

Study of stroke in young adults: Special emphasis on risk factors

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ABSTRACT

INTRODUCTION:- Stroke is the most common life threatening or disabling neurological condition in older population. Although it is not infrequent in young adult. Stroke in young adults poses a major socioeconomic health problem especially in developing countries. The traditional risk factors like hypertension, diabetes are associated with stroke in both young and elderly. In recent years, there has been increasing economic and demographic development in developing countries resulting in a shift from diseases caused by poverty towards chronic, non-communicable, lifestyle related diseases, this happening in the younger age group adds to the social and economic burden, and as such these patients merit special attention in diagnostic, therapeutic, and preventive care.

MATERIAL AND METHODS:- This was an observational study conducted in Department of Medicine, Sanjay Gandhi Memorial Hospital, associated with Shyam Shah Medical College, Rewa during the period between April 2018 to June 2019.

RESULTS:- Males were more affected than females and most common clinical presentation was hemiparesis. Hypertension was significantly associated with hemorrhagic stroke in young adults.

CONCLUSION:- Stroke in young adults can lead to huge socioeconomic burden on society, as in our study we found hypertension was significant risk factor for hemorrhagic stroke. So by preventing these modifiable risk factors at various levels of prevention, we can decrease the incidence of stroke in young adults.

INTRODUCTION

A stroke or cerebrovascular accident, is defined as “rapidly developing clinical signs of focal (or global) disturbance of cerebral function, with symptoms lasting 24 hours or longer or leading to death, with no apparent cause other than of vascular origin”¹. Stroke leads to cut off of the blood supply to the cerebral tissue may be due to infarction or hemorrhage causes lack of oxygen and glycogen to neurons leading to cerebral damage. Stroke is the most common life threatening or disabling neurological condition in older population, although it is not infrequent in young adult. Stroke in young adults poses a major socioeconomic health problem especially in developing countries². It appears that the risk factors for stroke in Indian population are not different from that of the western or Southeast Asian population. The traditional risk factors like hypertension and diabetes are associated with stroke in both young and elderly. In recent years, there has been increasing economic and demographic development in developing countries resulting in a shift from diseases caused by poverty towards chronic, non-communicable, lifestyle related diseases, this happening in the younger age group adds to the social and economic burden, and as such these patients merit special attention in diagnostic, therapeutic, and preventive care³.

The most common symptom of a stroke is sudden weakness or numbness of the face, arm, or leg, most often on one side of the body, Other symptoms include confusion, difficulty speaking or understanding speech, difficulty seeing with one or both eyes, difficulty walking, dizziness, and loss of balance or coordination, severe headache with no known cause; fainting or unconsciousness².

MATERIAL AND METHODS:-The present study was conducted in Department of Medicine, Sanjay Gandhi Memorial Hospital, associated with Shyam Shah Medical College, REWA in Vindhya region between April 2018 to June 2019(15 Month) with sample size was 100 cases. This was an observational study.

Inclusion criteria:-

- Patients age 18-45 years were included.
- Stroke cases proven by CT Scan/ MRI Brain were included.

Exclusion criteria:-

- Patients <18 years and >45 years.
- Traumatic Brain injury.

Aims and objectives:-

- To study the clinical profile of stroke in young with special emphasis on metabolic risk factors and hypertension.

Statistical Methods:-

- Chi square test and Fisher Exact test had been used to find the significant association of risk factors with stroke. A p value <0.05 was consider significant.

RESULTS:-

Type of Stroke

Type of stroke	Number Patients(n=100)	of%
Ischemic stroke	73	73.0
Hemorrhagic stroke	27	27.0

Age and Sex wise distribution

Age in Years	Male		Female		TOTAL	
	No.	%	No.	%	No.	%
18-25	12	20.69	16	38.09	28	28.0
26-35	18	31.03	12	28.57	30	30.0

36-45	28	48.28	14	33.34	42	42.0
Total	58	100.0	42	100.0	100	100.0
Mean ± SD	34.34 ± 7.562		32.55 ± 8.986		33.59 ± 8.195	

Clinical features of stroke

Clinical features		Number (n=100)	%
Consciousness			
Normal		42	42.0
Decreased		58	58.0
Seizures			
Absent			
Present		73	73.0
		27	27.0
Speech			
Normal			
Dysarthria		41	41.0
Could not be Examined		32	32.0
		27	27.0
Motor deficit			
Hemiparesis		83	83.0
Monoparesis		14	14.0
		3	3.0
Sensory deficit			
Normal		87	87.0
Hemi sensory loss		13	13.0

Correlation of Metabolic risk factors and Hypertension with Stroke

Risk factor	Type of stroke		P value
	Ischemic stroke (n=73)	Hemorrhagic stroke (n=27)	
Total cholesterol (<200)			
Normal	50 (68.4%)	19 (70.3%)	P =1.0
Abnormal	23 (31.6%)	8(29.7%)	
HDL (M:<40; F<50)			
Normal	18 (24.7%)	10 (37.1%)	P =0.31
Abnormal	55 (75.3%)	17 (62.9%)	

LDL(<100)			
Normal	27 (36.9%)	12(44.5%)	P =0.49
Abnormal	46 (63.1%)	15(55.5%)	
Diabetes Mellitus			
Absent	55(75.4%)	24(88.9%)	P=0.17
Present	18(24.6%)	3(11.1%)	
Hypertension			
Absent	61(83.6%)	4(14.9%)	P=0.0001
Present	12(16.4%)	23(85.1%)	

Correlation of Homocysteinemia with Stroke

Homocysteinemia	Ischemic stroke(n=26)	Hemorrhagic stroke(n=4)	P value
Absent	23(88.5%)	4(100%)	P=1.0
Present	3(11.5%)	0	

Correlation of Oral contraceptive pills with Stroke

OCP	Ischemic stroke(n=33)	Hemorrhagic stroke(n=9)	P value
Absent	27(81.8%)	8(88.9%)	P=1.0
Present	6(18.2%)	1(11.1%)	

A total 100 consecutive patients diagnosed with stroke satisfying inclusion and exclusion criteria were selected for the study, 27 of them had hemorrhagic stroke. Sex ratio in our study was 1.3:1 (male: female). The Mean age \pm SD of the study group was 33.59 \pm 8.195 years and that of male and female patients was 34.34 \pm 7.562 years and 32.55 \pm 8.986 years respectively. The majority of stroke occurred between the ages of 36-45 years at 42% and 48.28% of male were also in the same age group, where as in females it was in the ages between 18-25 years at 38.09%. 58% of the study patients presented with decrease level of consciousness, 27% patients present with seizures, 32% of patients had speech abnormalities. Motor deficit was seen in all the patients, hemiparesis seen in 83% patients, hemiplegia seen in 14% patients and monoparesis seen in 3% patients. Hemisensory loss was seen in 13% of the study group. On investigating dyslipidemia, 63.1% of ischemic stroke and 55.5% of hemorrhagic stroke had abnormal LDL whereas 75.3% of ischemic stroke and 62.9% of hemorrhage stroke had abnormal HDL. Diabetes mellitus was seen in 21% of patients. 24.6% of ischemic stroke were diabetic whereas 11.1% of hemorrhagic stroke had the same disease. Hypertension was seen in 35% of patients. Among them ischemic stroke 16.4% was hypertensive whereas 85.1% of hemorrhagic stroke had hypertensive, shows significant association with hemorrhagic stroke (P value<0.05). Homocysteine levels were seen elevated in 10.0% of patients, 11.5% of ischemic stroke had homocysteinemia, none of the hemorrhagic stroke had this risk factor. 16.6% of patients were

taking oral contraceptive pills. 18.2% and 11.1% of ischemic and hemorrhagic stroke were taking the same.

DISCUSSION:- This study comprised 100 stroke patients admitted in Department of Medicine Sanjay Gandhi Memorial Hospital, associated with Shyam Shah Medical College, REWA between April 2018 to June 2019(15month). In our study 73% of all the strokes were ischemic stroke where as 27% of them had hemorrhagic stroke this is similar to RajehSA et al⁴ in their study they had found ischemic infarction in 76.2% and hemorrhage in 23.8% of the stroke in young. Sex ratio in our study was 1.3:1 (male: female). Mehndiratta et al⁵ showed a ratio of 1:08 in north India, Zunni et al⁶ demonstrate a ratio of 1.2:1, where as Chandana et al⁷ demonstrated a similar ratio 1.3:1 in his study. The mean age of all the patients in our study was 33.59 years, a study in north India by Mehndiratta et al⁵ showed a mean age of 31.97 years. The mean ages of males and females were 30.66 and 33.28 years. Our study had a markedly higher mean age group among men at 34.34 years. Whereas among women it was 32.55 years. This difference probably because there were difference in the sample size. In our study 58% of the study patients presented with decrease level of consciousness, 27% patients presented with seizures, 32% of patients had speech abnormalities and hemiparesis seen in 83% patients. In the study of Bansal et al⁸ 57.2% patients presented with decreased level of consciousness, 28.6% patients presented with seizures, 30.4% patients presented with speech abnormalities and 79.2% patients presented with hemiparesis. In our study a high occurrence of dyslipidemia seen in the form of abnormal LDL seen in 63.1% of ischemic stroke and 55.5% of hemorrhagic stroke whereas 75.3% of ischemic stroke and 62.9% of hemorrhage stroke had abnormal HDL. Mehndiratta et al⁵ showed abnormal cholesterol and triglycerides levels as a risk factor. Albucher JF et al⁹ showed by multivariate analysis that HDL was the only one to be highly associated with stroke. In this study diabetes mellitus was seen in 21% of patients. 24.6% of ischemic stroke were diabetic whereas 11.1% of hemorrhagic stroke had the same disease. In Chandana et al⁷, diabetes present in 28.2% of ischemic and 9.1% of hemorrhagic stroke, whereas it was 3.96% and 2.36% in ischemic and hemorrhagic stroke respectively in Mehndiratta et al⁵. In our study hypertension was seen in 35% of patients. Among them ischemic stroke 16.4% was hypertensive whereas 85.1% of hemorrhagic stroke had hypertensive. Dalal et al¹⁰ showed an incidence of hypertension were 46.7%, Alvarez et al¹¹ 23%, Nagaraja et al¹² 22.6% and Grindal et al¹³ 17.2%, Chandana et al⁷ shows that hypertension present in 15.4% of the ischemic and 90.9% of hemorrhagic stroke, whereas it was 16.53% and 3.14% in ischemic and hemorrhagic stroke respectively in Mehndiratta et al⁵. There was a significant association between hypertension and incidence of hemorrhagic stroke (p-value <0.05). Homocysteine levels were seen elevated in 10.0% of patients, 11.5% of ischemic stroke had homocysteinemia, none of the hemorrhagic stroke had this risk factor. In the study of Chandana et al⁷ it was elevated in 12.0% patients. In our study 16.6% of patients were taking oral contraceptive pills. 18.2% and 11.1% of ischemic and hemorrhagic stroke were taking the same. In a study by Grindal et al¹³ the incidence of oral contraceptive pills leading to stroke was 17.9% where as in Bevan et al¹⁴ it was 18.75% and Alvarez et al¹¹ it was 21.2%.

CONCLUSION:- This study shows that majority of the age distribution of stroke in

young population was between the ages of 36-45 years, and it was the same among males. However it was lower in females at 18-25years. Among clinical features motor deficit and decrease in consciousness were prominent. Hypertension and Diabetes mellitus were modifiable risk factors commonly seen. Especially hypertension increase risk of hemorrhagic stroke. Dyslipidemia in the form of elevated LDL and decreased HDL were also common. Other metabolic risk factors like homocysteinemia and OCP also considered during evaluation.

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