

# Incidence of Stroke (Infarct and Haemorrhage) and Mortality Rate among Stroke Patients

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## ABSTRACT

**Background:** Infarct and hemorrhage are frequently encountered problem. Assessment of possible hemorrhage in acute stroke before appropriate therapy remains important. Causes, outcome and treatment strategies differ from patient to patient. Aim: To determine the incidence of stroke (infarct and haemorrhage) in patients and mortality admitted to Netaji Subhash Chandra Bose Medical College Jabalpur. **Methods:** 100 patients of both genders and age > 15 years presenting with stroke were included in the study. All patients had CT scan brain. The results were then compared with clinical diagnosis on case to case basis and precision of clinical diagnosis was as refrained. **Results:** In current study highest incidence in the age group was 61-70 yrs in 32% cases. In current study the incidence of stroke was much more common in males. Results showed that of the 100 cases studies cerebral infarct was seen in 65% cases, cerebral hemorrhage in 33% cases, and subarachnoid hemorrhage in 1% and cerebral venous thrombosis in 1% cases. The mortality from cerebral infarct was 30 % from intra cerebral hemorrhage was 36%. As a whole out of 100 patient of stroke of all types, 32 patients died within span of 30 days. **Conclusion:** As the age increases incidence of stroke increases, increased mortality was seen in present study.

**Keywords:** Acute ischemic stroke, hemorrhagic transformation, mortality.

## INTRODUCTION

More than 2,400 years ago the father of medicine, Hippocrates, recognized and described stroke-the sudden onset of paralysis. Until recently, modern medicine has had very little power over this disease, but the world of stroke medicine is changing and new and better therapies are being developed every day. Today, some people who have a stroke can walk away from the attack with no or few disabilities if they are treated promptly. Doctors can finally offer stroke patients and their families the one thing that until now has been so hard to give: hope.

WHO defines stroke as a focal or at time global neurological impairment of sudden onset and lasting more than 24 hrs or leading to death and of presumed vascular origin.<sup>[1]</sup> Studies have suggested that strokes are a major cause of adult disability because of the debilitating initial symptoms and in many cases the severe long-term impairment in activities such as walking and speech.<sup>[2,3]</sup> Various studies have reported that the epidemiology of

stroke, as well as epidemiology of other cardiovascular diseases, is found to be changing depending on the population, various reasons are related to the changing epidemiology.<sup>[4,5]</sup>

### Aim:

To determine the incidence of stroke (infarct and haemorrhage) and mortality rate among stroke patients.

## MATERIALS AND METHODS

This clinical study was carried out in the department of medicine Netaji Subhash Chandra Bose Medical College Jabalpur, during study cases of stroke were diagnosed clinical and with CT scan confirmation. Ethical committee approval was obtained from the Institutional Ethics Committee. A written informed consent was obtained from the parents of the selected children. A total of 100 patients aged age > 15 years were selected for the study.

### Inclusion criteria:

1. Sudden onset of stroke and lasting >24 hrs or leading to death and of presumed vascular origin.
2. 100 patients of both genders and age > 15 years presenting with stroke

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**Exclusion criteria:**

1. Patients who had TIA
2. Mentally challenged patients

The cases under study underwent through clinical examination especially detailed neurological assessment with particular attention to age, sex mode of onset, evolution & course of illness. Routine investigations as well as special investigations are also done like: CBC, ESR, Blood urea, S. creatinine, Urine R/M, FBS & FLP, ECG, Echocardiography (in some selected patients) and CT scan/ MRI (brain). All patients had CT scan brain. The results were then compared with clinical diagnosis on case to case basis and precision of clinical diagnosis was as refrained. Patients were then followed up for 30 days and mortality among them was noted.

**Statistical Analysis:**

The values obtained during each session will be assessed, tabulated and subjected to appropriate statistical analysis.

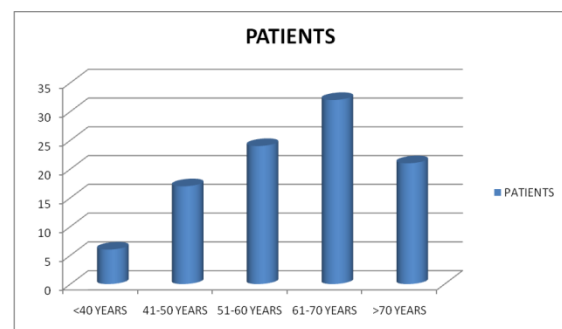
**RESULTS**

A total of 100 patients aged above 15 years with stroke admitted to NetajiSubhash Chandra Bose Medical College Jabalpur from Aug.2008 to Sep. 2009. In present study 6% patients were aged less than 40 years, 17% patients were aged between 41 to 50 years, 24% were aged 51 to 60 years, 32% were aged between 61 to 70 years whereas 21% were aged more than 70 years. In current study highest incidence in the age group was 61-70 yrs in 32% cases. The youngest patients in present study were of 22 yrs and the eldest was of 90 yrs [Table 1, Figure 1]. In current study the incidence of stroke was much more common in males. Out of the 100 cases 57 were male and 43 females [Figure 2]. Results showed that of the 100 cases studied cerebral infarct was seen in 65% cases, cerebral hemorrhage in 33% cases, and subarachnoid hemorrhage in 1% and cerebral venous thrombosis in 1% cases [Table 2]. Loss of power was seen in 97% & difficulties in speech in 58% were the common symptoms of cerebral infarct. In patients with cerebral hemorrhage, loss of consciousness was seen in 89% and hemiplegia in 96% was the most common

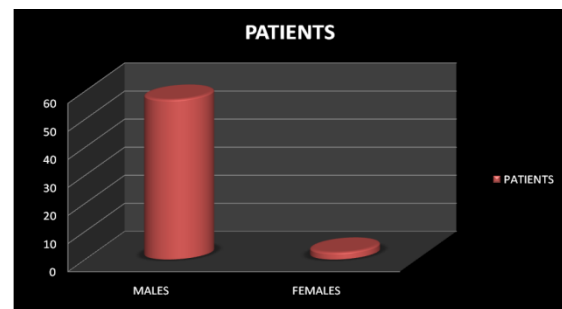
symptoms. Patients of SAH present with loss of consciousness 100%. Loss of power in 100%, were the most frequent complaints in patients of CVT [Table 3]. The outcome of stroke in 30 days was studied in current study. The mortality from cerebral infarct was 30 % from intra cerebral hemorrhage was 36%. As a whole out of 100 patient of stroke of all types, 32 patients died within span of 30 days [Table 4].

**Table 1: Distribution of Age**

Age group	No. of cases & (%)
<40 yrs	6
41-50 yrs	17
51-60 yrs	24
61-70 yrs	32
>70 yrs	21



**Figure 1: Distribution of Age**



**Figure 2: Sex Incidence In Stroke Cases**

**Table 2: Types of Strokes Observed**

Type of Strokes	Cerebral infarct	Cerebral hemorrhage	SAH	CVT
No. of cases	65	33	1	1

**Table 3: Incidence of Various Presenting Symptoms In 100**

S.no	Presenting symptoms	INFARCT		Hemorrhage		SAH		CVT	
		No	%	No	%	No	%	No	%
1.	Loss of consciousness	25	38	30	89	1	100	0	0
2.	Loss of power (weakness)	63	97	31	96	0	0	1	100
3.	Difficulty in speech	37	58	6	20	0	0	0	0

**Table 4: 30 Day Mortality Rate In Patients Of Stroke**

S.no	Outcome	Cerebral Infarct		Intracerebral Hemorrhage		SAH		CVT	
		no	%	no	%	no	%	no	%
1.	Survived	45	70	21	64	1	100	1	100
2.	Expired	20	30	12	36	0	0	0	0
Total		65		33		1		1	

## DISCUSSION

Cerebrovascular diseases are the commonest cause of severe physical disability with an annual incidence of stroke of 2 per 1000 according to BMJ et al in 1993 and of TIAs of 0.5 per 1000 according to Humphrey PRD et al in 1994.<sup>[6]</sup> In our study, the incidences of stroke was higher in men than in women (Male: Female ratio 1.32:1). These figures are in agreement with the results of another study according to Greve et al in 1993, which reported ratio in stroke study between men and women is 2:1. The highest incidence was in the 6th decade 32%, followed by that in the fifth decade 24% in both men and women. According to a study by R. Walker et al in a rural population of Tanzania, median age of first ever stroke was 65. Bansal B.C. et al in 1998 reported prevalence rate of stroke for male as 46.1/100000 & for females as 41.9/100000.<sup>[7]</sup> Ahmed Vohra et al in 1997 reported higher incidence in males (56.3%) as compared to females (43.7%).<sup>[8]</sup> In current study highest incidence in the age group was 61-70 yrs in 32% cases. The youngest patients in present study were of 22 yrs and the eldest was of 90 yrs. However other studies have reported in their study with the incidence in males being generally higher than in females.<sup>[9,10]</sup> Amongst the 100 patients included in our study, 65% had cerebral infarct, 33 had intra cerebral haemorrhage, 1% subarachnoid hemorrhage 1% cerebral venous thrombosis. B.C. Bansal in his study reported an incidence of 82% for cerebral infarction.<sup>[11]</sup> The presenting symptoms observed in our study were alteration in the level of consciousness (89%), loss of power (96%) and aphasia (20%) in case of haemorrhage. Amongst the case of infarction, loss of power was observed in 97%, alteration in the level of consciousness in 38% and aphasia in 58% of patients. Amongst the cases of SAH loss of consciousness recoded in 100%. Loss of power observed in cases of cerebral venous thrombosis was 100%. Harrison MJG et al in 1980 reported loss of consciousness in 62% and hemiparesis/ hemiplegia in 61% of the patients of hemorrhage, while the incidence of loss of consciousness was 38.2%, and hemiparesis / hemiplegia in 99% of the patients of infarction.<sup>[12]</sup>

## CONCLUSION

Within the limits of the study we found that the male: female ratio was observed to be (1.32:1). The highest incidence was seen in the sixth decade (32%) followed by the fifth decade (24%). Cerebral infarction (65%) was the most common type of stroke. The incidence of intracerebralhaemorrhage (33%), subarachnoid hemorrhage, cerebral venous thrombosis 1%, each of total cases. The vascular territory involved in cerebral infarction and hemorrhage commonly was the middle cerebral

artery, with the right side being affected more frequently.

## REFERENCES

1. WHO Global Infobase: Stroke cerebrovascular accident publications. The atlas of heart disease and stroke.
2. Wolfe C, Rudd T. The Burden of Stroke White Paper. London, UK: The Stroke Association; 2007.
3. Di Carlo A. Human and economic burden of stroke. Age and Ageing. 2009;38(1):4-5.
4. Truelsén T, Piechowski-Józwiak B, Bonita R, Mathers C, Bogousslavsky J, Boysen G. Stroke incidence and prevalence in Europe: a review of available data. European Journal of Neurology. 2006;13(6):581-598. [PubMed] [Google Scholar]
5. Wu TC, Grotta JC. Stroke treatment and prevention: five new things. Neurology. 2010;75(18, supplement 1):S16-S21. [PubMed] [Google Scholar]
6. Humphrey P, Sandercock P, Slattery J.: 1990 : A simple method improve the accuracy of non- invasive ultrasound in selecting TIA patients for cerebral angiography. J. NeurolNeurosurgPsychiat, 53 966-71.
7. Bansal BC. Personal communications form Rihtal Centre of W.H.O. Collaborative study on the Control of stroke in the community 1976.
8. Bansal BC. Personal communications form Rihtal Centre of W.H.O. Collaborative study on the Control of stroke in the community 1976.
9. BRFSS. Behavioral Risk Factor Surveillance System: turning information into health data, Prevalence and Trends Data, Cardiovascular Disease—2008, Ever told you had a stroke? Centres for Disease Control and Prevention, National Center for Chronic Disease Prevention & Health Promotion, Behavioral Risk Factor Surveillance System, 2010.
10. National Heart, Lung and Blood Institute. Incidence and Prevalence: 2006 Chart Book on Cardiovascular and Lung Diseases National Institutes. National Heart, Lung and Blood Institute; 2010.
11. Bansal BC. Personal communications form Rihtal Centre of W.H.O. Collaborative study on the Control of stroke in the community 1976.
12. Harrison MJG: 1980: Clinical distinction of cerebral haemorrhage and infarction, Postgrad. Med. J. 56: 629-32.

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