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**RETROSPECTIVE STUDY OF RISK ASSESSMENT OF STROKE IN QUATERNARY
CARE HOSPITAL**

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ABSTRACT

Stroke is one of the major challenges facing medicine with a scaring statistics of being the third leading cause of mortality worldwide after heart disease and cancer, and primary cause of serious long term disability. Identification and management of risk factors remains pivotal in reducing morbidity and mortality from stroke a retrospective study was conducted with the objective of identifying various risk factors for stroke and assessing the role of the risk factors for stroke in the South Indian population. It has been identified that stroke has preponderance to Hypertension as the major risk factor. Diabetes mellitus and Dyslipidemia being the second and third leading causes.

Keywords: Stroke, Hypertension, diabetes, Dyslipidemia, Modifiable risk factors

INTRODUCTION

To function properly, the brain needs oxygen and nutrients provided by the blood. However, if the blood supply is restricted or stopped, it causes the brain cells to infarct, which is irreversible cell death. This can occur when hemodynamics are altered for example - by an emboli or coronary stenosis

(a circulating clot or occlusion due to Hypercholesterolemia), this is known as ischemic stroke. About 10% of the strokes are causing by the bleeding of the arteries which damages the brain tissue and which also causes the loss of blood supply. The causal disorders include diabetes mellitus,

high blood pressure, high cholesterol, cigarette smoking and other life style related disorders. The causal phenomenon follows that the increase in the high blood sugar can increase the permeability with in the blood vessels and arteries hence cause it to infiltrate and cause cytokine recruitment in that area of infiltration further follows the thrombocyte recruitment hence causing thrombi or emboli which then circulates in the blood and leads to clots resulting in stroke. In certain cases due to high blood pressure, there is a chance of minute blood vessels or an artery rupturing causing hemorrhagic stroke. Stroke has now become one of the most leading causes of mortality in humans which is alarming. However post advancement in medical field and diagnosis, there exists a challenge in treating patients diagnosed with stroke leading to long term hospital admission and critical care. Stroke not always means that there exists a permanent physical disability. If the right side of the brain infarcts, it is responsible for the speech and hence the patient finds it tough to speak or respond verbally. If the patient is affected on the left

side of the brain it can be the causality for left sided weakness. This is due to the corpus collosum (the transverse band of nerves that connect the two halves of the brain and the pyramid of decussation which connects interconnects on side of the brain to the opposite side of the body. Most people ignore the symptoms of hemorrhagic stroke and consider it as any normal headache and sometimes self medicate with OTC drugs, however if there is a recurrence or persistence of symptoms then it should never be ignored. Widely used diagnostic tests like the MRI can reveal if there are any ischemic infarcts. If proper knowledge and awareness is inculcated the disorders can be prevented. Stroke can be controlled through medications and are sometimes preventable. Those factors that contribute to stroke are called **Modifiable Risk Factors**, on the contrary certain factors that cannot be preventable although care has to be initiated, those risk factors are known as **Non-modifiable risk factors**. Below are some examples of the risk factors.

Modifiable risk factors	Non modifiable risk factors
Hypertension	Age
Cardiac disorders	Sex
Hypercholesterolemia	Race
Diabetes mellitus	Heredity
Circulating Thrombi	Ethnicity

METHODOLOGY

The retrospective study was conducted in the Medical Record Department, BGS Global Hospitals, Kengeri, and Bengaluru. For 6 months.

Data was collected from the patient's case records by using specially designed data collection form. Cases collected from the patients who are newly diagnosed with stroke or admitted with the previous history of stroke. Data collected from the patient case record forms were segregated according to modifiable and non-modifiable risk factors. Study was designed to collect both the live cases and death cases of the patients who were admitted from the month of January 2015 to March 2016 that is patients who were admitted in the time period of 12 months. As the project deals with the case-control study, along with the cases, controls were also collected simultaneously. The collected data in the data collection forms were entered into the MICROSOFT EXCEL and the data was categorized according to the modifiable and non-modifiable risk factors with respect to the disease condition.

RESULTS

A total of 120 patients with completed stroke were taken up for study. The mean age of patients was 58.02 ± 16.26 (range of 25-90 years). There were 86 (71.66%) males (mean

age 58.05 ± 16.6 years) and 34 (28.33%) females (mean age 57.94 ± 15.50 years). Stroke incidence and prevalence was predominant in males. 50% patients (39 males & 21 females) were in the age group of 50-70 years (Table 1).

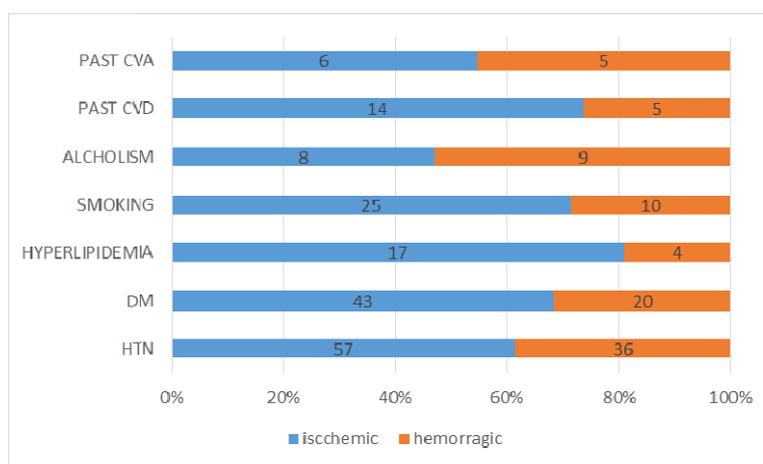
Among 120 patients, 72(60%) had ischemic stroke and 48(40%) had hemorrhagic stroke. A total of 21(17.5%) mortalities (16 males and 5 females) were recorded in this study. 19(15.8%) of the deaths were due to hemorrhage and 2(1.66%) were due to ischemia. Mortality was higher with hemorrhagic stroke. Mortality rate of stroke in our study quaternary care hospital was found to be 1.29 per 1000 patients.

Overall risk factor profile

In this study, hypertension (77.5%) was the profound causative risk factor for stroke in 93 patients, followed by DM in 63 patients (52.25%), smoking in 35 patients (29.16%) dyslipidemia in 21 patients (17.50%). The study also revealed the past history of cardiovascular disorders in 19 patients (15.8%), previous history of CVA in 11 patients (9.1%) and alcoholism in 17 patients (14.16%). On analysis of risk factors according to the type of stroke, hypertension still remained the most common risk factor for both ischemic and hemorrhagic stroke (Table2).

Table 01: Age and Gender Distribution

AGE IN YEARS	MALES (N=86)		FEMALE (N=34)		TOTAL (N=120)	
	Sample size	%	Sample size	%	Sample size	%
20-30	9	10.4	3	8.8	12	10
30-40	5	5.8	2	5.8	7	5.8
40-50	13	15.1	1	2.9	14	11.6
50-60	21	24.4	9	26.4	30	25
60-70	18	20.9	12	32.3	30	25
70-80	13	15.1	4	11.7	17	14.1
80-90	7	8.13	3	8.8	10	8.3



RISK FACTOR	ISCHEMIC N=72		HEMORRHAGIC N=48		Total	TOTAL N=(120) %
	Sample size	%	Sample size	%		
HTN	57	79.1	36	75	93	77.5
DM	43	59.7	20	41.6	63	52.5
HYPERLIPIDEMIA	17	23.6	4	8.3	21	17.5
SMOKING	25	34.7	10	20.8	35	29.16
ALCHOLISM	8	11.1	9	18.7	17	14.16
PAST CVD	14	19.4	5	10.4	19	15.8
PAST CVA	6	8.3	5	10.4	11	9.1

Table 02: Risk Factors And Types Of Stroke

Risk factor	Odd ratio	95% Confidence Interval		P value (<0.05 significant)
		Lower	Upper	
HTN	10.333	5.698	18.739	0.0001***
DM	3.316	1.919	5.729	0.001**
dyslipidemia	2.616	1.145	5.979	0.0221
alcoholism	1.358	.628	2.937	0.43
smoking	2.882	1.476	5.627	0.0019**
Past CVD	2.320	1.004	5.362	.048*
Female gender	0.960	0.549	1.679	0.8866

DISCUSSION

Risk factor for stroke is relative of a population in a patient pool, associated with an increased risk of disease. Stroke continues to be the leading cause of morbidity and mortality despite of technological and medical advancements stroke continues to be the penultimate causes of death.

The risk factors for stroke include hypertension, diabetes mellitus, hyperlipidemia as the major preponderance and clinically significant .and family history of stroke, ethnicity, obesity, and hyperlipidemia. Studies done in developed countries have shown that hypertension is one of the most prevalent and leading risk factor for “first stroke” and also an independent risk factor for recurrent stroke and stroke after TIA. There is a continuous and linear relationship between blood pressure and risk of stroke.

Hypertension was the most common risk factor identified overall and for both types of stroke. About 86% of the study population had elevated systolic and diastolic blood pressures. Studies conducted in India ^[27]and other parts of the world such as Turkey ^[28], Israel ^[29]France ^[30], Ireland ^[31] and Nigeria ^[31] corroborates with our findings. Diabetes and other CVA disorders also contribute to the devastating cause but do not gain a

significant preponderance with regard to being clinically significant.

In our study, the Genetic predisposition did not play a significant role in the study. Most of the patients were in fifth and sixth decade of life with higher male preponderance, which may be due to the protective role of female sex hormones before menopause or that the females tolerate hypertension better than males.

To further substantiate, estrogen and estradiol in females adds to the protective action against stroke, Most of the patients had first ever stroke. Adequate hypertension control may prevent a substantial proportion of first ever stroke among the treated hypertensive. This study was carried out in 120 patients with completed stroke or CVA and majority of them were males. Most of the patients had hypertension as a risk factor followed by lifestyle diseases like diabetes mellitus, smoking and dyslipidemia. It was also found that advancing age, male gender, alcoholism and diabetes were at high risk for stroke. Smoking and alcoholism were important risk factors observed especially in younger age groups.

CONCLUSION

This study reveals hypertension as the most common risk factor for stroke followed by

diabetes, smoking, dyslipidemia and past CVD.

Mortality rate of stroke was estimated to be 1.29 per 1000 patient in the quaternary care hospital where study was conducted. Hypertension and diabetes was most common risk factor causing mortality of stroke. Regular and moderate degree of physical activity and tight control of hypertension, dyslipidemia and diabetes prevents a substantial proportion of stroke incidence. Pharmacists along with other health care professionals play an important role in achieving these goals by establishing and verifying relationships with patients and ensure the appropriateness of dosage regimen, patients understanding of their therapy and the significance of regular and consistent monitoring and control.

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