ORIGINAL RESEARCH PAPER
VOLUME-6 | ISSUE-6 | JUNE-2017 | ISSN No 2277 - 8179 | IF : 4.176 | IC Value : 78.46
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

Intracranial Bleed: A study of Clinico-Radiological Profile and Outcome

Medicine

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ABSTRACT

Introduction: The present study was performed to evaluate the varied clinical presentation, risk factors, clinical and neuro-radiological parameters that would help to predict the outcome of haemorrhagic stroke.

Materials & Methods: Present prospective observational study was conducted in department of Medicine of tertiary heath care hospital. A total of 50 consecutive non-traumatic intracranial haemorrhage patients were included after satisfying the inclusion criteria. Detailed history of all the patient was taken along with general, systemic and neurological examination and relevant investigation. Based on the CT brain, history, clinical examination and blood investigations, a final diagnosis was reached. The patients with normal CT findings underwent an MRI Brain or MRA as needed for localisation and confirmation of diagnosis. All the patients were re-evaluated at the time of discharge from the hospital regarding the outcome of the disease, to assess the prognosis and rehabilitation.

Results: Mean age of study subjects was 60.86 ± 11.08 years with Male to female ratio of 1.6:1. Hemiparesis/ Hemiplegia (92%) was the most common presentation followed by headache (82%), vomiting (72%) and sensory loss (52%). Aphasia was present in 44% of patients in present study. Systolic and diastolic blood pressure more than 160 mm and 100 mm of Hg was seen in 76% and 62% patients respectively. History of addiction to alcohol and smoking was seen in 38% and 62% cases while hypercholesterolemia was observed in 44% cases respectively. Intracranial bleed in cerebellum and thalamus was associated with highest mortality while least mortality was found in lobar bleed. The volume of hematoma more than 30 cc, midline shift, hydrocephalus and Intraventricular extension showed significant association with mortality.

Conclusion: Hemorrhagic stroke most commonly present with symptoms like hemiparesis/ hemiplegia, headache, vomiting, convulsion and loss of consciousness. The major risk factor in the present study was hypertension followed by smoking and alcohol consumption. Intracranial bleed in cerebellum and thalamus was associated with highest mortality. Radiologically, volume of hematoma more than30 cc, midline shift, hydrocephalus and and Intraventricular extension were associated with an increased mortality and can be used as a prognostic tool.

KEYWORDS:

Hemorrhagic stroke, Hypertension, Intracranial Bleed, Mortality, Radiological features

INTRODUCTION

Cerebrovascular diseases include some of the most common and devastating disorders: ischemic stroke, hemorrhagic stroke, and cerebrovascular anomalies such as intracranial aneurysms. Stroke is the third leading cause of death behind heart disease and cancer. Hemorrhagic stroke accounts for 10-15% of stroke in the United States and Europe and 20-30% in Asia. It has a high mortality of 40-50% and leaves survivors with a greater disability compared to ischemic stroke [1].

Effective therapies for hemorrhagic stroke are not available, treatment is primarily supportive and outcomes remain poor, hence it becomes important to recognize all the risk factors for this serious sub-type of stroke, as only interventions at the primary and primordial level can help to prevent mortality and morbidity associated with hemorrhagic stroke.

Accurate prediction of hemorrhagic stroke outcome in the emergency department is crucial for families confronted with a patients need for invasive intensive care, for physicians making decisions about the judicious allocation of scarce resources. Fundamentally it is the identification of patients likely to recover, which can address the most pressing concern of families and medical teams with regard to direction of care.

Hence, the present study was performed to evaluate the varied clinical presentation, risk factors, clinical and neuro-radiological parameters that would help to predict the outcome of hemorrhagic stroke.

MATERIALS AND METHODS

Type of study: Hospital based prospective observational study.

Study area: The present study was carried out at tertiary care Hospital.

Study population: A total of 50 consecutive cases above 14 years presenting with non-traumatic intracerebral haemorrhage were recruited in the study and they were followed up until discharge and the outcome at the time of discharge recorded.

Inclusion Criteria

Patients having age more than or equal to 14 years irrespective of sex, clinically and radiologically diagnosed as having non traumatic intracranial hemorrhage.

Exclusion Criteria

The following cases were excluded from our study

(1) Traumatic intracerebral haemorrhage.
(2) Patients diagnosed as having ischemic stroke.
(3) Patients (parents or guardian in minor or unconscious patients) not giving written informed consent.

Methodology

Present study was conducted in department of Medicine of tertiary heath care hospital. A total of 50 consecutive non traumatic intracranial haemorrhage patients were included after satisfying the inclusion criteria. Detailed history of all the patient was taken along with general, systemic and neurological examination. Further every study participant was subjected to relevant investigations.

A provisional diagnosis was reached based on the history, examination and blood investigations. All the recruited patients were then subjected to CT Brain plain or contrast as needed. Based on the CT brain, history, clinical examination and blood investigations, a final diagnosis was reached.

The patients with normal CT findings underwent an MRI Brain or MRA as needed for localisation and confirmation of diagnosis. All the patients were re-evaluated at the time of discharge from the hospital regarding the outcome of the disease, to assess the prognosis and rehabilitation.

Stroke or CVA was defined as sudden onset of neurodefecit due to a

vascular cause and was sub typed as Embolic (Type A), Thrombotic (Type B), Hemorrhagic (Type C) and CVST (Type D) as per the etiology. Treatment according to the type of CVA was given according to the management of stroke guidelines in these cases.

Patients were followed to assess the improvement in power of the affected group of muscles at the time of discharge. An increase in the grade of power from the power at presentation of CVA was taken as improved case.

Statistical Analysis

Collected data was entered in Microsoft Excel sheet- 2007 and then transferred and analyzed using SPSS software ver. 20. All the observation findings were presented as Means and Percentages and appropriate statistical tests were applied based on type and distribution of data.

RESULTS

In present study most of the cases were from the age group > 60years (52%) with mean age of 60.86 ± 11.08 years. Male (62%) to female (38%) sex ratio in present study group was 1.6:1. Hemiparesis/ Hemiplegia (92%) was the most common presentation followed by headache (82%), vomiting (72%) and sensory loss (52%). Aphasia was present in 44% of patients in present study (Table 1). Among them Broca's aphasia (22%) was most common type followed by Wernicke's aphasia (16%) and global aphasia was found in 6% patients. Systolic and diastolic blood pressure more than 160 mm and 100 mm of Hg was seen in 76% and 62% patients respectively. History of addiction to alcohol and smoking was seen in 38% and 62% cases while hypercholesterolemia was observed in 44% cases respectively (Table 2). Intracranial bleed in cerebellum and thalamus was associated with highest mortality of 100% followed by 60% mortality in putamen and internal capsule bleed. Least mortality (21.4%) was found in lobar bleed (Table 3). The volume of hematoma more than 30 cc, midline shift, hydrocephalus and Intraventricular extension showed significant association with mortality ($p<0.05$; Table 4).

DISCUSSION

Most common age group involved in current study was more than 60 years with male preponderance among cases. These results were comparable to the study done by Siddique N et al. [2], where maximum number of hemorrhagic stroke cases were in age group of 61-70 (25%). In another study by Swamy N et al. [3], majority (51.66%) of the cases were in 5th and 6th decade of life. Male predominance among study groups was also seen by both the authors.

In present study, Hemiparesis, hemiplegia, sensory loss, headache, vomiting and loss of consciousness, convulsion and aphasia were main presenting complaints and percentage of patients presenting with these symptoms was comparable to the studies done by Siddique N et al. [2] and another study done by Swamy N et al. [3].

Systolic and diastolic blood pressure more than 160 mm and 100 mm of Hg was seen in 76% and 62% of our cases respectively. In a study done by Takahashi O et al. [4], it was found that 58% of the patients had blood pressure more than 160/100 mm of Hg which was comparable to present study. Similarly in a study by Fogelholm R et al. [5] it was found that 62% of the patients had MAP>140 mm of Hg. History of addiction to alcohol and smoking was seen in 38% and 62% cases, which was comparable to study done by Siddique N et al. [2], where 38% and 50% of patients with hemorrhagic stroke were alcoholics and smokers respectively.

In current study cerebellar and thalamic bleed were found to be associated with highest mortality, which was comparable to the studies done by Broderick et al. [6] and Togha M et al. [7]. The also observed 74% and 65.2% mortality in cases where volume of hematoma was more than 30 cc. as compared to 88% observed in present study. In present study, mortality was observed in all the cases with midline shift while it was seen in 71% in Togha M et al. [7] study and 65.2% in Broderick et al. [6] study. Presence of hydrocephalus was also associated with an increased mortality (83.3% in present study and while 75.4% in Togha M study [7] and 79.2% in Broderick et al. [6] Study).

CONCLUSION

Hemorrhagic stroke most commonly present with symptoms like hemiparesis/ hemiplegia, headache, vomiting, convulsion and loss of consciousness. The major risk factor in the present study was hypertension followed by smoking and alcohol consumption. Intracranial bleed in cerebellum and thalamus was associated with highest mortality. Radiologically, volume of hematoma more than30 cc, midline shift, hydrocephalus and and Intraventricular extension were associated with an increased mortality and can be used as a prognostic tool.

TABLES

Table 1. Distribution of patients as per Clinical Presentation

Clinical Presentation	N	%
Headache	41	82.0%
Vomiting	36	72.0%
Convulsion	17	34.0%
Loss of Convulsions	20	40.0%
Hemiparesis/ Hemiplegia	46	92.0%
Sensory Loss	27	54.0%
Motor Aphasia	11	22.0%
Sensory aphasia	8	16.0%

Table 2. Distribution of patients as per Risk Factors

Risk Factors	N	%
SBP> 160 mm Hg	38	76.0%
DBP > 100 mm Hg	31	62.0%
Alcoholism	19	38.0%
Smoking	31	62.0%
Total Cholesterol > 180 mg%	22	44.0%

Table 3. Distribution of patients as per Site of Hematoma

Site of Hematoma	N	Mortality	
		n	%
Putamen/ Internal Capsule	20	12	60.0%
Cerebellum	2	2	100.0%
Lobar	14	3	21.4%
Pons	3	1	33.3%
Thalamus	11	11	100.0%

Table 4. Association of Radiological findings with Final Outcome

Radiological features	N	Mortality		p- value
		n	%	
Hematoma (> 30 cc)	33	29	87.9%	<0.05
Midline shift	19	19	100.0%	<0.05
Hydrocephalus	18	15	83.3%	<0.05
Intra-ventricular extension	11	11	100.0%	<0.05

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