

Original research article

Study of Risk Factors among Stroke Patients in a Tertiary Hospital

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Abstract

Background: Stroke is one of the leading causes of death and disability worldwide. The aim of the study was to find out the incidence of different types of strokes and the associated risk factors .

Methods: The study dealt with 100 patients of stroke who were admitted to Rangaraya Medical college ,Andhra Pradesh. Each patient was analyzed in detail about clinical presentation and the investigations were aimed to establish the pathologic type of stroke and estimation of risk factors.

Results: Stroke incidence was more in males (Male: Female= 2.57:1). Maximum incidence of stroke was in 6th decade (34%) followed by 5th decade (25%). Among modifiable risk factors, history of hypertension was the commonest (79%) followed by Diabetes (62% patients) ,smoking (15%) and ,alcohol(15%)exclusively, found in males. Facial weakness was the most common presentation (88%) followed by hemiparesis(85%). Chest X-ray was abnormal in 17% patients, abnormal ECG was found in 36% patients .

Conclusions: Apart from control of hypertension and diabetes, abnormal lipid profile remains an important modifiable risk factor for stroke. Keywords: Stroke, Risk factor

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Introduction

Stroke is an important cause of disability among adults and is one of the leading causes of death worldwide.¹A stroke, or cerebrovascular accident, is defined by the abrupt onset of a neurologic deficit that is attributable to a focal vascular cause.² The common risk factors, that is, hypertension, diabetes, smoking, and dyslipidemia are quite prevalent and inadequately controlled; mainly because of poor public awareness and inadequate infrastructure. Presently, prevention of stroke is the best option considering the Indian scenario through control and/or avoiding risk factors of stroke³ There is paucity of information on stroke especially in this part of India. Therefore this study was undertaken to find out the incidence of different types of strokes and the associated risk factors and to establish the role of different investigations in patients of stroke.

Material and Methods

This one year observational study involved all the patients with a definite diagnosis of stroke (acute cerebrovascular disease) admitted to the Neurology ward of Government General Hospital ,Kakinada.

Acute cerebrovascular disease was defined as “A stroke or cerebrovascular accident with rapidly developing clinical symptoms and signs of focal, and at the global loss of cerebral function with symptoms or leading to death, with no apparent cause other than that of vascular origin”⁴ Patients with head injury, primary or secondary brain tumor were excluded from the study.

The patients were classified as having ischemic or hemorrhagic stroke definitive on the basis of CT scan head. Each patient was studied in detail on the basis of a preplanned proforma with special references to assess the risk factor associated with the cerebrovascular accident. A detailed clinical history was recorded. All the patients were asked about past history of hypertension, TIA, previous stroke, diabetes mellitus, heart disease, smoking and alcoholism, migraine, consumption of OCP. A thorough general and systemic examination was done. Hematological investigations such as Hemoglobin(Hb), total leucocyte count (TLC), random blood sugar, blood urea, serum creatinine, serum sodium, ESR, PCV, VDRL and coagulation study was done⁷. Lipid Profile Estimation was also done. ECG, Chest X-Ray and Echocardiography were also done to assess cardiovascular status. Imaging Studies –CT scan of Head (Plain and contrast) was done. The data were analyzed using SPSS software. Statistical significance by calculating the probability by using the percentage difference between the data and the standard error.

Table 1: Prevalence of risk factors in cases of stroke.

Risk	Male (%)	Female (%)	Total (%)
Age (above 50 years)	60 (60%)	24 (24%)	84 (84%)
Sex	72 (72%)	28 (28%)	100(100%)
Family history	7 (7%)	4 (4%)	11 (11%)
Hypertension	60 (60%)	19 (19%)	79 (79%)
Diabetes mellitus	47 (47%)	15 (15%)	62 (62%)
Smoking	15 (15%)	0	15(15%)
Heart disease RHD CHD	0	1(1%)	1 (1%)
Atrial fibrillation	5 (5%)	2 (2%)	7 (7%)
previous stroke	5 (5%)	3 (3%)	8(8%)
TIA	4(4%)	2(2%)	6 (6%)
Alcoholism	12 (12%)	0	12 (12%)
Migraine	0	1 (1%)	1(1%)
OCP	0	2 (2%)	2 (2%)

Results

The study involved a total of 100 patients of stroke.

Prevalence of stroke was more common among the males (72.0%) and those aged above 50 years of age (84%). Family history of stroke was present in 7.0% males and 4.0% females. Among modifiable risk factors, history of hypertension (79.0%) was the commonest risk factors found followed by smoking (15.0%), exclusively found in males. History of previous

stroke was observed in 8.0% patients being more common in males (7.0%). Diabetes mellitus was present in 62.% patients (Table 1).

Table 2: Clinical features of stroke

clinical features	Male (%)	Female (%)	Total (%)
Sensorium			
Conscious	55 (55%)	15 (15%)	70(70%)
Drowsy	12 (12%)	12 (12%)	24 (24%)
Coma	5 (5%)	1 (1%)	6(6%)
Glasgow coma scale			
5	5 (5%)	1 (1%)	6(6%)
6-10	27 (27%)	10 (10%)	37 (37%)
11-15	40 (40%)	17 (17%)	57(57%)
Hemiparesis			
Right	46 (46%)	20 (20%)	66 (66%)
Left	14 (14%)	5 (5%)	19(19%)
Facial weakness			
Right	50 (50%)	18 (18%)	68(68%)
Left	15 (15%)	5 (5%)	20(20%)
Speech defect	65 (65%)	16(16%)	81(71%)
Respiration			
gasping	2 (2%)	0	2 (2%)
hyperventilation	2 (2%)	1 (1%)	3(3%)
Rapid	3 (3%)	0	3(3%)
Pupil size			
U/L constricted	1 (1%)	1(1%)	2 (2%)
B/L constricted	1 (1%)	1(1%)	2 (2%)
U/L dilated	2 (2%)	0	2 (2%)
B/L dilated	1 (1%)	0	1(1%)
Meningeal sign	1 (1%)	0	1(1%)
Papilledema	4 (4%)	1(1%)	5(5%)
cerebellar sign	10 (10%)	8(8%)	18(18%)
Hemi sensory loss	10 (10%)	6(6%)	16 (16%)
visuospatial defect	8 (8%)	3(3%)	11 (11%)
Hemianopia	16 (16%)	5(5%)	21 (21%)
Hemi neglect	6(6%)	1(1%)	7(7%)

Majority of patients were admitted between within 24 hours of onset of stroke (49%), followed by between 2-7 th day (31% patient) and after 7 days of onset of stroke (20%).

As per JNC-7 criteria ⁵, Majority of patients were hypertensive with stage-2 hypertension (SBP>160, DBP>100) in 33% followed by stage-1 hypertension (SBP=140-159, DBP=90-99) in 18% and prehypertension (SBP=120-139, DBP=80-89) in 13% respectively.

Most common side of weakness (Hemiparesis/ Hemiplegia) was right (66%) followed by left (19%). In 3% patients side of weakness could not be assessed. Quadriparesis was found in only 4(4%) patient while in 11 (11.0%) patients focal deficit was found.

Time of onset of stroke was most common in the morning (60%) followed by evening (18%) and afternoon and night (12% and 10% respectively). Further progression of disease after onset of the stroke was observed in 52% patients while in 48% patients no progression was found.

Facial weakness was the most common clinical feature (88%) followed by Hemiparesis(85%) and speech defect (81%). Glasgow coma scale was less than ten in 43% patients. Hemianopia was seen in 21% patients followed by cerebellar signs in 16% patients (Table 2).

Mild anaemia was the commonest laboratory finding in 61% patients followed by leukocytosis in 38% patients. Decreased PCV was observed in 10% patients and increased ESR in 23% patients. Hyperglycaemia was found in 60%, increased serum creatinine in 30%, hyponatremia in 25% and hypokalemia in 10% patients. Abnormal lipid values were found in 89 % patients (Table 3).

Abnormal ECG was present in 36% patients, with LVH with strain pattern as the most common presentation (19%). Chest X-ray was abnormal in 17% of patients, with cardiomegaly in 17% patients. On echocardiography valvular disease found in 3% patients (Table 4). Diagnosis of ischaemic stroke was made in 85% patient, intracranial hemorrhage in 14% patients and sub-arachnoid hemorrhage in 1% patient

Table 3: Blood investigations among the stroke patients.

Name of investigations	Male (%)	Female (%)	Total (%)
Haemoglobin level (gm%)			
Normal (>13 in male, >12 in female)	25	10	35
Mild Anemia (9-12)	45	16	61
Moderate Anemia (7-9)	2	2	4
Total leucocyte count per cumm)			
Normal (4,000-11,000)	45	10	55
Leucocytosis (>11,000)	22	16	38
Leucopenia (<4000)	5	2	7
ESR			
Increased	15	8	23
Decresad	7	2	9
Serum creatinine			
Normal (0.2-1.2 mg%)	50	20	70
Increased	22	8	30
Electrolytes			
Sodium			
Normal (135-155 meq/l)	55	20	75
Hyponatremia (<130 meq/l)	17	8	25
PCV			
Decreased	8	2	10
Random blood sugar (RBS)			
Normal	27	13	40
Hyperglycemia	45	15	60
Potassium			
Normal (3.5-5.0meq/l)	62	24	86
Hypokalemia (<3.5meq/l)	8	2	10

Hypekalemia (>5.5meq/l)	2	2	4
Coagulation study	NORMAL	NORMAL	
VDRL (Reactive)	1	0	1
Lipid Profile			
Normal	7	4	11
Abnormal	65	24	89

Table 4: ECG, chest X-ray and echo-cardiography in stroke patients.

Name of investigations	Male (%)	Female (%)	Total (%)
Electrocardiogram (ECG)			
L.V. H. with strain pattern 1	13	6	19
Atrial fibrillation	5	2	7
Ventricular arrhythmia	8	5	13
Myocardial infarction	4	8	12
Chest X-ray			
Normal	55	12	67
Not done	10	10	20
Cardiomegaly	7	10	17
Miliary T.B	0	0	0
Echocardiography			
Valvular heart disease	3	0	3

Discussion

Age is an important nonmodifiable risk factor for stroke. The mean age of stroke onset in India (i. e., 63 years).⁴ Incidence of stroke was observed to be 16.0% among individuals aged less than 50 in this study. Previous hospital-based data from India observed a high proportion of young stroke (first-ever stroke onset below 40 years of age), ranging between 15 and 30%.⁵ Overall, there is male preponderance of stroke in this study. Similar findings have been reported from Coastal south India in young adults (15-45 years)⁶ Among modifiable risk factors, hypertension (79.0%) and diabetes(62.0%) were the most common ones found in the present study. Similar results have been obtained in a plethora of studies. Day time onset is reported to be more common, which is similar to our results.^{11,12} Abnormal lipid values were found in almost 80% of the patients. Our study findings are supported by other studies.¹³⁻¹⁶ However, further studies with bigger sample sizes are required to find out trends and risk factors among stroke patients.

Conclusion:

Stroke is one of leading cause of disability .Ischemic stroke being more common than hemorrhhic stroke. Life style modifications and risk factor control like Hypertension and diabetes as most important aspects of stroke prevention.

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