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Original Research Article

A retrospective study of prescription pattern of drugs in the management of stroke, at BRIMS teaching hospital, Bidar, India

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ABSTRACT

Background: Stroke is a leading cause of death worldwide these days. It is one of the major public health challenges, not only for neuropharmacology but the society in general. This study was conducted mainly to assess the prescribing pattern of drugs in stroke patients.
Methods: A retrospective study was conducted in the department of medicine at BRIMS teaching hospital over a period of 3 months. 40 Patients were included in this study based on the inclusion and exclusion criteria. Pharmacological therapy prescribed was analysed to determine the pattern of prescription of drugs.
Results: The incidence of stroke was higher in males as compared to females. Hypertension, smoking, and alcoholism were found to be the major risk factors for stroke. The major co-morbidities identified were hypertension and diabetes mellitus. In study of 40 patients 78% were identified as Ischemic stroke patients and 22% suffered Hemorrhagic stroke. The current prescribing trends were antihypertensive (35%), followed by antiplatelets (25%), statins (10%), antidiabetics (10%), antibiotics (11%) and nootropics (5%).
Conclusions: In order to promote the quality use of drugs, the prescribing pattern of drugs should be based on severity of stroke, associated co-morbid conditions, and currently available evidences.

Keywords: Co-morbidities, Hypertension, Prescribing trend, Stroke

INTRODUCTION

Stroke is a major cause of mortality worldwide and commonly occurs in elderly patients.[1] In India, the ICMR estimates in 2004 stated that stroke contributed 41% of deaths and 72% of disability adjusted life years amongst the non-communicable diseases. WHO has defined stroke as "rapidly developing clinical signs of focal or global disturbance of cerebral function, lasting for more than twenty four hours or leading to death, with no apparent cause other than vascular origin.[2] Stroke is the third commonest cause of death worldwide after coronary heart disease (CHD) and cancer of all types.[3,4]

Drug utilization study leads us to detect and also to quantify problems in clinical practices. These studies help to frame appropriate interventions based on the problems and ultimately promotes rational use of drugs in the community.

Stroke is a clinical syndrome divided into two broad categories according to its pathophysiology:

- Ischaemic strokes are caused by sudden occlusion of arteries supplying the brain, either due to a thrombus at the site of occlusion or formed in another part of the circulation. It accounts for 50%-85% of all strokes worldwide.
- Haemorrhagic strokes are caused by subarachnoid haemorrhage-bleeding from one of the brain's arteries into the brain tissue or intra-cerebral haemorrhage - arterial bleeding in the space between meninges. This

category of stroke accounts for 1%-7% and 7%-27% respectively of all strokes worldwide

Stroke prevalence among the elderly in rural India was 1.1% and urban India was 1.9%.[5] Prevalence is directly proportional to age and inversely proportional to the education levels of stroke survivors.

Three transitions have contributed to the emergence of the stroke epidemic: demographic, lifestyle and socioeconomic. Non-modifiable stroke risk factors.[6,7] include; age, sex, low birth weight, ethnicity and genetic factors. According to the recent studies conducted, it was found that modifiable risk factors such as hypertension (40%), alcoholism (35%), smoking (28%) and hyperlipidemia (17%) are the commonest cause of stroke among the elderly.[8] Smoking, alcoholism, increased BMI, diabetes and hypertension are significantly associated with strokes among young people. The presence of coronary artery disease and large artery atherosclerosis are also considered the strong predictors of a new vascular event among the stroke survivors.

Currently the awareness regarding the diagnosis of stroke is through the FAST examination (which adopts weakness of face, arm as well as speech and essentially time). The other means of diagnosis are CT scan, MRI scan, PET and ultra sound.

According to NICE guidelines 2011, early recognition and diagnosis of stroke using validated tools outside hospital environment can help save life and limit disability. Proven treatments of acute thrombotic stroke include intravenous thrombolysis within 3hours of onset of symptoms, use of aspirin within 48hours and decompressive surgery for malignant middle cerebral artery infarction. The drug treatment strategy is involved with selecting drugs like thrombolytics, anticoagulants, antihypertensives (angiotensin converting enzyme-inhibitors, angiotensin II receptor blockers, and diuretics), blood lipid lowering agents (statins), antiplatelet drugs (aspirin and clopidogrel), and cerebral activators. It is also recommended to select, a route, and dosage form of drugs to have optimal therapeutic effects to manage cerebrovascular accident.

Primary management of stroke includes antiplatelet therapy with aspirin, statin therapy and blood pressure management. Secondary management with carotid endarterectomy, carotid angioplasty, warfarin and heparin is useful.

Primary preventive interventions are expected to target at behavior modification such as reduced smoking, alcohol and salt consumption patterns and increased physical activity. Increasing fruit and vegetable consumption (for each 1-serving per day) is considered to reduce the risk of stroke by 6%. Secondary prevention is through the pharmacological therapy. Tertiary prevention is attributed to maintain their ability to carry out daily activities. Stroke rehabilitation is expected to begin as soon as possible after a person has a stroke and continue for as long as it is clinically appropriate.[9]

The purpose of the study was mainly to assess the prescribing pattern of drugs in stroke patients.

METHODS

A descriptive retrospective study was conducted in the department of medicine at BRIMS teaching hospital over a period of 3 months for analysing the prescribing patterns of drugs in stroke patients. About 40 patients were included in this study based on the inclusion and exclusion criteria.

Details regarding the prescribed drugs were obtained from patient case report and through clarification by the attending physician. Pharmacological therapy prescribed was analysed to determine the pattern of prescription of drugs.

Patients were selected and excluded according to the following criteria's.

Inclusion criteria

All patients who were diagnosed (confirmed either clinically or radiologically) to have stroke with age more than 18years of either sex.

Exclusion criteria

- Age ≤18 yrs,
- Pregnant/lactating women,
- Patient with hepatic disorder,
- Patient with bleeding diathesis,
- Patient with intracranial abnormalities.

RESULTS

Following results were obtained from the study conducted in BRIMS teaching hospital for a period of 3 months. The incidence of stroke was higher in males (26) as compared to females (14) (Figure 1 and 3) and half of the patients were between 51-70 age group (Table 1). The prevalence of ischemic stroke (31) was found to be greater as compared to that of the hemorrhagic stroke (09) (Figure 2).

Smoking and alcoholism were found to be the major risk factors for stroke. Among these 30% of the patients were having both the habits and 32.50% of the patients doesn't have any habits (Figure 4).

The major co-morbidities identified were hypertension (33), Coronary Heart Disease (21) and diabetes mellitus (23) (Figure 5).

In the present study, total 248 drugs were prescribed in 40 prescriptions i.e. average of 6.2 drugs/patient and almost

half of the patient had been prescribed 7 or more drugs (Table 2).

Table 1: Percentage distribution of age among stroke patients.

Age distribution (in years)	Number of patients		Total	
	Male	Female		
20-30	01	00	01	02.5%
31-40	02	01	03	07.5%
41-50	06	02	08	20%
51-60	07	05	12	30%
61-70	05	03	08	20%
71-80	04	01	05	12.5%
81-90	01	02	03	07.5%

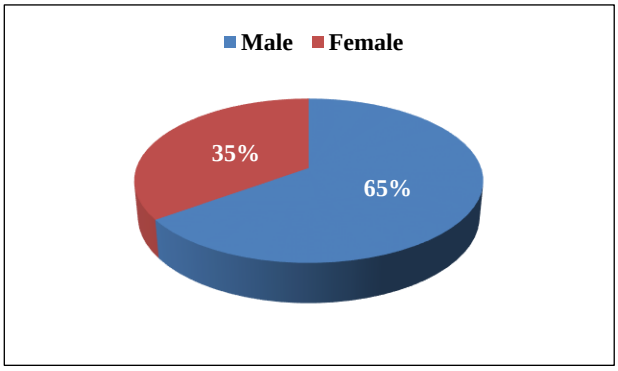

Figure 1: Gender distribution in study population.

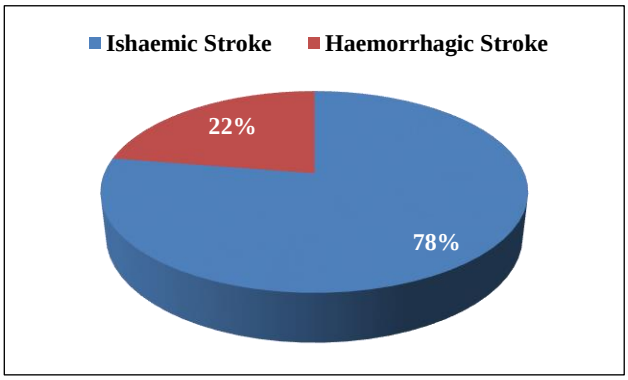

Figure 2: Prevalence of types of stroke among patients.

Table 2: Distribution of drugs prescribed in a prescription.

No. of drugs prescribed	No. of Prescription	Percentage distribution
4 drugs	5	12.5%
5 drugs	8	20%
6 drugs	7	17.5%
7 drugs	17	42.5%
>7 drugs	03	7.5%
Total	40	100

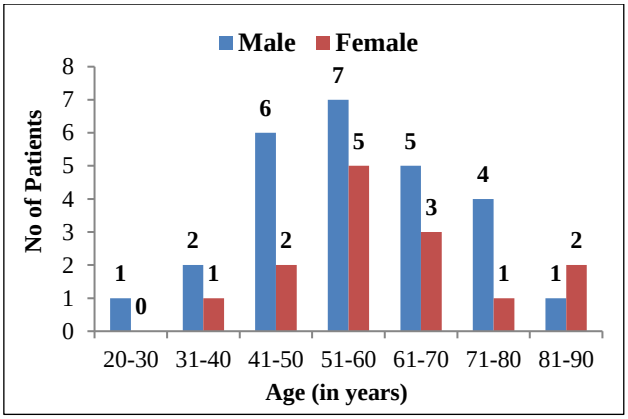

Figure 3: Age wise gender distribution.

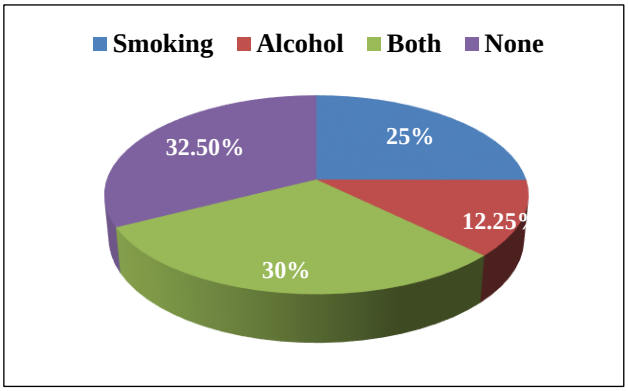

Figure 4: Distribution of social habits in stroke patients.

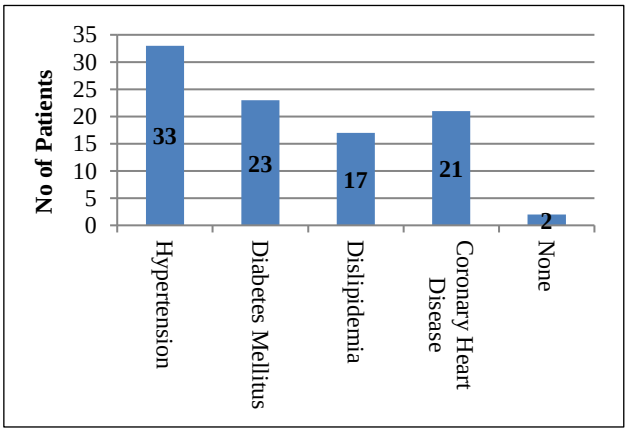

Figure 5: Distribution on basis of co-morbidities.

Majority of the drugs prescribed were antihypertensives 87(35%), followed by antiplatelets 62(25%), statins 25(10%), antidiabetics 25(10%), antibiotics 25(10%) nootropics 12(5%) and vitamin supplements 12(5%) (Figure 6).

DISCUSSION

This study was done to assess the pattern of drugs prescribed in stroke patients. Authors observed that the

incidence of stroke was higher in males (65%) as compared to females (35%).

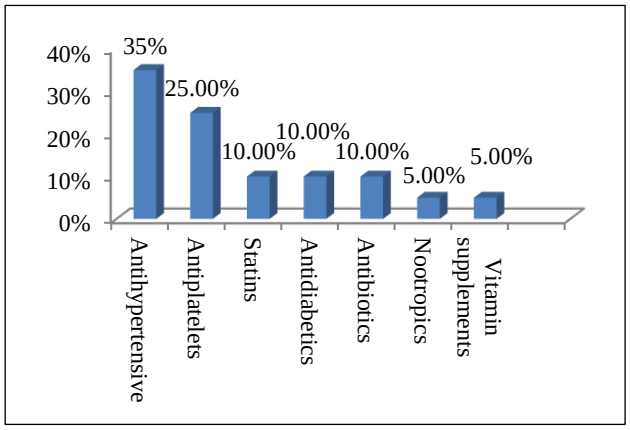

Figure 6: Percentage of drugs prescribed in stroke patients.

This was similar to a study conducted by Vurumadla et al, where 69.33% males were affected from stroke.[10] The most common age group affected from stroke was between 51-70 years. This is in accordance with a study conducted by Abbasi Md et al, where incidence of stroke was higher in the age group 56-70 years.[11]

The prevalence of ischemic stroke was 78% in this study which is similar to study conducted by Preethi P et al, where the prevalence of ischemic stroke was 82.26%.[1] Similar results were obtained in study conducted by Celin et al, that revealed 86.12% Ischemic stroke.[12] Lavy S et al, concluded that in a total stroke cases, 42% had hypertension.[13] In the present study authors found little higher incidence of hypertension (i.e. 82.5%) among stroke patients.

In the present study, hypertension 33(82.5%), coronary heart disease 21(52.5%), diabetes mellitus 23(57.5%) and dyslipidemia 17(42.5%) were the major co-morbidities among stroke patients. A study by Vurumadla S et al, showed that hypertension 102 (68%), dyslipidemia 81 (54.2%), diabetes mellitus 51 (34.6%), heart disease 49 (32.6%) were the commonly seen co-morbidities among stroke patients.[10]

In the present study, antihypertensive drugs (35%) were the most commonly prescribed one, followed by antiplatelets (25%), statins (10%), antidiabetics (10%), antibiotics (10%), nootropics (5%) and vitamin supplements (5%). Similarly, Abbasi Md et al, concluded that various drugs commonly prescribed in stroke patients were anticoagulants, antiplatelet drugs, dyslipidemics, anti-hypertensives, neurotonics.[11]

CONCLUSION

The study showed stroke prevalence, various aspects affecting it and drug utilization review. According to the present study the prevalence of ischemic stroke was higher compared to hemorrhagic stroke. The incidence was higher in males with age group of 51-60 years. The common risk factor for stroke is hypertension, smoking, alcoholism. The study also assessed the prescribing trends of drugs. Majority of drugs belonged to antihypertensives and antiplatelet. The usage of drugs differs with hospitals and physicians. The prescribing pattern of drugs should be based on the condition and severity of stroke in order to provide optimal care. Therefore, Standard stroke treatment guidelines should be adopted in India to provide rational therapy.

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REFERENCES

1. Preethi BP, Naveed AS, Sri Lakshmi G, Rao V. Prescribing pattern of drugs in stroke patients admitted to a multi-specialty hospital, India. Indo Am J Pharmaceut Res.2014;4(2):1015-20.
2. Singh H, Gupta JB, Gupta MS, Aggarwal R. Assessment of utility of Siriraj Stroke Score (SSS) in stroke patients of Pt. BD Sharma PGIMS hospital, Rohtak, India. Med J Indonesia. 2001 Aug 1;10(3):164-8.
3. Tapas K, Shyamal KD. Epidemiology of stroke in India. Neurol Asia. 2006;11(1):1-4.
4. Ovbiagele B, Nguyen-Huynh MN. Stroke epidemiology: advancing our understanding of disease mechanism and therapy. Neurotherapeut. 2011 Jul 1;8(3):319.
5. Po HL, Lin YJ, Hseuh IH. The prescribing patterns of antithrombotic agents for prevention of recurrent ischemic stroke. Acta Neurol Taiwan. 2009;18:98-103.
6. Ansari AK, Akhund IA, Shaikh AQ. Stroke in elderly; identification of risk factors. J Ayub Med Coll Abbottabad. 2001;13(3):11-3.
7. Ali L, Jameel H and Shah MA. Risk factors in stroke. J Coll Physicians Surg Pak. 1997;7:7-10.
8. Eapen RP and Parikh JP. A study of clinical profile and risk factors of cerebrovascular stroke. GMJ. 2009;64(2):47-54.
9. Kanji S, Corman C, Douen AG. Blood pressure management in acute stroke: comparison of current guidelines with prescribing patterns. Canadian J Neurolog Sci. 2002 May 1;29(2):125-31.
10. Vurumadla S, Rakshith V, Murari CH, Venkateshwarlu K. A study on symptoms, risk factors and prescribing pattern of drugs used in stroke patients. Int J Pharm Pharm Sci. 2015;7(1):421-6.

11. Abbasi MY, Ali MA. Prescribing pattern of drugs in stroke patients: A prospective study. Arch Pharma Practice. 2012 Oct 1;3(4):283.
12. Celin AT, Seuma J, Ramesh A. Assessment of drug related problems in stroke patients admitted to a South Indian tertiary care teaching hospital. Indian J Pharm Pract. 2012 Oct;5(4):28-33.
13. Lavy S, Melamed E, Cahane E, Carmon A. Hypertension and diabetes as risk factors in stroke patients. Stroke. 1973 Sep;4(5):751-9.

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