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Original Research Paper

General Medicine

STUDY OF RELATION OF HEMORRHAGIC STROKE WITH LIPID PROFILE, SMOKING AND ALCOHOL

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ABSTRACT Stroke is defined as rapidly developing clinical signs of focal (or global) disturbance of cerebral function, with symptoms lasting 24 hours or longer, or which may be fatal, with no apparent cause other than of vascular origin. Hemorrhagic stroke is attributed to rupture of a blood vessel or an abnormal vascular structure. It is associated with modifiable risk factors such as dyslipidaemia, smoking and alcohol consumption which can cause haemorrhagic stroke by different mechanisms.This study was conducted to evaluate the above risk factors as a prognostic factor for mortality in hemorrhagic stroke.

KEYWORDS : Stroke, Haemorrhage, Dyslipidemia

INTRODUCTION

Stroke in adults is an important cause of morbidity. WHO defined stroke as "rapidly developing clinical signs of focal (or global) disturbance of cerebral function, with symptoms lasting 24 hours or longer, or which may be fatal, with no apparent cause other than of vascular origin". [1] Strokes are broadly classified into: Ischemic and Haemorrhagic strokes[2]. A hemorrhagic stroke can be caused by hypertension, rupture of an aneurysm or vascular malformation or as a complication of anticoagulation medications. An intracerebral hemorrhage occurs when there is bleeding directly into the brain tissue, which often forms a clot within the brain.[3]

It is associated with modifiable risk factors such as hypertension, diabetes, dyslipidemia, smoking and alcohol consumption which can cause haemorrhagic stroke by different mechanisms such as vessel wall injury, loss of ability to repair vessel wall injury, hemodynamic stress and synergistic effects. Besides these, other factors like psychosocial, ethnic, and economic factors play a role in the prevalence of cerebral hemorrhage, with ICH being twice as common in low-income and middle-income countries compared with high-income countries.[4]

Thus, clearly, in a limited resource setting of the developing countries and in the cases of ICH which require prompt initiation of management protocols, it is highly imperative to be able to assess the prognosis of the patient beforehand. Therefore, this study was conducted to evaluate the clinical parameters as a prognostic factor for mortality in hemorrhagic stroke.

AIMS AND OBJECTIVES

1. To study the clinical correlation between patients of hemorrhagic stroke taking into consideration their clinical at the time of admission and at the time of discharge/ death.
2. The study will help us to determine how the risk factors like dyslipidemia, smoking and alcohol affect the mortality of patients in hemorrhagic stroke.

MATERIALS AND METHOD

Study Design: Prospective, observational study.

Conducted in Department of Medicine, MGM Medical College and Hospital, Navi Mumbai in 100 patients admitted with the diagnosis of hemorrhagic stroke and meeting the inclusion and exclusion criteria.

Inclusion Criteria:

1. Patients diagnosed with Acute Hemorrhagic Stroke on CT Brain Plain.
2. Patients more than 18 years of age.

Exclusion Criteria:

1. Patients with transient ischemic attack, cerebral infarction.
2. Patients on medications for lipid control
3. Patients having haemorrhagic stroke secondary to thrombolysis for CVA or MI.
4. Patients having a normal CT Brain scan.

METHOD:

Detailed personal and past history were taken from the relatives/legal guardians of all the patients and recorded. Laboratory investigations were performed for the assessment lipid profile and the results were recorded.

The cut offs were as follows:

1. Cholesterol: upto 200 mg/dL
2. Triglycerides: upto 150 mg/dL
3. Low density lipoprotein cholesterol (LDL): upto 130 mg/dL

Any case having values of Cholesterol, Triglycerides or LDL more than the cut off values were labelled to have "Dyslipidemia". All the data were recorded in excel and analyzed.

Statistical Analysis:

The data was analyzed using statistical software (IBM SPSS, IBM Corporation, Armonk, NY, USA

RESULTS

Table 1: Distribution of lipid profile according to outcome in the study population

PARAMETER*	DISCHARGE	DEATH	TOTAL	P Value
CHOLESTEROL(mg/dl)	160.32 ± 35.21	166.87 ± 33.54	162.81 ± 34.56	0.361
TG (mg/dl)	108.10 ± 33.46	120.61 ± 26.47	112.85 ± 31.45	0.053
LDL (mg/dl)	102.32 ± 25.07	102.61 ± 20.71	102.43 ± 23.40	0.953
HDL (mg/dl)	52.42 ± 12.09	52.95 ± 8.66	52.62 ± 10.87	0.817

*Cholesterol, TG, LDL and HDL are expressed in mg/dL.

Table shows the mean lipid profile in the discharge and death cases. The difference between the two groups was statistically insignificant.

Table 2: Distribution of the risk factors according to the outcome

PARAMETER		DIS CHARGE		DEATH		TOTAL		P value
		N	%	N	%	N	%	
DYS LIPIDEMIA	ABSENT	48	48%	29	29%	77	77%	0.899
	PRESENT	14	14%	9	9%	23	23%	
	PRESENT	18	18%	18	18%	36	36%	
ALCOHOL	ABSENT	35	35%	22	22%	57	57%	0.887
	PRESENT	27	27%	16	16%	43	43%	
SMOKING	ABSENT	49	49%	29	29%	78	78%	0.750
	PRESENT	13	13%	9	9%	22	22%	

In the present study, it was found that the mean cholesterol was more in the patients who died (166.87 ± 33.54 mg/dL) than in the patient who were discharged (160.32 ± 35.21 mg/dL). However, the difference was statistically insignificant (P-value: 0.361). Similarly mean Triglyceride levels were found to be higher in the patients who died (120.61 ± 26.47 mg/dL) than the patients who were discharged (108.10 ± 33.46 mg/dL), with the difference being statistically insignificant (P-value: 0.053). The mean LDL levels were almost similar in the patients who died (102.61 ± 20.71 mg/dL) and the patients who were discharged (102.32 ± 25.07 mg/dL); with a statistically insignificant difference (P-value: 0.953). Similarly, the mean HDL levels were also almost similar in the patients who died (52.95 ± 8.66 mg/dL) and the patients who were discharged (52.42 ± 12.09 mg/dL); with a statistically insignificant difference (P-value: 0.817). When assessed in terms of Dyslipidemia, the overall prevalence was 23%. However, there was no statistically significant difference in the presence of Dyslipidemia in the patients who died (23.68%) and who were discharged (22.58%); with the P-value of 0.899. Overall prevalence of Alcoholism was 43%. It was also observed that there was no statistically significant difference in the presence of Alcoholism in the patients who died (42.11%) and who were discharged (43.55%); with the P-value of 0.887. It was also observed that there was no statistically significant difference in the presence of Smoking habits in the patients who died (23.68%) and who were discharged (20.97%); with the P-value of 0.750.

DISCUSSION

Spontaneous non-traumatic ICH constitutes about 10–15% of all strokes and has a high mortality of approximately 40% at 1month.[5] Prompt institution of treatment protocols may restrict the expansion of hematoma and thereby, improve the outcome of the survivors, in terms of mortality and morbidity. In a limited resource setting, predicting the outcome is crucial to making decision regarding treatment.

Lipid Profile:

In the present study, it was found that the mean cholesterol was more in the patients who died (166.87 ± 33.54 mg/dL) than the patient who were discharged (160.32 ± 35.21 mg/dL). However, the difference was statistically insignificant (P value: 0.361). Similarly mean Triglyceride levels were found to be higher in the patients who died (120.61 ± 26.47 mg/dL) than the patients who were discharged (108.10 ± 33.46 mg/dL), with the difference being statistically insignificant (P value: 0.053). The mean LDL levels were almost similar in the patients who died (102.61 ± 20.71 mg/dL) and the patients who were discharged (102.32 ± 25.07 mg/dL); with statistically insignificant difference (P value: 0.953). Similarly, the mean HDL levels were also almost similar in the patients who died (52.95 ± 8.66 mg/dL) and the patients who were discharged (52.42 ± 12.09 mg/dL); with statistically insignificant difference (P value: 0.817). When assessed in terms of Dyslipidemia, the overall prevalence was 23%. However, there was no statistically significant difference in the presence of Dyslipidemia in the patients who died (23.68%) and who were discharged (22.58%); with the P value of 0.899.

In the study by Bhatia R. et al[6], they assessed the in-hospital mortality and discharge outcome in 214 cases of spontaneous intracerebral hemorrhage. They observed that there was no statistically significant difference in the presence of Dyslipidemia in the patients who died (11.4%) and survivors (6.9%); with the P value of 0.26. This was similar to the present study.

Thus, it can be concluded that the outcome of hemorrhagic stroke is independent of the presence of Dyslipidemia.

Alcoholism:

In the present study, it was found that the overall prevalence of Alcoholism was 43%. It was also observed that there was no statistically significant difference in the presence of Alcoholism in the patients who died (42.11%) and who were discharged (43.55%); with the P value of 0.887.

In the study by Tetri S. et al [7], conducted to evaluate Hypertension and Diabetes as predictors of early death after spontaneous intracerebral hemorrhage, they found that there was no statistically significant difference in the presence of Alcoholism in the patients who died (7%) and survivors (11%). This was similar to the present study.

In the study by Hegde A. et al [8], conducted to assess the clinical profile and predictors of outcome in spontaneous intracerebral hemorrhage. They found that the overall prevalence of Alcoholism was 30.5%. They also found that there was no statistically significant difference in the presence of Alcoholism in the patients who died (29.32%) and who were alive (31.18%); with the P value of 0.803. This was similar to the present study.

Thus, it can be concluded that the outcome of hemorrhagic stroke is independent of the presence of Alcoholism.

Smoking:

In the present study, it was found that the overall prevalence of Smoking was 22%. It was also observed that there was no statistically significant difference in the presence of Smoking habit in the patients who died (23.68%) and who were discharged (20.97%); with the P value of 0.750.

In the study by Bhatia R. et al[6], they assessed the in-hospital mortality and discharge outcome in spontaneous intracerebral hemorrhage. They found that there was no statistically significant difference in the presence of Smoking habit in the patients who died (34.3%) and survivors (30.6%); with the P value of 0.58. This was similar to the present study.

CONCLUSIONS

The mean age of patients who die is more than the patients that are discharged (P value: 0.005).The outcome of hemorrhagic stroke is independent of the levels of Cholesterol, TG, LDL and HDL (P value: >0.5).The prevalence of dyslipidemia is 23%. The outcome of hemorrhagic stroke is independent of dyslipidemia (P value: 0.899).The prevalence of alcoholism is 43%. The outcome of hemorrhagic stroke is independent of alcoholism (P value: 0.887).The prevalence of smoking is 22%. The outcome of hemorrhagic stroke is independent of smoking habit (P value: 0.750).

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