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STUDY OF RISK FACTORS AND CLINICAL PROFILE OF ACUTE STROKE

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ABSTRACT: INTRODUCTION: Stroke is the third leading cause of death in developed countries after cardiovascular disease and cancer. In India Community Surveys have shown a crude prevalence rate for hemiplegia 200 per 1, 00, 000 population. It accounts for nearly 1.5% of all urban admissions, 4.5 % of all medical and about 20% of neurological cases. **AIMS AND OBJECTIVE:** Identification of risk factors and evaluation of clinical profile of acute stroke. **MATERIAL AND METHOD: INCLUSION CRITERIA:** Cases of acute stoke admitted in SGMH hospital were selected for the study. **EXCLUSION CRITERIA**: Brain injury cases, infective, neoplastic cases producing stroke were excluded. **RESULTS:** Stroke was more common in male, 58 % patients were male and 42% patients were female. It was more common in 5th and 6th decade. Most common etiology was infarction. Most common risk factor was hypertension followed by smoking. In addition to limb weakness, headache and vomiting were most common presenting symptoms followed by convulsion. These symptoms were more common in hemorrhagic stroke. Right sided hemiplegia was more common than left sided. Middle cerebral artery was involved in majority of cases in atherothrombotic stroke whereas basal ganglion was most common site of bleed in hemorrhagic stroke. Coma and mortality were more in hemorrhagic stroke. **CONCLUSION:** The risk factors and clinical profile of acute stroke in India are similar to that of Western countries. Common risk factors are hypertension, smoking, diabetes mellitus and hyperlipidemia.

KEYWORDS: Risk factors, Stroke.

INTRODUCTION: Cerebrovascular disease has been defined by WHO as a neurological dysfunction with symptoms lasting more than 24 hours or resulting in death before 24 hours and in which after adequate investigations, symptoms are presumed to be of a non-traumatic vascular origin.[1] It is the third leading cause of death in developed countries after cardiovascular disease and cancer.[2]

Among all strokes ischemic stroke/TIA is responsible for 80% and hemorrhage accounts for 15% of cases whereas subarachnoid hemorrhage and hypertensive ICH is responsible in 4% and 7% cases respectively. In India Community Surveys have shown a crude prevalence rate for hemiplegia in range of 200 per 1, 00, 000 population. It accounts for nearly 1.5% of all urban admissions, 4.5 percent of all medical and about 20% of neurological cases.[2]

The incidence of stroke worldwide is 179 per 1, 00, 000 population in various parts. In Western countries overall prevalence rate is 794 per 1, 00, 000 population. The annual incidence of stroke in UK is about 350 per 1, 00, 000 population and in USA they cause 2, 00, 000 deaths per-year.[3-4]

AIMS AND OBJECTIVE: Identification of risk factors and evaluation of clinical profile of acute stroke. The study comprised of 100 patients admitted in S.S. Medical College & associated S.G.M. Hospital Rewa, from May 2009 to Sept 2011.

MATERIAL AND METHOD:

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INCLUSION CRITERIA: Cases of acute stoke admitted in SGMH hospital were selected for the study.

EXCLUSION CRITERIA: Brain injury cases, infection, neoplastic cases producing stroke were excluded. Stroke in less than 20 year of age were excluded from study.

After admission a detailed history regarding the temporal profile of stroke including history of risk factors like hypertension, diabetes mellitus, smoking, history of CAD and rheumatic heart disease were obtained. Detailed neurological examination including fundoscopy and other systemic examination was carried out in all cases. The diagnosis of stroke was made on the basis of temporal profile of clinical syndrome, clinical examination, and CT scan of brain.

RESULTS:

Age (years)	Male	Female	Total	Percent
21-30	2	1	3	3.00
31-40	6	4	10	10.00
41-50	15	5	20	20.00
51-60	16	11	27	27.00
61-70	14	14	28	28.00
71-80	4	4	8	8.00
81-90	-	2	2	2.00
91-100	1	1	2	2.00
Total	**58**	**42**	**100**	**100.00**
Table 1: Age and sex distribution in stroke patients				

		No. of Cases	Percent
No risk Factor (n-28)		**28**	**28.0**
Risk Factors (n-72)		**72**	**72.0**
a.	Hypertension	45	62.5
b.	DM	13	18.05
c.	Smoking	28	38.88
d.	Hyperlipidemia	8	11.11
Table 2: Incidence of Risk Factors in stroke patients			

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Type of Stroke	Male		Female		Total	Percent
	No	%	No	%		
Ischemic stroke	35	51.47	33	48.33	68	68.00
Hemorrhage stroke	19	59.37	13	40.63	32	32.00
Total	54		46		100	100.00
Table 3: Incidence of Infarct & Hemorrhage with reference to sex						

p > 0.05

Clinical Features	Ischemic (n-68)		Hemorrhage (n-32) (n=32)	
	No	%	No.	%
Headache	17	25.00	21	65.62
Vomiting	13	19.11	25	78.12
Convulsions	6	8.82	4	12.50
Right side hemiplegia	47	69.1	22	68.75
Left side hemiplegia	21	30.80	10	31.25
Conscious	38	55.80	6	18.75
Drowsy	12	17.50	2	6.25
Coma	18	26.47	24	75.00
Table 4: Clinical features in study group				

p<0.001

TERRITORY	TOTAL	%
Frontal	8	11
Temporal	15	22
Parietal	20	29
Occipital	3	4.4
Internal capsule	6	9
Basal ganglia	11	16
Thalamus	3	4.4
Cerebellum	2	3
Table 5: Infarct distribution		

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TERRITORY	NO	%
Thalamus	8	21
Basal ganglia	18	47
Pons	1	2.6
Cerebellar	2	5.2
Internal capsule	1	2.6
Cortical	1	2.6
SAH	7	18.4
Table 6: Distribution of hematomas		

Type of stroke	No. of died patients (n-22)	Percentage
Ischemic	9	40.00
Hemorrhagic	13	59.00
Table 7: Patients of stroke who died		

ECHO changes	Ischemic (n-68)				Hemorrhage (n-32)			
	Normal		Abnormal		Normal		Abnormal	
	No	%	No	%	No	%	No	%
LV dysfunction	52	76.47	16	23.53	14	43.75	18	56.26
LA thrombus	68	100.0	-	-	32	100.0		-
Mitral valve abnormality	54	79.41	14	20.59	32	100.0	-	-
Aortic valve abnormality	65	95.58	3	4.41	32	100.0	-	-
Normal	30	44.11	38	55.88	24	75.0	8	25.00
Table 8: 2D Echo changes in stroke patients								

LV dysfunction was most common echocardiographic abnormality which was more common in hemorrhagic stroke.

DISCUSSION: A hospital based cross sectional study was done to know the clinical features and risk factors of stroke patient. Among the 100 patients 58 were males and 42 were females (sex ratio was M:F-1.4:1), age ranged from 24-92 years and the mean age of patients of alive and dead were 58.73 and 54 years respectively. The cases of stroke were more common in the 5th and 6th decade, making 55%, which is comparable to Venkataramana et al (1977)[5] study in which the percentage of stroke cases above the age of 51 years was 41% and in the Carlo study (2003)[6] was 71.8%.

Study group	Venkataraman et al (1977)	Carlo et al (2003)	Present study
Incidence of stroke	41%	71.8%	55%
Comparison of Incidence of Stroke Patients above age group of 51 years			

Stroke is one of the leading causes of death in many countries. Although there was a lack of

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unanimity, several factors have been reported to increase the risk of stroke. Reports from different countries have implicated different factors associated with high risk of stroke. To evaluate the risk factors, a prospective survey of a given population of the years as done in the Framingham Study was essential. The only epidemiological study of Abraham et al (1970) who found hypertension, diabetes mellitus, hypercholesterolemia and syphilis to be the risk factors associated in hemiplegia patients.[7] Shaper et al in 1991 concluded that, hypertension, cigarette smoking and pre-existing IHD was found to be the major risk factors.[8]

Risk factors	Smith[9] (2005) (%)	Carlo et al[6] (2003) (%)	Present Study (%)
Hypertension	87.00	48.00	62.5
Diabetes mellitus	50.00	20.90	18.05
Smoking	35.22	--	38.88
History of stroke	39.30	12.50	--
Hyperlipidemia	22.95	--	11.11
Comparison of association of risk factors in different studies			

In the present study, risk factor was found in 72% cases while no risk factor was found in 22% cases. Hypertension was present in majority of the cases i.e., 62.5%, which is comparable with that found I n the studies of Smith (2005) and Carlos (2003) i.e., 87% and 48% respectively and next commonest risk factor was smoking (38.88%) which are comparable with that found in Smith (2005) i.e., 35.22% and 39.30% and diabetes mellitus was present in 18.05% of the patients in the present study and the least was hyperlipidemia.[6, 9]

Clinical features	Mohr et al[10] (1978) (%)	Foulkes et al[11] (1988) (%)	Present Study (%)
Headache	36.00	41.00	38.00
Vomiting	44.00	49.00	38.00
Convulsions	7.00	9.00	10.00
Comparison of Clinical Features in Patients with Stroke			

In the present study, headache was present in 38% of the cases, which is comparable to the series of Mohr et al (1978), who reported an incidence of 26%.[10] Foulkes et al (1988) reported severe headache in 41% of cases.[11] Vomiting was present in 38% of our patients, which is comparable to Mohr et al (44%), Foulkes et al (1988), who reported frequency of headache in 49% of the cases. Convulsions in the present series were present only in 10% of the total patients, which is comparable to that of Mohr et al (1978) and Foulkes et al, who reported frequency of 7% and 9% respectively.[10-11]

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Type of Strokes	Mikolich et al[12] (1981)	Roy et al[13] (1995)	Daniele et al[14] (2002)	Present study
Ischemic	93.33	71.00	78.28	68.00
Hemorrhage	6.66	29.00	21.80	32.00
Comparison of Type of Strokes				

In this study, 68% of the patients has ischemic stroke, which was comparable with that found in the studies of Daniele et al, Roy et al and Mikolich et al (1981) i.e., 78.20%, 71.00% and 93.33% respectively. 32% had stroke in the present study comparable with 21.80%, 29% and 6.66% in the Daniele et al (2002), Roy et al (1995) and Mikolich et al study group. In this study MCA, ACA, and PCA territory was involved in 60%, 11%, 29% cases respectively. Most common site of hematoma in hemorrhagic stroke was basal ganglia. LV dysfunction was most common echocardiographic abnormality which was more common in hemorrhagic stroke and it was significantly correlated with mortality in hemorrhagic stroke.

SUMMARY: Stroke was more common in male, 58 % patients were male and 42% patients were female. Stroke was more common in the 5th and 6th decade. The mean age was 56yrs. Among the strokes most common etiology was infarction which comprised 68 % of patients followed by hemorrhage which comprised of 32% patients. Young stroke were 13% (age <40yrs). Most common risk factor was hypertension followed by smoking. In the present study, hypertension, smoking, past history of stroke, diabetes mellitus, and hyperlipidemia was present in 45%, 28%, 22%, 13% and 8% of cases respectively.

In addition to limb weakness headache and vomiting were most common presenting symptoms followed by convulsion, which were present in 38%, 38%, 8% cases respectively, all these symptoms were more common in hemorrhagic stroke. Right sided hemiplegia was more common. Coma was more common in hemorrhagic stroke. MCA territory was involved in majority of cases in infarct group whereas basal ganglion was most common site of bleed in cases of hemorrhagic group. Mortality was more in hemorrhagic stroke (59%) than atherothrombotic stroke (40%).

CONCLUSION: The risk factors and clinical profile of acute stroke patient in India are similar to that of Western countries. Common risk factors are hypertension, smoking, diabetes mellitus and hyperlipidemia. So it is strongly recommended that there should be strict control of blood pressure, diabetes, hyperlipidemia and cessation of smoking for prevention of stroke.

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