Shows treatment outcomes in stroke patients

Treatment outcome	No of patients	Percentage (%)
Recovered	118	73.7
Not recovered	21	13.1
Economic burden	21	13.1
No change	00	00
Shifted to higher centers	00	00
Left against to medical Advice (LAMA)	00	00

Table 15: Shows criteria for diagnosis in the hospital

Condition at the time of diagnosis	No of patients	Percentage (%)
Can't remember	00	00
After lab investigations	20	12.5
By imaging	150	100

Study Method:

The study will be initiated after obtaining the permission from the Head of the Institution and Head of Department of Neurology. Patients are considered into the study, after taking informed consent form from them or from the attendants. Patients are considered for the study based on inclusion and exclusion criteria [20].

The "Chart Review Method" will be used to gather the data for this study, as it is well suited to identifying all the necessary and relevant baseline information. The data will be collected on a specially designed patient data collection proforma, which includes patient demographics like age, socio-economic status, family income, educational level, high-risk factors, past and present medical/medication history, lab investigation data, radiographic data, physician information, and patient demographics like age [21].

RESULTS AND DISCUSSION

Our Study was conducted in the department of neurology and neurosurgery, we have collected the data of the patients including all the demographic details of the stroke patients with inclusion and exclusion criteria of age group 66-70 (24.4%) having the highest out of 150 patients and 30-40 (6.2%) being the lowest, out of 150 (60%)male and (38%) female, with marital status of (97.3%) married and (9.3%)unmarried, The educational level of patients (52%) of primary (26%) of secondary and (22%)of tertiary with hygienic conditions of maximum were poor 73(48.6) and minimum were good 48(32%)and very less excellent 29(19.3%)was

reported with surrounding environment was almost good and cleanliness is almost good 65(43.3%) was observed. The reasons for the admission were also analysed after collecting the data from the stroke patients 150(100%), hypertension 59(39.3%), diabetes 47(31.3%), recurrent CVA 23(15.3%), both hypertension and diabetes 106(70.6%), CAD 15(10%), UTI sepsis and AKI being(4%), Trauma and post-traumatic stroke being (0%). The symptoms mostly observed during the treatment and hospital stay were dysarthria 48(32%), Facial asymmetry 24 (16%), descend 34(22.6%), mental confusion 15(10%)and not obeying commands 12(8%). The symptoms observed during the admission is mostly of weakness of upper limbs and lower limbs 115(72%), slurring of speech 93(58%), deviation of mouth angle 78(49%), seizures 14(9%) including headache, loss of consciousness reported the least (Tables 1, 2, 3, 4 and 5).

The lab parameters performed to the patients in different conditions include complete blood profile, lipid profile and glycemic profile of 150(100%), and liver function tests, renal function test, urine analysis, thyroid profile and electrolytes were analysed with the least no of patients. In the study for the final confirmation differential diagnosis were done of which were mainly scans performed are CT, MRI 150(100%), carotid doppler 139(86.6%) were performed for evaluation of stroke (Tables 6, 7, 8, 9 and 10).

The treatment regimen provided for the patients with different class of drugs were mostly of anti platelet drug 146(97.3%), thrombolytic agents 150(100%), anti coagulant 120(80%), anticonvulsant 138(92%), antihyperlipidemic agents 65

(43.3%), anti diabetic drugs 47(31.3%) and multi-vitamin tablets are prescribed for the patients along with NSAIDs and antibiotics. The different types of treatment provided for stroke patients include mannitol, enoxaparin sodium 150(100%), aspirin 146(100%), clopidogrel 62(38.7%), piperacillin and tazobactam 36(22.5%), insulin 30(18.75%), telmisartan 25 (15.62%), maximum use and metformin, amlodipine, ondansetron, pantoprazole were being minimum usage (Tables 11, 12, 13, 14 and 15).

The complications observed after the stroke therapy include recurrent seizures 05(3.1%), pain 126(78.7%), confusion 90(56.25%), anxiety 56(35%), emotional 28(17.5%), UTI 36(22.5%), mobility-related falls 76(47.5%) and deep vein thrombosis, chest infections are least observed. Our study also analysed the treatment complications in the patients suffering with stroke the maximum was pneumonia 23(14.3%), seizures 12(7.5%), decreased intracranial pressure 10(6.25%), and cerebral swelling, malnutrition reported the least.

The drugs that are used for stroke in long-term therapy involve the maximum use of ecosprin 150(100%), inj.alteplase 138(92%), aspirin 146(91%), clopidogrel 62(3.7%), acenocoumarol 24(16%) and heparin, dabigatran, dipyridamole and enoxaparin sodium of minimum usage observed. The duration of therapy in stroke patients include onset of stroke to 3 weeks 150(100%), 3 months 120(80%), 6 months 68(45.3%), 8 months 43(28.6%), 12 months 22(14.6%) and maximum patients with rehabilitation. The treatment showed better outcome in the patient suffering with stroke, the maximum number of patients were recovered 118(73.7%), and minimum not recovered 21(13.1%), and least for economic burden 21(13.1%). The overall criteria for the diagnosis in the hospital is by imaging 150(100%). Out of 150 patients, 150 are provided with the information by continuous monitoring of the patient and the data were analysed and evaluated with long-term complications and concluded the study.

CONCLUSION

Our study concluded that most of the patients under long-term treatment for stroke, caused several complications. These complications lead to permanent systemic complications. Therefore the long-term management of some drugs must be reviewed frequently to overcome the side effects in the patients. It should be considered that we should provide proper drug therapy to the patients based on physician advice in a proper mechanism. We the clinical pharmacist should provide the knowledge to the

patient attendants about the drug usage and proper follow-up. We prepare the pamphlet and brochure about medical management to the patients. The healthcare system has to take measures throughout the world for better outcomes and quality of life with increased life expectancy.

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Conflict of interest

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