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Frequency of Key Risk Factors, Disability and its Impact on Activities of Daily Living in Stroke Patients

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A B S T R A C T

Background: Stroke is a very disabling condition producing a burden on the society being the major cause of morbidity and mortality.

Objective: The main objective of the study was to find the frequency of key risk factors among stroke in twin cities and to find association between different risk factors including physical activity and disability.

Methodology: A cross sectional descriptive study was conducted on 168 diagnosed indoor patients of stroke of either gender suffering from any type of stroke by using non probability purposive sampling from twin cities from May 2016 to Sep 2016. Data was collected by using demographic details, Modified Rankin Scale, Barthel Index and Rapid assessment of physical activity (RAPA) scale while smoking habits of patients were evaluated by Fagerstrom Test for Nicotine Dependence (FTND) scale. Data was analyzed by SPSS 20.

Results: Hypertension and cardiac problems were more frequent among the stroke. We found that mean for the FTND scale was 1.32± 2.84, for Barthal scale was 3.78± 3.81 and for modified Rankin scale was 4.10± 1.45.

According to the results, strong association was found between RAPA 1 and RAPA 2 and also between modified Rankin and Barthal index scales whereas no association was found between age and modified Rankin scale and modified Rankin and FTND scale.

Conclusion: There is an association between disability and Physical Activity. Majority of the patients suffered severe disability and physical dependence in ADLs after stroke. Diabetes, Hypertension, smoking and cardiac issues were major risk factors in majority cases.

Introduction

Stroke is one of the major cause of morbidity and mortality, being the third cause of death all around the world.[1] But the exact incidence and prevalence of stroke and how much it affects the body and causes death, is not known yet and no exact data from different regions of the world is available.[2] According to the studies among all types of stroke, 80% are ischemic, the remaining being hemorrhagic(15% intracerebral hemorrhage, 5% subarachnoid hemorrhage).[3] Stroke without an evident explanation or cryptogenic (of unknown cause) stroke constitutes about 30-40% of all the ischemic strokes.[4] However, in Asia regarding etiology, intracranial atherosclerotic stenosis and occluded small vasculature are two mostly used classifications of stroke.[5.]

Functional impairments that develop after stroke require serious attention as 20% of people after stroke take medical care for 3 months in hospitals or other centers for rehabilitation and still around 15 to 30 percent remain functionally impaired for whole of life putting burden on the economy.[6]

Various risk factors have been identified regarding stroke, among which some of them are modifiable and others are non-modifiable. Modifiable risk factors include: hypertension, atrial fibrillation, smoking, cardiovascular diseases, sedentary life style, dyslipidemias, obesity, increase blood cholesterol, alcohol intake, poor dietary habits and to some extent diabetes. However, age, gender, race, prior stroke are the factors that cannot be

modified in any way. Now some studies have also shown migraine as a risk factor of stroke.[7-10]

Risk factors should be properly identified, only then they can be prevented. By providing awareness about all the risk factors, stroke can be prevented in an effective way. The current study is conducted to find out the frequency of key risk factors among stroke in twin cities and to find association between different risk factors including physical activity and disability.

Methodology

A cross sectional descriptive study was conducted in various hospitals of Rawalpindi and Islamabad from May 2016 to September 2016. 168 patients were included in the study by using non probability purposive sampling technique. Indoor patients of any type of stroke with either gender filling consent form were included in the study, while all other patients affected with tumors, infectious diseases, related co morbidities and critically ill patients that were unable to respond were excluded from the study. Data was collected by using demographic details, Modified Rankin Scale was used to find the disability level, Barthal index and Rapid assessment of physical activity (RAPA) scale was used to find independence in activities of daily living and physical activity respectively. While smoking habits of patients were checked by Fagerstrom Test for Nicotine Dependence (FTND) scale. Data was analyzed by using SPSS 20 and results were evaluated. Mean was evaluated for different scales while correlation was used to find the association between the variables.

Results

Results of the study show that of all the affected patients, 112 (66.5%) were male and 56 (33.5%) were female. 65.8% of patients were those suffering from ischemic stroke and 34.2% were those suffering from hemorrhagic stroke. Mean age of patients was 59.80 ± 14.28 years. The distribution of the location of the stroke showed that out of all cases, 45.4% had right hemiplegia, 38.6% were those suffering from left hemiplegia and 16 % were those who have hemiplegia on both right and left side of the body. According to the results, MCA had the highest percentage (62.1%) whereas TIA had the least (1.2%). 36.7% patients suffered from ACA. Among all hemiplegics around 38.6% had diabetes, 23.9% were those suffering from any cardiac problem and 75.2% have hypertension. Mean value of FTND scale was found to be 1.32±2.84, Barthal index was 3.78± 3.81, Modified Rankin scale was 4.10± 1.45. However, mean for RAPA 1 and RAPA 2 were 3.83± 1.43 and 0.54± 1.12 respectively. Details of modified Rankin scale are shown in table I.

Table I: Modified Rankin Scale

Modified Rankin Scale	Frequency
No symptoms	5 (2.5%)
No significant disability despite symptoms	14 (8.6%)
Slight disability	4(2.8%)
Moderate disability	15 (8.4%)
Moderately severe disability	42 (24.3%)
Severe disability	88 (53.4%)

This table shows percentage frequencies of hemiplegia with their level of disability on modified Rankin scale.

Table II: Association of Variables

Variables	P Value
Age modified Rankin	0.07
Modified Rankin FTND	0.36
Modified Rankin Barthal	<0.001***
RAPA 1 RAPA 2	0.004**

***=P value<0.01*

****= P value<0.001*

This table shows association between different variables. According to the results a strong association was found between RAPA 1 and RAPA 2 (RAPA 1 shows aerobic activities while RAPA 2 tells about strength and flexibility) and also between modified Rankin scale and Barthel index, whereas no association was found between age and modified Rankin scale and modified Rankin scale and FTND scale.

Discussion

The study conducted by Sooyeon Kwon and colleges showed that cardiac problems were a major comorbidity which affected 31% of the sample size[(11)]. Results of our study revealed somewhat similar results with hypertension prevailing in the patients along with

cardiac problems. There is a significant decline in the trend of age of people suffering from stroke with 71.2 years of those reported in 1993 - 1994 to 69.2 years reported in 2005. There is also a noticeable increase in stroke in persons with age less than 55 years in 2005 when compared to previous reports.[12] Other than age the next most important risk factor that cannot be altered unfortunately is the hypertension. Hypertension is responsible for not only hemorrhagic stroke but also ischemic stroke.[13] A large number of studies have therefore established the fact that hypertension is a major risk factor leading to stroke. A study done by Joffers et.al showed that those countries which have decreased hypertension have also reduced rates of both stroke and ischemic heart diseases as there is direct relation of stroke with hypertension. Similar results were shown by the current study.[14]

RAPA scale revealed that majority of the patients did absolutely no exercise to increase physical fitness prior to the attack. A previously conducted study revealed that active individuals had a 20% lower risk and highly active individuals had a 27% lower risk of stroke incidence or mortality than the low-active individuals.[15] Our results are consistent with many previous studies which suggest that regular physical activity is related with decrease of cerebrovascular and cardiovascular events which may relate to enhance endothelium-dependent vasodilation. Physical activity not only decreases stroke risk, but also provides a prophylactic treatment strategy for increasing blood flow and reducing brain injury during cerebral ischemia.[16] Our study revealed slightly uneven gender distribution as there were slightly more males than females. Other studies showed results with higher prevalence of stroke in women than in men.[17] This contradiction might have occurred due to different lifestyle among different populations. Diabetics are more likely to develop stroke and they suffer increased morbidity and mortality after stroke; It is a well-established independent risk factor for stroke and is associated with high mortality.[18] A major percentage of the patients in our study were also positive for diabetes mellitus.

Numerous studies have proved that cigarette smoking continued to make a significant independent contribution to the risk of stroke generally and brain infarction specifically. A cohort study done in Japan showed high prevalence of both heart disease and stroke in smokers.[19] Similarly a study done on Chinese population showed positive relationship between stroke and smoking [(20)]. Although studies stated that all over the world men are five times more addicted to cigarette smoking than females however, this ratio changes with different countries showing different prevalence's.[21] In the current study also majority of the nicotine addicts were men and hence FTND scale was strongly associated with the gender. The addicts did not specifically inhaled nicotine in the form of cigarette rather various other forms like hookah and shisha were also involved. Another study reported positive relationship between smoking and stroke and stated that smokers are more liable to the development of stroke than nonsmokers and the risk increases about two to four times.[22]

The sample size was limited due to small duration of study and accessibility issues. It is recommended that further studies should be conducted with larger sample size and study should be conducted for a longer period of time ensuring more accurate results. Young adults should be educated about the hazards of smoking as a risk of stroke.

Conclusion

Our study concluded that there is an association between disability and Physical Activity. Majority of the patients suffered severe disability and physical dependence in ADLs after stroke. Diabetes, Hypertension, smoking and cardiac issues were major risk factors in majority cases.

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