Investigation Of Drug Prescribing Pattern And Blood Pressure In Cerebrovascular Accidents

Dr. Akshay D Meshram[1], Prof. Rajendra Marathe[2], Dr. Rohit P Khillare[3], Dr. Vishal V Narwade[4], Prof. Minakshi Bhattacharya[5], Ms. Ashily Rajendran[6]

[1]Research Scholar, Department of Pharmacology MGM Medical College, Navi Mumbai, Maharashtra
[2]Principal, Govt. College of Pharmacy, Ratnagiri, Maharashtra
[3]Doctor of Pharmacy, Govt. College of Pharmacy, Aurangabad, Maharashtra
[4]Doctor of Pharmacy, Govt. College of Pharmacy, Aurangabad, Maharashtra
[5]Professor, Govt. Medical College and Hospital, Aurangabad, Maharashtra
[6]Research Scholar, Institute of Chemical Technology, Mumbai, Maharashtra
Corresponding Author- **Dr. Akshay D Meshram**
Email id: drakshaymeshram94@gmail.com
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Abstract

Developing countries like India are facing a double burden of communicable and non-communicable diseases. Stroke is one of the leading causes of death and disability in India. Considering all these points, the present study was conducted on drug prescribing pattern and blood pressure monitoring in Cerebrovascular accident (CVA) at Govt. Medical College and Hospital, Aurangabad. Out of cases of 71 cases of CVA, 90% were of ischemic stroke with 61.9% of male patients within the age group of 43. Age was found to be the major risk factor in the present study (88.88%). Majority of patients was given mannitol 67(94.3%), aspirin and atorvastatin 63(88.7%), antibiotics were given 28 (39.4%) to prevent hospital acquired infections.

Keywords: Cerebrovascular accident, stroke, age group, antibiotics.

1. Introduction

The sudden death of brain cells due to lack of oxygen caused by blockage of blood flow or rupture of an artery to the brain.[1] WHO defined stroke as a neurological deficit of cerebrovascular cause that persist beyond 24 hour or is interrupted by death within 24 hour.[2] Stroke is the second leading killer worldwide and the third leading cause of death in the United States, behind cardiovascular disease and all cancers. Despite improvements in the stroke mortality rates in the second half of the 20th century, stroke occurs in more than 700,000 individuals per year and results in 150,000 deaths.1 Recent advances in our knowledge of the pathophysiology of stroke and efforts to organize stroke care have led to evidence-based recommendations on the management of the stroke patient.[3]

Developing countries like India are facing a double burden of communicable and non-communicable diseases. Stroke is one of the leading causes of death and disability in India. The estimated adjusted prevalence rate of stroke range, 84-262/100,000 in rural and 334- 424/100,000 in urban areas. The incidence rate is 119-145/100,000 based on the recent population-based studies. There is also a wide variation in case fatality rates with the highest being 42% in Kolkata. Stroke units are predominantly available in urban areas that too in private hospitals. Intravenous (IV) and intra-arterial thrombolysis (IA) are commonly used in India. In the on-going Indo USA National stroke registry, the rate of IV thrombolysis is 11%. Stroke rehabilitation is not well developed in India due to lack of personnel. Organized rehabilitation services are available in the country but they are mainly in private hospitals of the cities. Even though India is a leading generic drugs producer still many people can't afford the commonly used secondary prevention drugs. As a first step the Government of India has started the National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases & Stroke (NPCDCS). The government is focusing on early diagnosis,

management, infrastructure, public awareness and capacity building at different levels of health care for all the non-communicable diseases including stroke. An organized effort from both the government and the private sector is needed to tackle the stroke epidemic in India.[4]

Stroke is a heterogeneous disease with more than 150 known causes. Strokes can broadly be divided into:

Ischemic - restricted or interrupted blood and therefore oxygen supply to an area of the brain

Hemorrhagic - bleeding into an area of the brain, due to rupture of a blood vessel or abnormal vascular structure in the brain

This distinction between hemorrhagic and ischemic stroke is critical for stroke management and treatment decisions. Hemorrhagic strokes can further be distinguished into intracerebral and subarachnoid strokes of all strokes, 88% are ischemic and 12% are hemorrhagic in nature. Of the hemorrhagic strokes, 9% are due to an intracerebral hemorrhage, and 3% are due to a subarachnoid hemorrhage.[5]
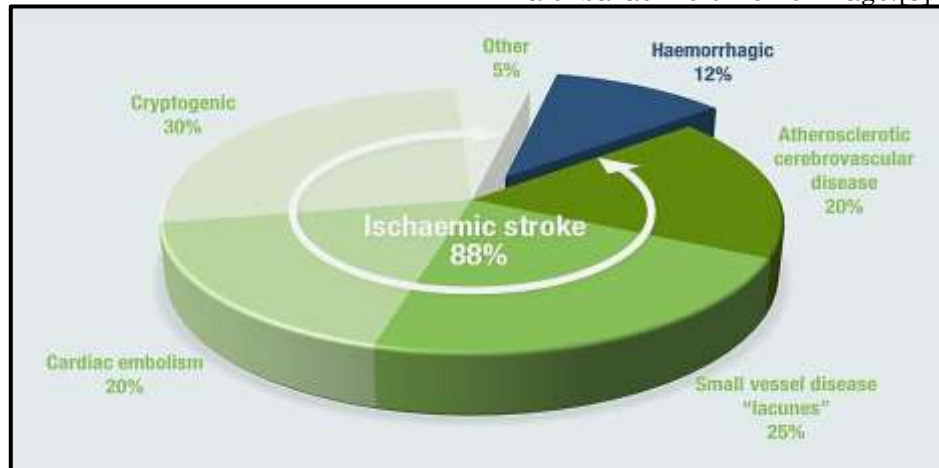
Figure 1: Classification of stroke

Risk factors for stroke can be subdivided into non modifiable, modifiable, and potentially modifiable. The most common modifiable, well-documented risk factors for stroke include hypertension, cigarette smoking, diabetes, atrial fibrillation, and dyslipidemia. The treatment of hypertension, beginning in the mid-20th century, is thought to be primarily responsible for the drastic reduction in stroke death rates between 1950 and 1980 in the United States.4 A second very important risk factor for stroke is cardiac disease. Patients with coronary artery disease, congestive heart failure, left ventricular hypertrophy, and especially atrial fibrillation are at increased risk of stroke.8,9 In fact, the presence of atrial fibrillation is one of the most potent risk factors for ischemic stroke, with stroke rates from 5% to 20% per year depending on the patient's comorbid conditions.10,11 Other known risk factors for atherosclerosis are also known to place patients at risk of stroke. Diabetes mellitus, dyslipidemia, and cigarette smoking are known atherogenic states that lead to cerebrovascular disease and ischemic stroke.[6]

Figure 2: Risk factors affecting CVA

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Treatment for CVA involves both non-pharmacological and pharmacological ways:

1) Ischemic Stroke:

• *Non-pharmacological:*

Surgical interventions in the acute ischemic stroke patient are limited. In certain cases of ischemic cerebral edema owing to a large infarction, craniectomy to release some of therising pressure has been tried. In cases of significant swelling associated with a cerebellar infarction, surgical decompression can be lifesaving. Beyond surgical intervention, however, the use of an organized, multidisciplinary approach to stroke care that includes early rehabilitation has been shown to be very effective in reducing the ultimate disability owing to ischemic stroke. In fact, the use of "stroke units" has been associated with outcomes similar to those achieved with early thrombolysis when compared with usual care. [7]

• *Pharmacological:*

Anticoagulants/Antiplatelets

Antiplatelet agents such as aspirin and anticoagulants, such as warfarin, interfere with theblood's ability to clot and can play an important role in preventing stroke.

Antihypertensives

Antihypertensives are medications that treat high blood pressure. Depending on the type of medication, they can lower blood pressure by opening the blood vessels, decreasing blood volume or decreasing the rate and/or force of heart contraction. [8]

2) Hemorrhagic Stroke:

• *Non-pharmacological:*

a) Endovascular Procedures

Endovascular procedures may be used to treat certain hemorrhagic strokes similar to the way the procedure is used for treating an ischemic stroke. These procedures are less invasive than surgical treatments, and involve the use of a catheter introduced through a major artery in the leg or arm, then guided to the aneurysm or AVM; it then deposits a mechanical agent, such asa coil, to prevent rupture.[9]

b) Surgical Treatment

For strokes caused by a bleed within the brain (hemorrhagic stroke), or by an abnormal tangle of blood vessels (AVM), surgical treatment may be done to stop the bleeding. If the bleed is caused by a ruptured aneurysm (swelling of the vessel that breaks), a metal clip may be placed surgically at the base of the aneurysm to secure it. [10]

• *Pharmacological:*

The treatment and management of patients with acute intracerebralhemorrhage depends on the cause and severity of the bleeding. Basic life support, as well as control of bleeding, seizures, blood pressure (BP), and intracranial pressure, are critical. Medications used in the treatment of acute stroke include the following:

• Anticonvulsants - To prevent seizure recurrence

• Antihypertensive agents - To reduce BP and other risk factors of heart disease

• Osmotic diuretics - To decrease intracranial pressure in the subarachnoid space.

Management begins with stabilization of vital signs. Perform endotracheal intubation for patients with a decreased level of consciousness and poor airway protection.[11] Intubate and hyperventilate if intracranial pressure is elevated, and initiate administration of mannitol for further control. Rapidly stabilize vital signs, and simultaneously acquire an emergent computed tomography (CT) scan. Glucose levels should be monitored, with normoglycemia recommended. Antacids are used to prevent associated gastric ulcers.[12] The main goal of the present research work is to study the drug prescribing pattern and blood pressure monitoring in CVA.

2. Methods:

2.1. Design of study:

The present study was conducted in Govt. Medical College and Hospital, Aurangabad duringthe period of 4 months on patients of CVA (Cerebrovascular Disease).

2.2. Source of data and sample size:

The Patients of CVA (Ischemic & Hemorrhagic) attending medicine IPD of the Hospital were enrolled in the present study. Total of 71 patients were included in the study.

2.3. Inclusion and exclusion criteria:

In the case of inclusion criteria, male and female patients of age 16 years and above were included in the study. Patients diagnosed with ischemic and hemorrhagic stroke were included in study. Those patients who had radiologically confirmed diagnosis of stroke using CT/MRI were included in study. In the case of exclusion criteria, all the patients other than CVA were included in

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study.

2.4. Data Collection:

All the patients attending IPD at mentioned hospital were evaluated for the eligibility to be enrolled into the study. The eligible candidates were administered a verbal consent. The consented participants were enrolled in the present study. Descriptive data like name, age, sex, medical history, personal history like addiction were obtained by interviewing the patients. Each of the patient's proper history was recorded on

predesigned and pretested proforma. The reports of CT/MRI impression were obtained from patients record file. A detailed history was elicited from all patients with emphasis on previous stroke attack and hypertension was collected.

3. Results: 3.1. Type wise distribution of cases:

The observational study conducted randomly in 71 CVA patients, we found that out of 71CVA 64 were of ischemic and 7 were of hemorrhagic stroke.

Table 1: Type wise distribution of cases of CVA

Type	No.of cases
Ischemic stroke	64
Hemorrhagic stroke	7
Total	**71**

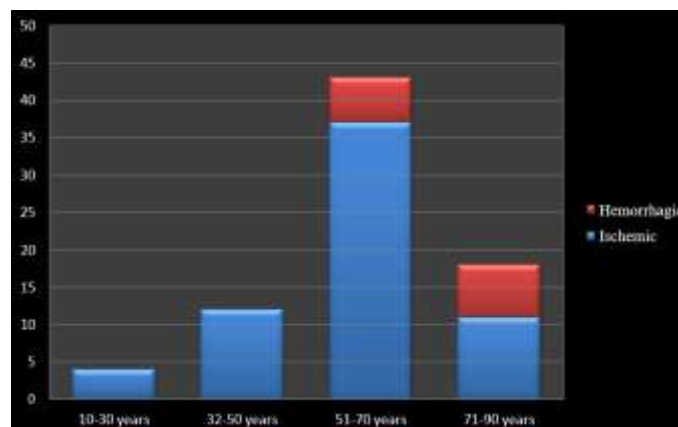
Figure 3: Observational study on type wise distribution of CVA cases

3.2. Age wise distribution of cases:

Out of 71 patients, 4 patients were of ischemic stroke of 10-30 age group,12 patients were of ischemic stroke between 31-

50 age, 37 were of ischemic stroke and 6 were of hemorrhagic between 51-70 age group,11 were of ischemic stroke and 1 were of hemorrhagic stroke between 71-90 age group.
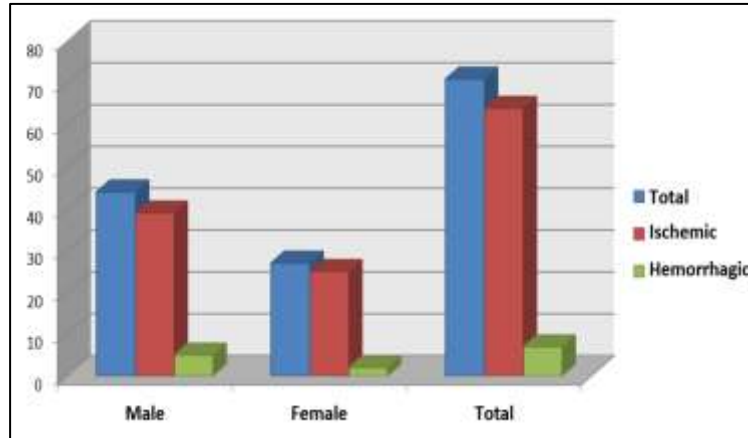
Table 2: Age wise distribution of cases

Age	Ischemic	Hemorrhagic
10 - 30 years	4	0
31 - 50 years	12	0
51 - 70 years	37	6
71 - 90 years	11	1
Total	**64**	**7**

Figure 4: Graphical representation showing age wise distribution of CVA cases

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3.3. Gender wise distribution of cases:
The observational study conducted randomly in 71 CVA patients, we observed that 64

Table 3: Gender wise distribution of cases

patient were of ischemic stroke (in which 39 are male and 25 are female) and 7 were of hemorrhagic stroke (5 males and 2 females).

Patients	Ischemic	Hemorrhagic	Total
Male	39	5	44
Female	25	2	27
Total	**64**	**7**	**71**

Figure 5: Graphical representation showing gender wise distribution of CVA cases

3.4. Blood pressure wise distribution of cases:
The observational study conducted randomly in 71 CVA patients, we observed that 64

patient were of ischemic stroke (in which 39 are male and 25 are female) and 7 were of hemorrhagic stroke (5 males and 2 females).
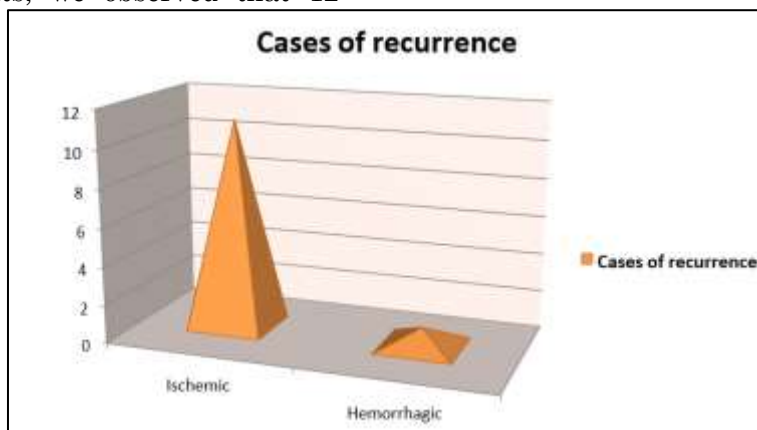
Table 4: Blood pressure wise distribution of cases

Blood pressure	Cases
160/90 mm hg and less	**54**
More than 160/90mm hg	**17**
Total	**71**

3.5. Distribution of cases on basis of recurrence:
The observational study conducted randomly in 71 CVA patients, we observed that 12

patients had recurrence of Stroke from which 11 were of ischemic stroke and 1 of hemorrhagic stroke.

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Figure 6: Distribution of cases on basis of recurrence

3.6. Prescribing pattern of drugs:

The observational study conducted randomly in 71 CVA patients, we observed that Mannitol was given to 67 patients, aspirin and atorvastatin was given to 63 patients , antibiotics were given to 28 patients, multivitamin was given to 9 patients, amlodipine was given to 9 patients, telmisartan and warfarin were given to 5 patients , dexamethasone and nifidepine were given to 4 patients, heparin, nimodipine and paracetamol were given to 2 patients and phenytoin, valproate, carbamazepine, hydrocortisone, clopidogrel was given to 1 patients.
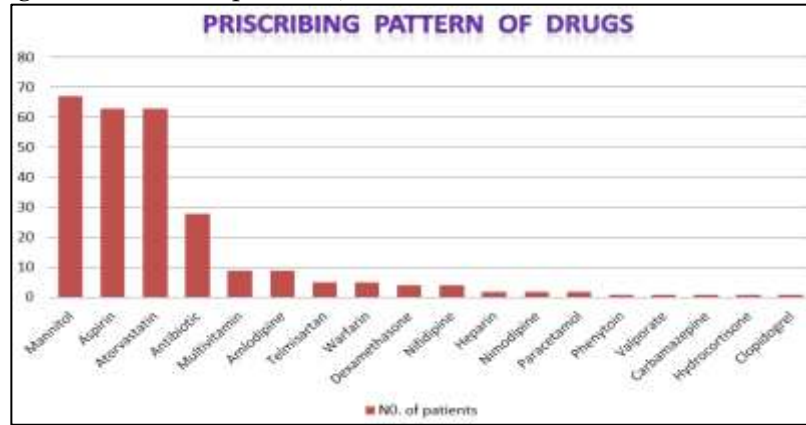
Figure 7: Prescribing pattern of drugs on CVA Patients

4. Conclusion

The present study was conducted on 71 CVA patients enrolled in Govt. Medical College and Hospital Aurangabad. Out of 71 patients maximum i.e., 64 (90%) patients were of ischemic stroke and maximum number of patients were males (61.9%). Maximum number of cases were observed in 51-70 years of age group. Recurrence was more in ischemic stroke. Antihypertensive was started BP above 160/90 mmHg. Age was found to be the major risk factor in the present study (88.88%). Majority of patients was given mannitol 67(94.3%), aspirin and atorvastatin 63(88.7%), antibiotics were given 28 (39.4%) to prevent hospital acquired infections.

5. Discussion

71 patients were enrolled in the study of both Ischemic stroke and hemorrhagic stroke. Our study on type of stroke distribution found some similar aspects with previous study Preethi Pratyusha, Abdul Naveed, Vinay Rao. 2014 which concluded that 82.6% ischemic and 17% were of hemorrhagic stroke and was found to be more common in age more than 60 years.[13] Also, our study was like the previous study by Shyamal k das, tapas banargi, trisha roy. 2007 which concluded that out of screened population 54% were men and 46% were women.[14] Previous study by Samer Bansal, Kiran pal S. Sangha and pooja khatri 2013 states that antihypertensive should be withheld unless the diastolic pressure is above that 120 mmhg or unless the systolic blood pressure is above 220 mmhg.[15] Previous study by Nan fang yika ,Xue xue bao 2009. concluded that Recurrence was 10.5% in ischemic and 12.7%in ICH patients. So our study found some similar aspects in recurrence of ischemic stroke with studyby Nan fang yika , Xue xue bao 2009. Study by Sangram vurumadla,Venkateshwalu k. Rakshith v. 2014.Concluded that Majority of stroke patients was prescribed with antiplatlets 85%, Dyslipedemic 75%, anticoagulants 36% and mannitol 98.5%.So our study found some similar aspects in recurrence of ischemic stroke with study by by Sangram vurumadla,Venkateshwalu k. Rakshith v. 2014.[16]

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