

## Research Article

# Clinical profile of acute hemorrhagic stroke patients: a study in tertiary care hospital in Northern India

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### ABSTRACT

**Background:** Acute hemorrhagic stroke, a subtype of acute stroke is one of the leading cause of death and major cause of morbidity and mortality throughout the world. The incidence of acute hemorrhagic stroke is increasing with gradual increase in obesity, diabetes mellitus, hyperlipidemia, hypertension and various cardiac problems. This study had been conducted with an objective to study the risk factors and clinical presentation of acute hemorrhagic stroke patients in north-Indian population.

**Methods:** This study was carried out among 100 acute hemorrhagic stroke patients (clinically and radiologically confirmed) irrespective of age and sex admitted to Emergency Department of KGMU, Lucknow after getting clearance from Institutional Ethical Committee(IEC). These patients had been subjected to plane CT (computed tomography) scan brain on admission by the CT scan model 16 slice Brivo 385 for radiological confirmation and to localize the lesion in brain. Data were collected in prescribed protocol.

**Results:** Majority of the patients were in the (50-60) age group with male predominance. Hypertension (62%) was the most common risk factor for acute hemorrhagic stroke followed by Non-veg diet (46%). The commonest clinical feature at presentation was hemiplegia (76%). Majority (47%) of the patients presented with Glasgow Coma Scale (GCS) of (9-12). Cerebral cortex (41%) was the most common site of brain lesion in acute hemorrhagic stroke patients.

**Conclusion:** This study focuses on the clinical profile and risk factors of acute hemorrhagic stroke, by targeting which the burden of this disabling disease can be prevented.

**Keywords:** Acute hemorrhagic stroke, CT scan, Hemiplegia

### INTRODUCTION

Acute hemorrhage stroke, a subtype of acute stroke is one of the leading causes of mortality and morbidity in both developed and developing countries like India. The incidence of stroke is increasing with the gradual increase in obesity, diabetes mellitus, hyperlipidemia, hypertension and various cardiac problems. The incidence of stroke increases with age as the population grows elderly.

Stroke can be defined by the sudden onset of a neurological deficit that is because of focal vascular

insult. In hemorrhagic stroke, hypertension or any other causes which weaken the endothelial lining of vessel leads to the rupture of the blood vessel of a focal region of brain and collection of blood in brain parenchyma. Collected hematoma or hemorrhage then causes neuronal injury, increase the intracranial pressure and may cause even death by brain herniation. CT scan is diagnostic tool of choice in acute hemorrhagic stroke.<sup>1</sup> The clinical picture and epidemiology of acute hemorrhagic stroke may vary depending on the site and extent of lesions. The detailed analysis of clinical picture, epidemiology and CT scan correlation of clinical diagnosis will help us to take therapeutic measures accordingly.<sup>2</sup>

Studies focusing on the clinical profile and risk factors of acute hemorrhagic stroke in this part of India are very few. Thus, the present study had been conducted in this tertiary hospital of Northern-India with an objective to see the clinical presentation and risk factors of acute hemorrhagic stroke in this North-Indian population.

## METHODS

This observational study had been carried out in collaboration with the Department of Physiology and Department of Medicine, KGMU, Lucknow, India from November 2013 to July 2014. A total of 100 acute hemorrhagic stroke patients (clinically and radiologically confirmed) admitted in OPD/Ward/Emergency were included irrespective of sex and age in this present study. Exclusion criteria was those patients who refused to take part in the study.

A pre designed semi-structural proforma, designed for the purpose was used as a study tool. A proforma for each of the acute hemorrhagic stroke patients was maintained where in a brief clinical information including particulars of the subjects, chief complaints, family, menstrual, personal, dietary history, past history were taken. Proper general physical examination and systemic examination were also done and recorded in the proforma. The acute hemorrhagic stroke patients were subjected to plane CT scan brain on admission by using CT scan model 16 slice Brivo 385 to confirm the diagnosis and also for localizing the site of lesion. The data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 15 (SPSS Inc., Chicago, IL, USA).

*Ethical issue:* This study was conducted only after getting approval from Institutional Ethical Committee, KGMU, Lucknow, India. Informed consent from the participating individual was also obtained. Confidentiality was maintained by masking the identity and identifiers of the participants.

## RESULTS

The present study is based on the primary data of 100 acute hemorrhagic stroke patients irrespective of sex and age.

Majority of the acute hemorrhagic stroke patients were male (70%) and had age range of (50-60) years (Table 1).

Hypertension (62%) was the most common risk factor among acute hemorrhagic stroke patients, followed by Non-veg diet (46%) and tobacco chewing (40%) (Table 2).

Majority of the acute hemorrhagic stroke patients presented with hemiparesis (76%) followed by altered sensorium (53%) (Table 3). 47% of the acute hemorrhagic stroke patients presented with a Glasgow coma score of 9-12 (Table 4).

**Table 1: Distribution of acute hemorrhagic stroke patients based on socio-cultural parameters.**

Parameters	Number of cases	Percentage (%)
Sex	Male	70
	Female	30
Age groups (years)	(0-20)	0
	(20-30)	1
	30-40	3
	40-50	10
	50-60	41
	60-70	22
	70-80	20
	>80	03
Religion	Hindu	72
	Muslim	24
	Others	04
Marital status	Married	85
	Unmarried	15
Total (n)	100	100.00

**Table 2: Risk factors of acute hemorrhagic stroke.**

Risk factors of Acute hemorrhagic stroke	Percentage (%)
Hypertension	62
Smoking	20
Nonveg	46
Panchewer	6
Diabetes mellitus	17
Previous Heart disease	14
Previous Stroke	12
Excess Alcoholism >40gm/day	25
Tobacco chewing	40
h/o Head Injury	3

**Table 3: Clinical presentations of acute hemorrhagic stroke patients.**

Clinical presentation of acute hemorrhagic stroke patients (n=100)	Percentage (%)	
Hemiparesis	76	
Altered sensorium	53	
Vomiting	29	
Headache	23	
Speech defect	22	
Altered behaviour	12	
Facial palsy	17	
Visual loss	1	
Blood pressure at presentation	Systolic blood pressure(SBP) > 140	72
	Diastolic blood pressure(DBP) > 90	39

**Table 4: Level of consciousness of acute hemorrhagic stroke patients at presentation.**

Subjects	Grade1 Glasgow Coma Scale (GCS 13-15)	Grade 2 (GCS 9-12)	Grade 3 (GCS 4-8)	Grade 4 ( GCS 3)
Acute hemorrhagic stroke patients (n=100)	23(23%)	47(47%)	24(24%)	6(6%)

Majority (54%) of patients presented with left hemispheric brain lesion and cerebral cortex was the most common site of lesion both in left and right hemispheric hemorrhagic stroke (Table 5).

**Table 5: Distribution of acute hemorrhagic stroke patients based on the side and site of the lesion in brain.**

Side of lesion	Acute hemorrhagic stroke patients (n=100)	Site of Lesion	Acute hemorrhagic stroke patients (n=100)
Left hemisphere	54%	Cerebral cortex	41%
		Basal ganglia	10%
		Brainstem	3%
Right hemisphere	44%	Cerebral cortex	34%
		Thalamus	3%
		Basal ganglia	3%
		Brainstem	4%
Bilateral hemispheres	2%	Cerebellum	2%

## DISCUSSION

The present study focuses on the role of non-modifiable risk factors like age and sex in acute hemorrhagic stroke and male predominance among stroke patients was noted, which is supported by the findings of other studies.<sup>3,4,5</sup> In this study majority of acute hemorrhagic stroke patients were in the (50-60) age group followed by age group (60-70) years, which is supported by the findings of Siddique et al.<sup>2</sup> Thus, it is clear that acute hemorrhagic stroke occurs more commonly in elderly.

In this study majority (62%) of acute hemorrhagic stroke patients were known cases of hypertension which is an important risk factor in acute hemorrhagic stroke. In their study, Daniel Woo et al<sup>6</sup> also found hypertension (63%) as the most important risk factor of acute hemorrhagic stroke. In a study W. Wang et al<sup>7</sup> showed hypertension as an independent risk factor for the hemorrhagic stroke.

Woo Daniel et al<sup>8</sup> in their study suggested that untreated hypertension is common among acute hemorrhagic stroke patients. Several others studies also confirm the role of hypertension as an important risk factor in acute hemorrhagic stroke.<sup>9,10,11</sup>

In the present study, 20% of the patients gave history of smoking. T Kurth et al<sup>12</sup> in their prospective study found a significant correlation between the risk of acute hemorrhagic stroke and the smoking. In another study T Kurth et al<sup>13</sup> also showed smoking as a relative risk factor for acute hemorrhagic stroke, intra-cerebral hemorrhage (ICH) and subarachnoid hemorrhage in men. Beside, several studies have focused the association between the smoking and risk of acute hemorrhagic stroke.<sup>2,14</sup> In this present study 17% of the acute hemorrhagic stroke patients were diabetic. Siddique et al<sup>2</sup> in their study reported that 15% of the acute hemorrhagic stroke patients were diabetic. Daniel Woo et al<sup>6</sup> also reported 20% prevalence of Diabetes among Intracerebral Hemorrhage patients. Diabetes Mellitus is a noted risk factor for cerebrovascular disease. It increases the risk of stroke compared to non-diabetics.<sup>15</sup> In this study diabetes appears to be associated with stroke, which correlates with the Framingham study.<sup>16</sup> Excess Alcohol intake can be noted as risk factor of acute hemorrhagic stroke in this study. Daniel Woo et al<sup>6</sup> in their study showed that frequent alcohol use as an independent risk factor for lobar Intracerebral hemorrhage. According to SeppoJuvola et al<sup>17</sup> alcohol consumption during the last week and within one week of onset of the disease increases the relative risk of intracerebral hemorrhage. In this study, 40% of the patients gave the history of using chewable form tobacco. However, Hergens et al<sup>18</sup> in their study analyzed that oral tobacco increase the risk of fatal ischemic stroke but not of hemorrhagic stroke. K Asplund<sup>19</sup> and colleague also suggested that smokeless tobacco is not associated with any apparent excess risk of acute hemorrhagic stroke. In the current study, hemiparesis (76%) is the commonest neurological deficit at presentation in acute hemorrhagic stroke patients. However, the various grades of weakness were not taken into consideration in this study. This result correlates with the study of Siddique et al and Framingham study where hemiplegia was also found to be the commonest presentation.<sup>2,16</sup> In this study left hemispheric lesion of brain constitutes majority (54%) of the acute hemorrhagic stroke patients. Cerebral cortex is the most common site of lesion in these patients. Similar findings had been reported by Siddique et al<sup>2</sup> in their study.

## CONCLUSION

The present study focuses on the clinical profile and risk factors of acute hemorrhagic stroke. Hypertension is the commonest risk factor. Beside other risk factors like smoking, alcoholism, non-veg diet, Diabetes mellitus are also found to be present in acute hemorrhagic stroke patients. Among various clinical features at presentation, hemiplegia, altered sensorium and high blood pressure

are very common. The detailed knowledge of clinical features at presentation, epidemiology and risk factors analysis will help clinicians for better understanding of pathogenesis, taking therapeutic decisions and also for prevention of acute hemorrhagic stroke management.

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