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Full Length Research Paper

Hospital based prospective registration of stroke, severity, symptoms at tertiary care hospital in Warangal, A.P., India

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The present study is to explore the gender, severity, clinical manifestations in young and non young adults among stroke patients in Warangal, using structure and semi-structure qualitative interviews. MGM is a teaching hospital in the north Telangana region, Warangal, A.P, India. It is a 1200 bedded multidisciplinary hospital. Patients are admitted to general wards for a maximum of 72 hours post-stroke. During the study period 290 patients were registered. Whereas, patient mean age was 58.18±0.8805. Women 57.84 (SD: 14.26), and men was 58.18 (SD: 12.76), p value = <0.0001.Only 30.34% of the enrolled patients were younger than 45 years. Overall 70% of patients were greater than 45 years. However, that mostly men were affected when compared to women population and most of stroke survivors married in this group were found to be 86%. Data concerning clinical manifestations of stroke patients was majorly found to be speech disturbance (46.2%). 147 (51%) patients have the brain infarct towards right side. The frequency of our study population of major disability was found to be 167 (58%). Risk factors like hypertension, smoking, alcohol consumption and diabetes mellitus were more prevalent in young patients. Whereas, clopidogrel were mostly used in young group and least aspirin is used in non-young group. Data analysis was done by using statistical software graph-pad prism version 5.0.Our results suggest that prevention of primary risk factors like hypertension and diabetes mellitus, creating awareness among public and primary health care workers for early referral of stroke to stroke departments and Supplementation of thrombolytic drugs in the golden period and to suggest the lifestyle modifications.

Keywords: Young, non-young, diabetes, stroke, and hypertension**.**

INTRODUCTION

In terms of developing countries population, India ranks second only to china. Recent rapid socio economic changes have led to a concomitant change in people's lifestyle, leading to work-related stress and altered food habits, raising the risk of hypertension. Those factors coupled with an increase in the average life expectancy, are expected to have an impact on the occurrence of stroke disorder in India (Shyamal et al., 2008). Whereas, stroke is a third leading cause of death and a major, contributed to the disability in the United States (Goldstein, 2006). However it accounts for 5% to 10% of all deaths in the western population with ischaemic stroke accounting for 70% to 80% of stroke cases (William, 2003). According to WHO, fifteen million people suffer stroke worldwide each year, of these, five million die and another five million are permanently

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disabled. In India incidence is 1 per 1000 and higher in men than in women. 20-30% of stroke falls below the age of 40years. Indians are at high risk of death due to stroke than Caucasians (Nagaraja, 1998). Although stroke is treatable, the fragmentation of care and lack of an integrated stroke network can be barriers to optimal care. While all individual components of this system may be in place in some areas, it has been suggested that stroke networks are more prone to be fragmented in rural or neurologically underserved areas (Burgin et al., 2001; Leira et al., 2007; Park et al., 2008; Leira et al., 2008). Therefore, purpose of this present study is to explore the causes of stroke, severity, clinical manifestations in young and non young adults in Warangal.

MATERIAL AND METHODS

Design

Observational study by conducting structural and semi-structural qualitative interviews were used for the study.

Settings

MGM is a teaching hospital in the North Telangana region, Warangal, A.P, India. It is a 1200 bedded multidisciplinary hospital. Patients are admitted to general wards for a maximum of 72 hours post-stroke.

Research committee approval

The study was approved by the research committee at KMC, Warangal. Informed consent is obtained from each participant before an interview on neurological examination was conducted.

Subjects

Consecutive 211 males, 79 females admitted to general ward with severe cognitive and communicative problems.

Procedure

Written informed consent is taken from patients within 72 hours of admission, designed specifically for this study and a semi- structure interview. Independent of the clinical terms, interviews was performed on the basis of protocol. As far as possible, interview was performed in a quiet area, in the ward. This hospital is a government hospital that provides outpatient and inpatient care for Indian citizen for free of charge. From October 2010 to August 2011, we enrolled 290 stroke patients from 6 different specialty units in MGM hospital (i.e., MMW 1, MMW 2, FMW 1, FMW 2, AMC, and IMC). All the patients aged between 18 to 90 yrs were included in our study and also the patients whose chief diagnosis was intra-cerebral hemorrhage, sub-arachnoid hemorrhage, transient ischemic attack, loss of cerebral functions with symptoms lasting for more than 24 hours were included. Patients were excluded from the analysis if they had duration of atrial fibrillations less than 3 months, had valvular heart disease and also the patients who had died before they arrived at hospital, children and pregnant women were excluded.

The onset of stroke is generally followed by immediate hospitalization and the patients are given with drugs, injections and imaging tests including brain computer tomography (CT) scan and magnetic resonance imaging (MRI) upon hospital admission. Thus hospital charges are likely to be confounded by potential difference in the preadmission process between the patients who are admitted in MGM hospital directly. The inpatient charges consists of basic fundamental charges for radiological tests and other free charges consists of laboratory examinations, ingestion therapies, drugs, operations, rooms and etc. Demographic data, insurance status and clinical data were prospectively taken from medical records and ward round participations. The demographic characteristics includes age, sex, admissions clinical data consisted of principal diagnosis, severity of stroke, bed used (ICU or ward bed), LOHS, comorbid conditions, hypertension, diabetic mellitus, cancer and ischemic heart disease and whether or not cerebral angiography surgery or autopsy were performed. The insurance status was determined by ascertaining kind of insurance that cover the patients charges of the subject.

Vascular risk factors

Apart from age and sex the following vascular risk factors were recorded.

- Hypertension

Blood pressure recordings higher than 160/90mm hg, on at least two separate occasions, before stroke or later than 1 week after stroke; patients on treatment for hypertension.

- Diabetes mellitus

Known, treated diabetes or either fasting serum glucose >7mmol/l or a postprandial serum glucose level > 11mmol/l on atleast two separate occasions before or after stroke, but not in the acute phase of stroke (the first 72hrs)

- Ischemic heart disease

Table 1: Gender difference of stroke patients

Gender	Number of patients	Percentage (%)	Mean± SD
Men	211	72.75	58.18±12.79
Women	79	27.24	57.84±14.26

Known or treated angina pectoris, or the presence of an old myocardial infarction (older than 6 weeks), or typical ecg changes of myocardial ischemia.

- Significant stenosis

The diameter reduction of more than 50% of the internal carotid artery, documented on non-invasive investigation with ultrasound or angiography.

- Asymptomatic lacunar infarct:

Act lesion as described under the definition of lacunar infarct, but not compatible with the presenting stroke syndrome and its lesion site. Furthermore, asymptomatic lacunar infarct have radiologic characteristics different from a recent lesion. in the analysis we distinguished patients with one or more asymptomatic lacunar infarct from those without.

Evaluations

Data analysis was done by using statistical software graph-pad prism version 5.0 to correlate relationship between socio-demographic variables and the medication usage in stroke patients. 'p' values of 0.05 was considered a statistically significant.

RESULTS

During the study period 290 patients were registered among them 211 were men. We excluded 123 patients because of protocol violations such as double registrations, no proper documentations of onset day, visit later than 2 weeks; duration of atrial fibrillations less than 3 months had valvular disease and the death. Patient mean age was 58.18±0.8805. Women 57.84 (SD:14.26), Median is 60.0, where men was 58.18 (SD:12.76), Median = 60, p value = <0.0001.Only 30.34% of the enrolled patients were younger than 45 years. Overall 70% of patients were greater than 45 years. It has been displayed in Tables 1, 2

In this study, we found that mostly men were affected when compared to women population and most of stroke survivors married in this group was found to be 86%. Data concerning clinical manifestations of stroke patients was majorly found to be speech disturbance (46.2%). The medical history of brain infarct in 147(51%) stroke patients towards right side was found in our study. The frequency of our study population of major disability found to be 167(58%) and least disability of global ischemia was found to be 13(4%). We summarized the odd of scoring ≥ 2 or ≤ 2 on the stroke patients. The higher no. of falls risk assessment (Scandandian scale) found to be 224 (77%) in our study population. Patients had undergone insurance coverage, 46% of patients aarogya sri insurance, 16% of patients had life insurance coverage, 14% had employee health insurance, 23% doesn't have any insurance coverage in our study population. All the above data is shown in the Table 3

Its shows that men 98(34%) were found to have a higher rate of hypertension were 'p' value is 0.5 than women 70 (24%)), 'p' value 0.5. Diabetes mellitus was found in 49 (17%) men and 22 (8%) women and ischemic heart disease was less likely found in 3(1%) women and 6 (4%) men, 'p' value is 0.5. All patients had head imaging performed (100% in both genders). Similarly comparable percentage of men and women 96% and 98% respectively had cardiac evaluation test done. On comparision of risk factors between young and non-young patients, diabetes mellitus, hypertension, alcohol consumption and smoking were more prevalent in non-young than the young patients, where as clopidogrel was mostly used in non-young group and least aspirin used in non-young group. On the other end disability was found to be dissimilar between young and non-young groups as shown in Table 4

Overall less significant gender difference was found in the type of antibacterials prescribed in both genders where 'p' value was found to be 0.0625 (table 5). Meanwhile, Table 6 shows the antihypertensive combination therapy among men and women patients, it summarizes the 'p' value of combination therapy was found to be 0.06 in men and 0.05 in women (Table 7).

where as pre-hypertension was found in age 41-50 years where p value for pre-hypertension, stage- I hypertension, stage II hypertension are 0.015, 0.022, 0.015 respectively.

DISCUSSION

Risk factor for stroke is characteristic of an individual or of a population associated with an increased risk of disease despite significant advances in the understanding or its underlying pathophysiology and the

Table 2: Demographic and stroke characteristics (N=290)

Patient characteristics	Number of patients	Percentage (%)
Marital status		
Married	251	87
Unmarried	28	10
Widow	11	03
Clinical Manifestation		
Weakness	142	49
Speech disturbance	134	46
Gait disturbance	12	04
Loss of consciousness	84	34
Sensory disturbance	28	10
Vertigo/dizziness	06	02
Nausea/vomiting	54	19
Visual disturbance	116	40
Headache	36	12
Convulsion	28	10
Region of brain infarct		
Left side	129	44
Right side	147	51
Both	14	05
Disability		
Regional ischemia		
Hemiplegia	167	58
Quadraplegia	61	21
Paraplegia	21	07
Global ischemia		
Dystonia	28	10
Athetoid	13	04
Fall risk management		
≥2	224	77
<2	66	23
INSURANCE		
Arogra sri	134	46.20
Life insurance	48	16.65
Employees health insurance	40	13.79
None	68	23.44

Table 3. Characteristics associated with gender difference with stroke patients Co-morbidities.

Co- morbidities	Men	%	Women	%	Total	%	'p' value	Significance
Diabetes mellitus	49	17%	22	8%	71	24%	0.5000	NO
Hypertension	98	34%	70	6%	168	58%	0.5000	NO
IHD	6	2%	3	1%	09	3%	0.5000	NO
None	27	9%	15	5%	42	14%	0.5000	NO

Table 4: Comparison between young and non-young stroke patients

VARIABLE	Young (< 45 years) (n=88)		Non-young (>45 years) (n=202)		'p' value	Significance
	M	W	M	W		
Hypertension	24	12	74	58	0.0259	*
Diabetes mellitus	17	05	38	17	0.0417	*
Smoking	39	02	73	01	0.9	NS
Chronic alcoholic	29	01	71	03	0.9	NS
Anti-platelet therapy						
Aspirin	27		03		06	04
Clopidogrel	39		18		16	06
Disability						
Hemiplegia	52		19		15	04
Quadraplegia	03		01		02	01
Paraplegia	00		00		02	00

Table 5: Depict the type of antibacterial agent prescribed for stroke patients.

Class	Agent	Number of agents prescribed		Total
		M	W	
Quinolones	Ciprofloxacin	03	06	09
Beta lactam pencillins	Amoxicillin	10	02	12
	Amoxicillin + Clavulonic acid	02	03	05
	Ampicillin	26	12	38
	Cephalosporin	54	18	72
'p' value		0.0625	0.0625	r^2=0.0189 (*)

Table 6: Anti-hypertensive combination therepy among men and women

Combination therapy	Men (%)	Women (%)	Total
A+D	30	13	43 (59.72%)
A+C	12	02	14 (19.44%)
A+C+D	04	03	07 (9.72%)
B+C	03	01	04 (5.55%)
B+D	01	01	02 (2.77%)
D+C	02	00	02 (2.77%)
Total	52	20	72 (100%)
'p' value	0.06	0.05	r^2=0.0104

A = ACE INHIBITOR, B = BETA-BLOCKER, C = CALCIUM CHANNEL BLOCKERS, D = DIURETICS

Table 7 summarize the drug use evaluation among men and women population of stroke. The most predominant drug utilized in our study was anti- hypertensives ((228(79%)) and least was anti-diabetic drugs 14(5%). the 'p' value was found to be 0.0019 which is significant.

Drug	Men (%)	Women (%)	Total (%)
Mannitol (20%)	78	40	118
Paracetamol	136	36	172
Antibiotics	104	26	128
Atorvastatins	90	28	118
Multivitamins	30	08	38
Ranitidine	130	42	172
Aspirin	18	02	20
Anti hypertensives	178	48	228
Anti diabetic drugs	12	02	14
Thrombolytics	46	16	62
P value	0.0019		
r^2	0.8231		
Significance	**		

Table 8. shows the single versus multiple therapies of antibacterial agents in our study population. The most commonly the drug therapy prescribed in this study was single drug therapy (114(39.31%)) and least three drug combinations was found among 4(1%).

Therapy	Number of patients	Percentage (%)
Single drug	114	39.3
Two drugs	13	4.48
Three drugs	04	1.37
Four drugs	01	0.34
Multiple drugs	00	0

Table 9: Comparison between age related versus number of disability in stroke patients

Age (years)	Number of any disability	Number of severe disability
18-30	19	05
31-40	29	09
41-50	57	28
51-60	135	93
61-70	124	85
71-80	16	04
81-90	04	00

Table 10. Shows the mean arterial pressure of the stroke patients.

Age (years)	> Borderline		Total	<Borderline		Total	Optimum		Total
	M	F		M	F		M	F	
18-30	08	04	12	05	02	07	01	00	01
31-40	14	05	19	06	02	08	01	00	01
41-50	10	06	16	17	12	29	03	01	04
51-60	16	10	26	19	11	40	02	01	03
61-70	18	06	24	30	18	48	00	00	00
71-80	18	13	31	09	03	12	00	00	00
81-90	02	00	02	06	01	07	00	00	00
'P' value	0.0223	0.022		0.0156	0.0313		0.0975	0.0358	
Significance	Yes	Yes		Yes	Yes		No	No	

Table 11: Association of age versus different stage of hypertension in stroke patients.

Age (years)	Normal			Prehypertension			Stage I-hypertension			Stage II hypertension		
	M	F	Total	M	F	Total	M	F	Total	M	F	Total
18-30	04	02	06	04	02	06	02	01	03	07	03	10
31-40	10	06	16	12	08	20	13	09	22	10	07	17
41-50	11	04	15	19	08	27	31	21	52	36	24	55
51-60	07	04	11	10	06	16	44	26	70	59	34	93
61-70	13	07	20	07	03	10	21	12	33	12	09	21
71-80	05	04	09	08	04	12	14	08	22	11	08	19
81-90	03	02	05	02	01	03	02	01	03	04	02	06
P value	0.0 15	0.02 13	0.01 56	0.015 6	0.022 3	0.015 6	0.022 3	0.02 23	0.022 0	0.0156	0.0 156	0.01 56
Significance	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes

development of more effective methods of the management stroke continues to be a leading cause of mortality and physical ability worldwide. The basic risk factors for stroke are well known. They include hypertension, diabetes mellitus and family history of stroke, ethnicity, obesity and hyperlipidemia. Studies done in developed countries have shown that hypertension is one of the most powerful and prevalent risk factors for "first stroke" and also an independent risk factor for recurrent stroke after Transient Ischemic Attack. There is a continuous and linear relationship between blood pressure and risk stroke Philip, (1998). Hypertension was the most common risk factor identified overall gender and for both types of stroke. About 58% of the study population had elevated systolic and diastolic blood pressure. These findings are similiarly to kaul et al., 2000. Studies conducted in india and other parts of the world, such as, Turkey (Kumral et al., 1998; Israel et al., 1996; Moulin et al., 1997); France et al., 2000; Ireland and Amu, 2005), Nigeria; (Amu et al., 2005) Corroborates with our finding. In a comparison of risk factors between young and non-young patient, Hypertension, diabetes mellitus, smoking and alcohol drinking were more prevalent in non-young men when compare to women population. Whereas, hypertension, diabetes mellitus was most significant however, Fahmi et al (2008) contrast to our findings hypertension, diabetes was not significant in their study.

A recent assessment of world-wide guidelines for the prevention of ischemic stroke found a guidelines that endorsed aspirin or initial therapy. 6 of these guidelines also suggested other antiplatelet as options for first-line therapy given their efficacy in protecting against recurrent ischemic stroke (Hart, 2002; Sacco, 2000).

Our analysis found a low rate of prescription antiplatelet and anticoagulant use among study population. These findings were similar to zaher et al., 2005. According to our results as many as 80% of patients who were not taking prescription antiplatelet drug, could be taking aspirin. However this does not neglect the critical point that against the background of current therapy. Although aspirin has been the main study of preventative treatment some clinical studies have demonstrated that antiplatelet agents are superior to aspirin for preventative ischemic stroke therapy and offer the opportunity to maximize the benefits of ischemic stroke reduction in secondary prevention (Majid, 2001; Sacco, 2000). Several non-antiplatelets, pharmaceutical agents have also been shown to reduce the rate of ischemic stroke. This may add to the complexity in deciding on a specific patient's drug regimen (Wilterdink and Easton, 1999). Statins have been demonstrated to reduce the risk of IS in both primary and secondary preventive efforts MRC/BHF 2002; Law et al., 2003; Blauw et al., 1997; Bucher et al., 1998; Moore and Experts, 2003). Recent data report that heart protection study and the Anglo Scandinavian cardiac outcome trial (ASCOT) show stroke reduction in patients with normal or only slightly elevated low density lipoprotein levels suggesting a cholesterol independent mechanism for stroke rate reduction (Padma et al., 2004) . Although ACE inhibitor equivalent reduction in risk of stroke (Koul et al., 2000). This finding was similar to previous literature of Zaher et al (2005).

CONCLUSION

This study has shown that stroke risk factors and overcoming barrier in prevention of stroke in a rural community of India. In addition to that collaborative efforts are needed to improve the health care system in rural population. These results suggest that several measures must be taken to prevent primary risk factors like hypertension and diabetes mellitus, create awareness among public and primary health care workers for early referral of stroke to neurology departments and supplementation of thrombolytic drugs in golden period may give good results in the therapeutic outcome of the patient. Suggesting better lifestyle modifications and encouraging the patient to follow up medication regularly helps in improving the quality of life of the patients. Stroke data banks and national stroke registries must be established to provide further information on the epidemiology of stroke in India. More studies are needed to investigate risk factors of young patients >45 years. Several limitations have been noted in our study. The study was hospital based rather than population based, but having our centre has the only referral centre is probably reflecting the actual burden of stroke in the developing country. In considering risk factor, the interplay of different factors, especially obesity, chewing tobacco, non chewing tobacco and alcohol should be considered for further studies.

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