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Research Article

A Study on the Risk Factors associated with Stroke in young adults and its Management Practices

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Abstract

The various risk factors causing premature stroke and cardiovascular diseases in young adults and their management are increasing problems in both developed and developing countries. Cardiovascular diseases include heart conditions that involve diseased vessels, structural problems, and blood clots. This is a prospective observational study which was conducted for 6 months in the general medicine department of Gandhi Hospital, Hyderabad. The study was initiated after the approval by Institutional Ethical Committee. During the study period a total number of 80 cases were collected. Out of these cases (55 cases, 69%) were of ischemic stroke and (25 cases, 31%) of hemorrhagic stroke. It was observed that males were more prone to strokes and females are more prone to cardiovascular diseases. The most common risk factor associated with stroke was hypertension. The age group of 41–50 years was mostly affected by stroke and cardiovascular diseases. Therefore, from our study we observe that timely treatment and patient counselling on disease, disease management and medications are important parameters for better patient care and improving quality of life.

Keywords: Stroke, cardiovascular diseases, hypertension.

INTRODUCTION

Ischemic stroke and hemorrhagic stroke at a young age is an increasing problem in both developed and developing countries [1]. Multiple recent studies have reported an increasing incidence of ischemic stroke, hemorrhagic stroke particularly at younger ages since the 1980s[2]. Both types of strokes are usually acute events and are mainly caused by a blockage that prevents blood from transporting to the heart or brain. The most common reason for this is the build-up of fatty deposits on the inner walls of the blood vessels that supply blood to the heart or brain. Strokes can be caused by bleeding from a blood vessel in the brain or from blood clots. [3]

The various types of strokes are: **Ischemic stroke** occurs due to blockage or narrowing of artery that reduces the flow of blood leading to decreased oxygen supply and finally stroke.

Hemorrhagic stroke is caused when there is rupturing of blood vessel that transports blood to brain leading to bleeding.

Transient ischemic stroke or mini-stroke is temporary cerebrovascular event that leaves no permanent damage but similar to stroke which can resolve quickly [4]. The incidence of stroke in the young is important because approximately 10% of strokes occur in people aged less than 50 years, which is the cut-off age used to define ‘‘early-onset’’ or ‘‘young-onset stroke’’ or ‘‘stroke in young adults [1]. Risk factors as hypertension, diabetes, covid infections, covid vaccine and obesity could be some of the causes leading to stroke [5]. Stroke can be treated by using both surgical and conservative therapies, but can be mostly treated by using medical therapy. Early treatment can be given with medication TPA [Tissue Plasminogen Activator] commonly called as clot buster which can minimise brain damage. Conservative therapy includes drugs like anticoagulants, antacids, thrombolytics, anti-platelet agents and surgical methods include thrombectomy. Drugs prescribed for other than clotting are Inj. Labetalol, Tab. Amlong, Inj. Lasix to control hypertension; Inj. Human Actrapid, Tab. Glimipride and Metformin for diabetes; osmotic agents like Inj. Mannitol is also prescribed to hemorrhagic stroke patients. Anti Coagulants: These drugs act slowly as controlled therapeutic inhibition of blood clotting. Example: Low Molecular Weight Heparin. Anti Platelet Aggregators: They act irreversibly on cyclo-oxygenase pathway, resulting in inhibition of conversion of arachidonase to prostaglandin G2/H2 and thrombinase A2 causing irreversible inhibition of platelet aggregration. Example: Tab. Aspirin 75 mg, Tab.

Clopitab. Thrombolytics: They dissolve thrombin in the vascular bed by activating plasmogen to form plasmin. It is a proteolytic enzyme that breaks the cross links between fibrin molecules to destabilise the structural integrity of blood clots. Examples: Tab. Alteplase 200 mg. Osmotic Agents: They play a key role in therapy of acute stroke by reducing the cerebral edema and cerebral perfusion by decreasing viscosity. Example: Inj. Mannitol [5].

Some Surgical treatment options for stroke involve procedures such as coronary artery bypass graft (CABG), percutaneous coronary intervention (PCI) and carotid endarterectomy which clear the fat deposits in the carotid arteries [6].

Therefore, this study aims to identify the risk factors for stroke in young adults and the management practices followed.

MATERIALS AND METHODS

The objectives of the study are to analyze various risk factors associated with stroke. Identify the common type of stroke and to observe treatment pattern prescribed for stroke. The research is a prospective observational study done in the In-patient departments of general medicine, Gandhi hospital, Secunderabad for a period of 6 months starting from October 2021 to March 2022. Study was initiated after the approval by Institutional Ethical Committee.

Inclusion criteria: Patients aged between 18 to 50 years admitted in the in-patient's units of department of general medicine and diagnosed with either stroke (ischemic / hemorrhagic) of both genders were included in the study.

Exclusion criteria: Patients with HIV, HBsAg were excluded.

Study method: A structured documentation form was prepared to enter the demographic details of patient. General medicine ward was visited on regular basis for case collection. The cases were reviewed for observation of the risk factors associated with stroke, inclusion and exclusion criteria.

RESULTS

A total of 80 cases were collected and documented for the study. Out of these cases (55 cases, 69%) were of ischemic stroke and (25 cases, 31%) of hemorrhagic stroke. Gender wise categorization of collected cases for stroke represented that maximum males were affected with stroke such as (54 cases, 67%) followed by (26 cases, 33%) females. Age wise categorization of collected cases for stroke shows that maximum of (45 cases, 57%) were in the age group (41 – 50) years followed by (28 cases, 35%) of (31- 40) years and (7 cases, 8%) of (18- 30) years.

Out of the 55 ischemic stroke cases the risk factors associated with it predominantly comprise of hypertension (40 cases), alcohol consumption (26 cases), dyslipidemia (23 cases), smoking (23 cases), diabetes (18 cases), obesity (16 cases), genetic predisposition (14 cases), COVID-19 (13 cases), life style choices – sedentary life, sleep disturbances, appetite damages (10 cases) and socio-economic factors – stress, trauma, psychiatric disorders, depression, poor diet (9 cases). This is represented in **Figure 1.**

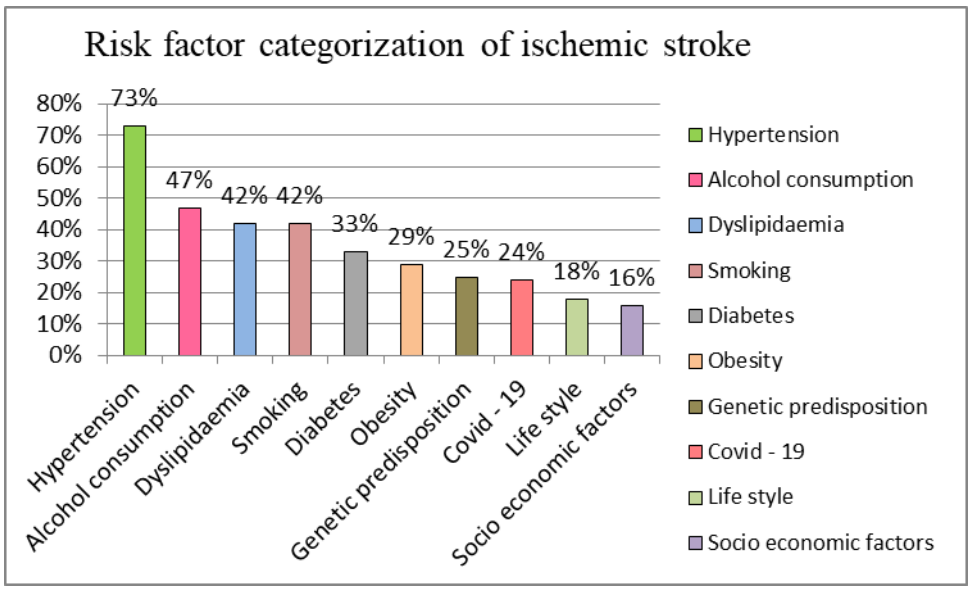

Figure 1: Risk factors associated with ischemic stroke

Out of the 25 hemorrhagic stroke cases the risk factors associated with it predominantly comprise of hypertension (20 cases), alcohol consumption (14 cases), dyslipidemia (12 cases), genetic predisposition (7 cases), life style choices – sedentary life, sleep disturbances, appetite damages (7 cases), smoking, diabetes and obesity each comprised of (6 cases), COVID-19 (2 cases), and socio-economic factors – stress, trauma, psychiatric disorders, depression, poor diet (2 cases). This is represented in **Figure 2.**

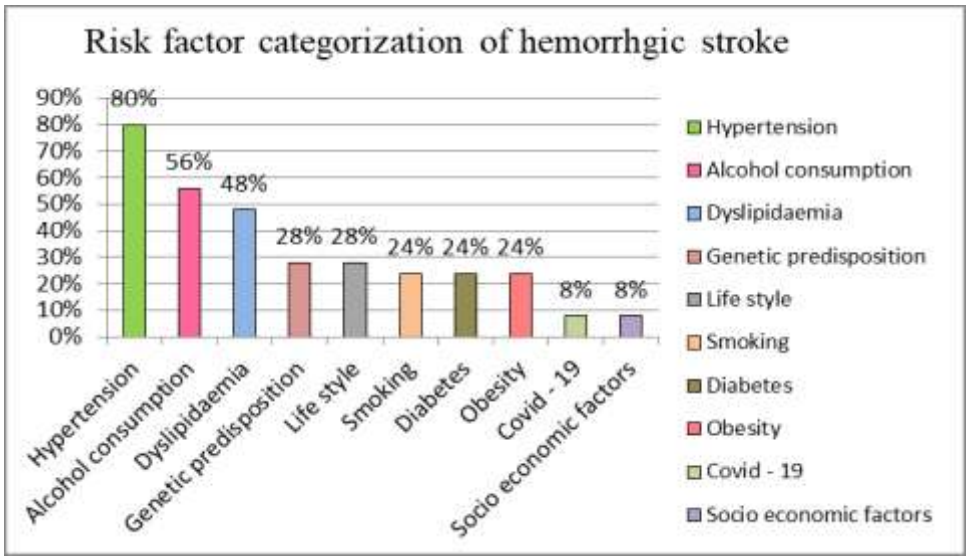

Figure 2: Risk factors associated with hemorrhagic stroke

Out of 80 stroke cases it was found that among 26 cases patient was already on anti-hypertensive medications from past as hypertension is observed to be the major risk factor for causing stroke. Hence, these medications were further continued to treat blood pressure issues in patients on hospitalization as shown in **Table 1.**

Table 1: Past medical history of anti hypertensive medication used by patient

S.No	Medication	No. of cases	Percentage
1.	Atenolol	6	23%
2.	Amlodipine	5	19%
3.	Amiloride	4	15%
4.	Clonidine	3	11.5%
5.	Verapamil	3	11.5%
6.	Losartan	2	8%
7.	Prazosin	2	8%
8.	Hydralazine	1	4%
	Total	26	100%

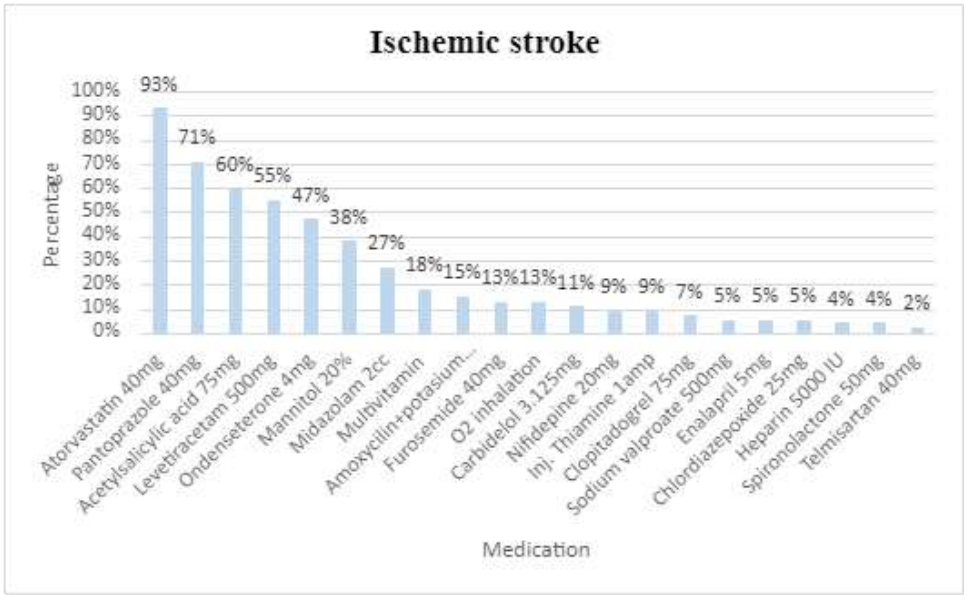

Figure 3: List of medications prescribed to treat ischemic stroke cases.

Figure 3: shows the distribution of data based on the drugs prescribed in management of ischemic stroke. It was observed from this study that importance was emphasized on the treatment of co-morbid condition with medications, primarily. Therefore, the most commonly prescribed drugs include tablet (T.) Atorvastatin given as lipid lowering drug to control cholesterol that can promote stroke severity, tablet Pantoprazole for acidity, T. Acetylsalicylic acid for any headaches or pain, T. levetiracetam- as some demonstrated behavioral changes, T. ondansetron to prevent nausea, Injection mannitol for any edama related issues. Apart from these an anti coagulant like Injection Heparin was given for three times a day and T. clopidogrel was also given to prevent any blood clot formation.

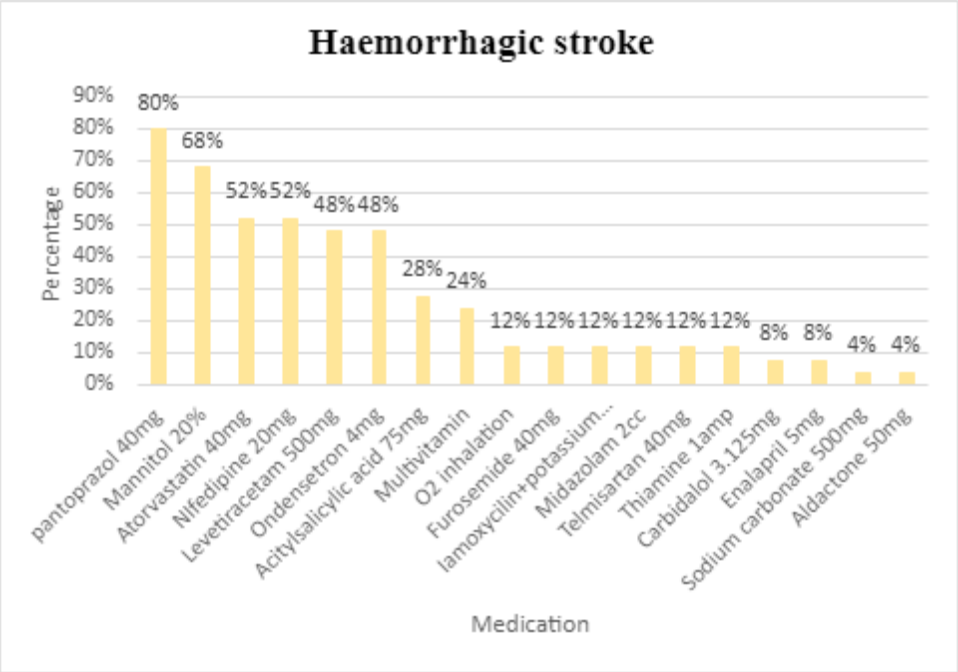

Figure 4: List of medications prescribed to treat hemorrhagic stroke cases.

Figure 4: shows the distribution of data based on the drugs prescribed in management of hemorrhagic stroke. It was observed from this study that the main medication used to treat heamorrhagic stroke was injection mannitol which was prescribed in most cases. Other prescribed drugs include tablet (T.) Atorvastatin given as lipid lowering drug to control cholesterol that can promote stroke severity, tablet Pantoprazole for acidity, T. Acetylsalicylic acid for any headaches or pain, T. levetiracetam- as some demonstrated behavioral changes, T. ondansetron to prevent nausea and T. nifedipine to treat hypertension.

DISCUSSION:

In this prospective study, cases were collected from general medicine department and a total number of 80 cases were collected, the outcome of new technique for treatment procedure was not identified as there was no recent change in treatment guidelines. Our study findings show that males are more prone to develop ischemic stroke and Hemorrhagic stroke compared to females. This study highlights the age group of 41-50 years showing highest number of cases in stroke. The findings in this study shows that ischemic stroke is the most common stroke when compared to other strokes (Hemorrhagic stroke, Transient ischemic stroke) which was similar to the study conducted by **SI Larbi** [7]. This study shows that post effects of covid-19 are causing changes in heart functioning like coagulation abnormalities, thrombosis, arrhythmias, tachycardia, that is leading to stroke which is similar to the study conducted by **Abbasi J** [8]. Our study findings show that hypertension is the most common risk factor in ischemic stroke, Hemorrhagic stroke and for managing it various classes of anti-hypertensive drugs are prescribed. This was similar to the study done by **G. Y. Srawan Kumar et al** [5]. The other risk factors followed by hypertension are alcohol consumption, dyslipidemia for ischemic stroke and hemorrhagic stroke. Our study findings has shown that atorvastatin is the maximum used medicine in the treatment of ischemic stroke, which is similar to the study that showed statins as the major prescribing medications in stroke [9]. The other risk factors followed by hypertension are alcohol consumption, dyslipidemia the major risk factors for ischemic stroke, hemorrhagic stroke and cardiovascular disease which was in contrast to the report published **by Ives Valenzuela,** which showed that fungal infections and rheumatic heart disease were also the risk factor causing hemorrhagic stroke [10].

CONCLUSION:

From our study we have identified that hypertension remains major risk factor for development of any type of stroke. Amongst the stroke, ischemic stroke remained the dominant one. Most often patients do not report about hypertension, cholesterol or other heart related issues leading to sudden stroke occurrences. Timely treatment and patient counseling on disease, disease management and medication use are the important parameters for better patient care and improving quality of life. Stroke is has now become predominant in all ages making it necessary for education about the disease condition and its signs and symptoms.

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Conflict of Interest: None.

Financial Support: None.

Ethics Statement: The final full board approval was obtained from the institutional ethics committee from CMR College of Pharmacy.

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