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Original Research

Clinical features and various risk factors for stroke and its CT scan correlation: an observational study

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***ABSTRACT*:**
Back ground: Stroke is one of the most important causes of high morbidity and mortality all over the world. Risk factors are common to all age groups. **Aim:** To study various risk factors for stroke and to assess their relative importance in the causation of the different types of stroke and to study various clinical features of stroke & its CT- Scan correlation. **Method:** 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 them compared with clinical diagnosis on case to case basis and precision of clinical diagnosis was as refrained. **Result:** In patients of hemorrhage 63% had hypertension, 20% had diabetes mellitus, 39% were smoker and 16% were alcoholic and 9% were having hyperlipidaemia. Smoking was the most common risk factors. **Conclusion:** based on result of present study two major risk factors are associated with stroke i.e. the hypertension and smoking are controllable
Key words: Acute ischemic stroke, risk factors, symptoms.

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INTRODUCTION:

Stroke is a work-wide health problem. It makes an important contribution to morbidity, mortality and disability in developed as well as developing countries. Although there are substantial differences in frequency from place to place cerebral thrombosis is usually the most frequent from of stroke, followed by hemorrhage.A WHO collaborative study in 12 countries showed, in the populations studied, stroke incidence rates ranged from 0.2 to 2.5 per 1000 population per year.[1] Stroke is one of the leading cause of death and disability throughout the world. In developed countries, coronary heart disease and cerebrovascular disease are responsible for between 40 – 50% of the death.[2]

Many risk factors for stroke have been described such as age and sex, physiological characteristics that predict future occurrence such as high blood pressure, serum cholesterol, fibrinogen; behaviors such as smoking, diet, alcohol consumption, physical inactivity; social characteristics such as education, social class and ethnicity; and environmental factors that may be physical (temperature, altitude), geographical, or psychosocial. Studies have shown that that raised blood pressure is the single most important risk factor for ischemic stroke with a population attributable risk of 50%.[3] According to the literature the risk of stroke rises steadily as blood pressure level rises and doubles for every 7.5 mm Hg increment in diastolic blood pressure, with no lower threshold. Treatment with anti-hypertensive treatment has been shown to reduce stroke risk by about 38 %.[4,5]

Aim: To study various risk factors for stroke and to assess their relative importance in the causation of the different

types of stroke and to study various clinical features of stroke & its CT- Scan correlation.

MATERIALS AND METHODS:

This clinical study was carried out in the Department of Medicine Netaji Subhash Chandra Bose Medical College Jabalpur Total 100cases 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.

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

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.Special emphasis was made on risk factors especially: smoking, Alcohol, DM, HTN heart disease and H/o TIA dyslipidaemia, OCP's on the basis of all above mentioned procedure clinical diagnosis is made. 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 them 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 Netaji Subhash 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 (GRAPH 1).In current study it was observed that amongst the patient of cerebral infract 42% had hypertension, 24% had diabetus mellitus, 10 % had cardiac disease, 50% were smoker, 20% were alcoholic and 12% had hyperlipidemia. In patients of hemorrhage 63% had hypertension, 20% had diabetus mellitus, 39% were smoker and 16% were alcoholic and 9% were having hyperlipideamia. In patients of SAH 100% were hypertensive cases (Table 1). In current study the most common site in both cerebral infarct and intra cerebral hemorrhage was in the right middle cerebral artery territory. The second most common site was the left middle cerebral artery territory which followed by vertebro basilar artery territory. In patients <40 years, most common risk factor is Heart disease i.e. RHD (50%) F/B equal incidence of smoking HTN and OCP is (17%). In patients >40% years most common associated is HTN (50%) F/B Smoking (46%) and DM (24%). The risk factor which contributes maximum to mortality in infarct cases is diabetes mellitus accounting for 50% mortality.

GRAPH 1: DISTRIBUTION OF AGE

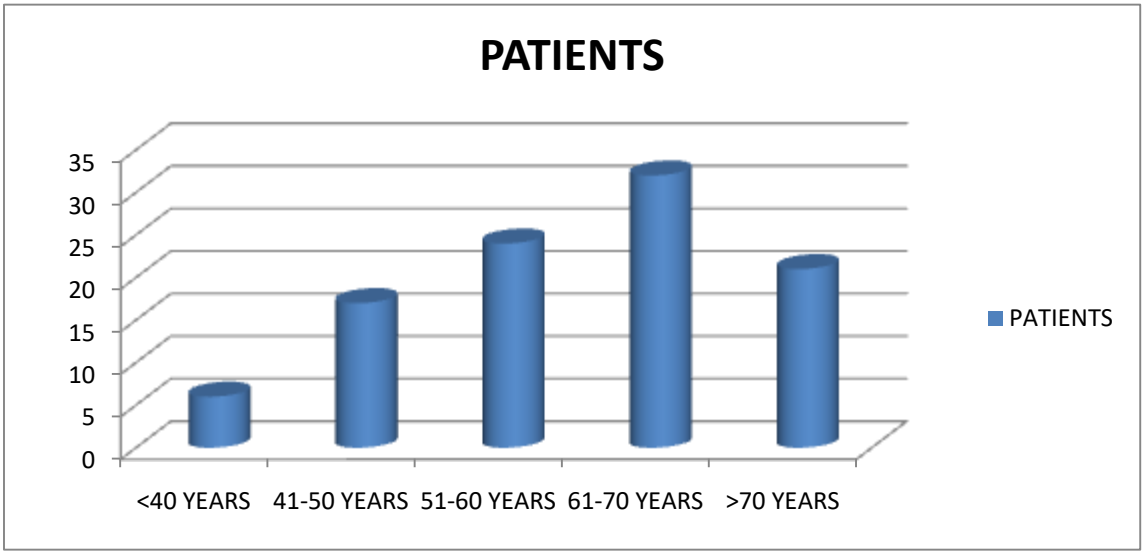

TABLE 1: INCIDENCE OF VARIOUS RISK FACTORS IN PATIENTS OF STROKE

1.	Hypertension	27	42	21	63	1	100	0	0
2.	Diabetus mellitus	16	24	7	20	0	0	0	0
3.	Cardiac disease								
	RHD	2	3	0	0	0	0	0	0
	IHD	5	7	0	0	0	0	0	0
4.	Previous TIA	5	7	0	0	0	0	0	0
5.	Smoking	32	50	13	39	0	0	0	0
6.	Alcoholism	13	20	5	16	0	0	0	0
7.	Hyperlipidemia	8	12	2	9	0	0	0	0
8.	Oral contraceptives	1	0.7	0	0	0	0	1	100

Table 3: VASCULAR TERRITORY INVOLVEMENT IN 100 PATIENTS OF STROKE

S. no	Vascular territory	Intra cerebral hemorrhage		Cerebral Infarct	
		No	%	No	%
1.	MCA				
	Left	10	30	22	34
	Right	19	58	40	62
2.	ACA	0	0	1	1
3.	VA	4	12	2	3
TOTAL		33		65	

TABLE 4: CORRELATION OF AGE WITH RISK FACTORS OF STROKE

Age(Yrs,)		Smoking		Alcohol			DM		HTN		TIA		Heart Disease		Dyslipi-demia		OCP	
No.	%	No.	%	No	%		No	%	No.	%	No.	%	No.	%	No.	%	No.	%
<40	1	17	0	0	0	0	1	17	2	33	3	50	0	0	1	17		
>40	44	46	18	19	23	24	48	50	3	3	4	4	10	11	0	0		

TABLE 5: RELATIONSHIP OF RISK FACTORS WITH MORTALITY IN INFARCT CASES

S. No.	Risk Factor	Total Cases		Mortality	
	%	No.	%	No	%
1.	Hypertension	27	42	10	37
2.	Diabetes Mellitus	16	24	8	50
3.	Heart Disease	7	10	3	43
4	Previous TIA	5	7	1	20
5	Smoking	32	50	12	37
6	Alcohol	13	20	6	46
7	Hyperlipidemia	8	12	1	12
8	OCP	1	0.7	0	0

DISCUSSION:

World Health Organisation (WHO) defined stroke as rapidly developing clinical signs of focal, at times global disturbance of cerebral function lasting for more than 24 hours or leading to death with no apparent cause other than vascular origin.[6]Risk factors may vary with different age groups, however most of the risk factors are common to all age groups. Various studies in the past have been analysed and reported that the risk factors of stroke in young, but considering its impact on the younger generation, it needs more studies for identification and modification of risk factors.[7]

In present study 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 were selected. In our 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. In current study it was observed that amongst the patient of cerebral infract 42% had hypertension, 24% had diabetus mellitus, 10 % had cardiac disease, 50% were

smoker, 20% were alcoholic and 12% had hyperlipidemia. In patients of hemorrhage 63% had hypertension, 20% had diabetus mellitus, 39% were smoker and 16% were alcoholic and 9% were having hyperlipideamia. Bevan et alin their study showed that atherosclerosis to be etiology in 31% of total cases.[8] In another case control study by Dakshinamurthy, it was found that 50% of stroke in young could be attributed to atherosclerosis.[9]AM Hossain et al in their study reported hypertension in 63% cases and Siddique et al reported hypertension in 69% cases.[10,11]

In our study the most common site in both cerebral infarct and intra cerebral hemorrhage was in the right middle cerebral artery territory. The second most common site was the left middle cerebral artery territory which followed by vertebro basilar artery territory. In patients <40 years, most common risk factor is Heart disease i.e. RHD (50%) F/B equal incidence of smoking HTN and OCP is (17%). In patients >40% years most common associated is HTN (50%) F/B Smoking (46%) and DM (24%). The risk factor which contributes maximum to mortality in infarct cases is diabetes mellitus accounting for 50% mortality.Yano et al and Donnan et al found strong association between cigarette smoking and stroke. History of dyslipidaemia was present in 20% cases.[12,13]

CONCLUSION:

We conclude that stroke per se as a disease contributes a great proportion of total hospital admission. Cerebrovascular disease plays an important worldwide role in the morbidity and mortality of adults posing serious medical socioeconomic and rehabilitation problems. It is the third leading cause of death after cancer heart disease, produces considerable morbidity and is an important public health problem all over the world. The two major risk factors associated with stroke i.e. the hypertension and smoking are controllable, modifiable risk factors and controlling them can reduce the burden of disease.

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