PREVALENCE OF RISK FACTORS ASSOCIATED WITH STROKE

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Contribution

FS designed the study and did manuscript writing. SG did data collection. AS did review and final approval of manuscript. All authors contributed equally to the submitted manuscript.

All authors declare no conflict of interest.

ABSTRACT

Objective: To assess the most common type of stroke and to determine the rate of different risk factors of stroke.

Methodology: This cross sectional study was conducted at Armed Forces Institute of Rehabilitation Medicine, Rawalpindi, from 1st July to 31st December 2016. The study included patients with acute or chronic stroke of either type i.e infarct or hemorrhagic stroke. Pre planned questionnaire including several variables like age, gender, type of stroke, area involved, side of hemiplegia and known risk factors of stroke like hypertension, diabetes mellitus, cardiac diseases, smoking, stress, sedentary life style and family history was recorded. Sampling was done by consecutive non-probability technique. The data was collected and analyzed using SPSS-20.

Results: Among 100 stroke patients 65% were males. The mean age was 20 to 60 years. About 75% had ischemic stroke while 25% had hemorrhagic stroke. Among all stroke patients 64% had sedentary life style. 34% patients had family history of stroke, 71% had hypertension, 52% had diabetes mellitus and 35% males had habit of smoking. Of all 68% patients had MCA lesion, 7% had PCA lesion and 25% had ACA lesion, 33% had cardiac problems and stress was among 31% patients.

Conclusion: Our study explored that risk factors for stroke are advanced age, sedentary life style and associated diseases like hypertension and diabetes mellitus

Key Words: Prevalence, Stroke, Risk factors

INTRODUCTION

Cerebrovascular accident or stroke is the rapid loss of brain function due to disturbance of supply of blood to the brain.1 As a result, the affected area of brain cannot perform function and this might result in hemi paresis, hemiplegia, aphasia or hemianopia.2Stroke is the second main source of mortality worldwide and a leading cause of disability in adult population.3According to the estimates of WHO, in 2002 approximately 5.5 million people died of stroke and about 20% of these deaths occurred in South Asia.4 The main types of stroke include hemorrhagic stroke and ischemic stroke. Ischemic stroke occurs due to blood clot or thrombus and it accounts for 75% of all stroke types. Hemorrhagic stroke occurs due to rupture of blood vessel on brain's surface.5In Pakistan the incidence rate of stroke is very high and it is increasing to 350,000 new cases every year.6The risk factors of stroke have been classified as modifiable and non-modifiable. The non-modifiable risk factors include gender, age, family history and ethnicity. The modifiable traditional risk factors include diabetes, hypertension, obesity, smoking, hyperlipidemia, atrial fibrillation, carotid artery disease and lack of physical activity. 7,8The socioeconomic burden of risk factors of stroke is very high in Pakistan i.e. in terms of diabetic patients in 2020 Pakistan will be the fourth most populous country.9Hypertension is considered as the major modifiable risk factor for stroke. According to National Health Survey of Pakistan (1990-4) the economic burden of hypertension is very high in the country.10Although there is no data on demographics of stroke in community but according to hospital based studies there is high proportion of young stroke.11 In a population based study among Pushtoons community in Karachi, systolic BP, diabetes and increased dietary salt intake were identified as independent risk factors of stroke.3Outcome of stroke depends on where the stroke occurs and how much part of brain is affected. Smaller stroke results in weakness of arm or leg. Whereas larger stroke results in paralysis or even death.5To reduce the burden of stroke the most effective mean is modification and treatment of vascular risk factors.12

Stroke prevention begins with recognition of its risk factors by a patient and clinicians treating the patient. Due to high mortality rate and the limitation of treatment on prognosis found in patients with stroke, it is time to act and identify the risk factors for stroke in local Pakistani population. There is a paucity of reliable information on the possible risk factors for stroke. The purpose of this study was to provide information regarding prevalence of the major modifiable and non-modifiable risk factors among the stroke patients presenting to Armed Forces Institute of Rehabilitation Medicine.

This study will help in better understanding of relative importance of the risk factors (hypertension, diabetes, cardiac diseases, sedentary lifestyle, stress, family history and smoking) for stroke and lead to better secondary prevention. It will help to easily target the people who are really prone to stroke. It will also limit the future burden of stroke in the increasing elderly population.

The objective of the study was to determine the rate of different risk factors of stroke

METHODOLOGY

This cross sectional study was conducted at Armed Forces Institute of Rehabilitation Medicine (AFIRM) from July 2016 to December 2016. The study included patients with acute or chronic stroke of either type i.e infarct or hemorrhagic stroke. Stroke was defined by WHO as neurological deficit of cerebrovascular cause that persists beyond 24 hours or is interrupted by death within 24 hours. Infarction stroke was defined as the stroke which occurs when a blood vessel supplying blood to the brain is obstructed. Hemorrhagic stroke was defined as the stroke which occurs when a weakened blood vessel ruptures.

Exclusion criteria was patients with traumatic brain injury and patients having any other neurological disorders like brain tumor, Parkinson's disease, multiple sclerosis, alzhiemer disease, epilepsy etc. Neurological disorder was defined as any disorder of the nervous system which may results in paralysis, muscle weakness, poor coordination, loss sensation, pain, seizures, and altered level of consciousness.

Pre planned questionnaire including several variables like age, gender, type of stroke, area involved, side of hemiplegia was recorded. Known risk factors of stroke like hypertension, diabetes mellitus, cardiac diseases, smoking, stress, sedentary life style and family history was also recorded. Sampling was done by consecutive non-probability technique. A written informed consent was taken from the patient attendants. The data was entered in specially designed proforma. Data was entered and analyzed using SPSS version 20. Frequencies and percentages were calculated for all variables and risk factors of stroke. Continuous variables were analyzed to find mean and standard deviation. Results were presented in tabulated form.

RESULTS

A total 100 stroke patients were included in the study. Of these patients 65 % were males and 35 % were females. Age wise distribution of patients is shown in table 1 in which 25 % were in age group of 40-50 years, 39 % were in age group of 50-60 years, and 23 % were in age group of 60-70 years. About 75 % patients had infarction stroke and 25 % patients had hemorrhagic stroke. The type of lesion showed that 68 % patients had middle cerebral artery lesion, 25 % patients had anterior cerebral artery lesion while 7 % patients had

posterior cerebral artery lesion. Right sided hemiplegia was found in 57 % patients whereas 43 % patients had left sided hemiplegia. About 71 % patients had hypertension, 52 % had diabetes mellitus, 33 % patients had cardiac diseases and 35 % patients were smokers. 34 % patients reported family history of disease, 31 % reported stress and 64 % patients reported sedentary life style. The detail of risk factors is shown in table 2.

Table 1: Demographics Variables of Study Population (n=100)

Variables	Percentage (%)
Age	
20-30	2%
30-40	6%
40-50	25%
50-60	39%
60-70	23%
70-80	5%
Gender	
Male	65%
Female	35%
Type	
Infarct	75%
Hemorrhage	25%
Hemiplegia	
Right	57%
Left	43%
Area involved	
MCA	68%
ACA	25%
PCA	7%

Table 2: Risk Factors of Study Population (n=100)

Variables	Percentages (%)
Hypertension	
Positive	71 %
Negative	29 %
Diabetes Mellitus	
Positive	52 %
Negative	48 %
Cardiac diseases	
Positive	33%
Negative	67 %
Stress	
Positive	31 %
Negative	69 %
Smoking	
Positive	35 %
Negative	65 %
Family history	
Positive	34 %
Negative	66 %
Sedentary Life style	
Positive	64 %
Negative	36 %

DISCUSSION

Stroke mortality is declining in the west, identifying the clinical patterns and the risk factors and intervening to control or modify them remain the most important mean of reducing stroke incidence.[13] Some determinants of stroke, such as age, gender, race, ethnicity and heredity cannot be modified they are risk markers. As such, they need to be considered in patient assessments.[13] In the ongoing study we explored the risk factors of stroke due to its high incidence in Pakistani population. Increasing age is clearly the strongest determinant of the number of new cases of stroke each year. Men maybe at greater risk of stroke than women, but the difference is small.[13] The mean age of stroke presentation 20 to 60 years was relatively lesser here than in the west 76 to 80 years.[13] Our study on Pakistani population

showed that prevalence of stroke was high in low socioeconomic group and majority of patients were males (65%). A study by Tintinalli et al revealed that infarction stroke was common.[14] Consistent with their findings Infarct stroke (75%) was also common in our study. According to Pakistan Stroke Society more than 70% patients with stroke are hypertensive. Hypertension is the most powerful and important modifiable risk factor for stroke. Our findings of hypertension replicate the findings of hypertension in a study conducted at Karachi by Taj F et al and in a large case control study in China also, hypertension was found as the most important and dangerous risk factor for stroke.[15] Hypertension was recognized as the most common risk factor of stroke in our study found in 71% patients. The prevalence of hypertension in our study is high and is similar to other published articles such as by Adnan Shah et al.[16] Diabetes mellitus was recognized as the second most common risk factor for stroke found in 52% patients. This is comparable to 48% by Syed et al and 49% by Nadia et al.[17,18] The risk of stroke is four times higher in diabetic than non-diabetics. Smoking is a causative factor of various pathological conditions such as different types of cancer, stroke heart diseases and chronic respiratory diseases. Framingham study identified smoking as an independent risk factor for stroke, proportional to the number of cigarettes smoked per day.[19] Smoking doubles overall risk of stroke compared to non-smokers.[20] It contributes to 12 to 14% of all strokes related deaths.[21] Smoking was also considered a risk factor in our study and found in more than half (35%) of male patients. Middle cerebral artery is the most common type of cerebral vascular territory infarct and accounts for two-thirds of cerebral infarcts.[22] MCA lesion was found in 68% patients in our study. In addition the ongoing study showed that sedentary life style from the past 20 years was an important predictor of stroke and found in 64% patients. Cardiovascular disease is common in stroke patients. It increases the estimated risk of stroke by 2 to 4 times.[13] Heart diseases that are risk factor leading to stroke are atrial fibrillation, left ventricular hypertrophy, coronary artery disease, congestive heart failure, patent foramen ovule and valvular heart diseases.[23] It was found in our study that 33% patients had cardiac problems. According to study conducted at Agha Khan University Karachi 55.8% cases were found to have stressful life.[24] Low income, large family size, high dependency ratio and hectic life style are the common determinants of stress. Our study also revealed stress as a contributing factor of stroke found in 31% patients. According to a study conducted by K Abbas et al family history of stroke was more frequent in young adults than in middle aged and very old patients.[24] Among the patients in our study 34% had family history of stroke.

The hospital based sample might not be representative of the population at large. Some other factors like awareness of stroke warning signs, sleep duration and quality, medication dosage, dietary and psychosocial factors were not measured in our study but these might also be significant risk factors for stroke. Large multicenter nationwide population based prevalence, and incidence studies are required. Physicians should identify risk groups and encourage them toward good compliance to drugs and proper disease control. Health professionals should encourage physically active life style and recommend individuals to adhere with exercises on daily basis. We also recommend 30 minutes exercises as already mentioned in related studies. We need to develop proper prevention and treatment guidelines specific to our population and region. Future research can be done to establish the role of physical therapist and other exercise prescriber in maintaining health. Future research can be done on methods of promoting community education about prevention of stroke and appropriate responses by people who experience stroke.

CONCLUSION

Our study explored that risk factors for stroke are advanced age, sedentary life style and associated diseases like hypertension and diabetes mellitus.

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