Frequency of Atrial Fibrillation in Patients with Ischemic Stroke at a Tertiary Care Hospital

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Abstract

Objective: To determine the frequency of atrial fibrillation in patients with ischemic stroke at a tertiary care hospital. **Study design:** Cross-sectional study. **Setting:** Department of Medicine, Nishtar Hospital, Multan. **Material and methods:** All the cases of ischemic stroke (171), fulfilling inclusion criteria was recruited from indoor and outdoor of Department of General Medicine, Nishtar Hospital Multan from May 2015 to June 2017. These patients were investigated for the presence of atrial fibrillation, diabetes, hypertension, smoking and obesity and data was analyzed by SPSS version 18. **Results:** A total of 171 patients with ischemic stroke were taken. Of these 171 patients, 112 (65.5%) were male patients while 59 (34.5%) were female patients. Mean age of our patients was 58.32 ± 12.06 years, ranging from 41 to 81 years while 54 (31.6%) were aged up to 50 years and 119 (69.6%) were aged more than 50 years. Of these 171 patients, 52 (30.4%) were from rural and 119 (69.6%) from urban areas, 87 (50.9%) belonged to poor families and 84 (49.1%) belonged to middle income families. Sixty-six (38.6%) were diabetic and 106 (62%) were hypertensive. Mean body mass index was 25.39 ± 3.81 kg/m^2 with obesity was present in 46 (26.9%) while 66 (38.6%) were smokers and all smokers were male patients. Atrial fibrillation was noted in 72 (42.1%) in ischemic stroke patients. **Conclusion:** Frequency of atrial fibrillation was high in our study among patients with ischemic stroke. Atrial fibrillation was significantly associated with male gender, smoking. diabetes, hypertension and obesity.

Keywords: Ischemic stroke, atrial fibrillation, risk factors.

Introduction:

Stroke, having 2 major subtypes; Ischemic stroke and hemorrhagic stroke, is 2nd leading cause of deaths worldwide [1, 2]. It may be associated with more than 6 million deaths each year, of which 66 % deaths occur in resource limited countries. Treatment strategies for ischemic and hemorrhagic strokes vary greatly as ischemic stroke treatment involves thrombolytic and antiplatelet therapies whereas hemorrhagic stroke management involves hemostatic therapeutic option to improve clinical outcomes. It is not associated with increased rates of mortality but it is also associated with significant increase in adulthood physical disability and mental health impairment. Functional disability in these patients further complicates its prognosis being more prevalent in resource limited nation, moreover such patients of such countries are almost 10 years younger than that of western population [3, 4]. WHO estimates that till 2020 stroke will remain 2nd leading cause of death in developed as well as developing countries after ischemic heart disease (IHD)[3].

An obstruction of a blood vessel which supplies blood to the brain tissue leads to the development of typical sign and symptoms of ischemic stroke that comprises approximately 90 % of total stroke patients in our patients. Stroke risk factors are categorized as non-modifiable factors "age, family history, prior stroke, gender and ethnicity" and modifiable risk factors such as "hypertension, diabetes mellitus, coronary artery disease, arterial fibrillation, dyslipidemia, smoking, obesity, alcohol abuse and physical inactivity" [5-7].

Atrial fibrillation (AF) is an important modifiable risk factor of ischemic stroke which increases 4 – 5 folds of its risk in these patients. [8] Different underlying factors of stroke for atrial fibrillation increase with advancing age from 1.5% among patients aged 50 to 59 years to approximately 25% among person aged more than 80 years. The risk of stroke and AF both increase with age, it is anticipated that there was greater numbers of patients presenting with an acute stroke and concomitant AF as the population ages [9]. Atrial fibrillation is also associated with high in-hospital mortality in patients with Ischemic stroke [10]. A Chinese study has reported 41.5 % atrial fibrillation in patients with ischemic stroke [11]. Another study from China reported 11.71 % ischemic stroke patients having atrial fibrillation [12].

Atrial fibrillation leads to adverse clinical outcome in patients having ischemic stroke. Recent studies have

also documented atrial fibrillation to be an independent predictor of mortality in patients with ischemic stroke. Moreover different proportions of atrial fibrillation have been reported in literature ranging from 11 % to 45 % in the same population subsets. Early diagnosis followed by proper management of atrial fibrillation will help to improve quality of life of our patients and will increase their productivity as it hits main workforce ages (10 years younger as compared with western population) in underdeveloped countries like Pakistan.

Material and Methods:

All the cases of ischemic stroke (171), fulfilling inclusion criteria was recruited from indoor and outdoor of Department of General Medicine, Nishtar Hospital Multan from May 2015 to June 2017. Patients with hemorrhagic stroke (on CT scan), known patients with coronary artery disease and heart failure and diagnosed cases of brain tumors were excluded. Atrial Fibrillation was defined by "presence of any of a group of conditions in which the electrical activity of the heart was irregularly irregular detected on electrocardiogram by absence of p waves and irregular heart rhythm (irregular R-R interval) as assessed on ECG" and Ischemic Stroke was defined as CT scan brain plan shows hypo dense area in specific vascular territory. Once registered in the study, routine investigations were done including chest X-Ray, ECG and Echocardiography. The outcome variable i.e. atrial fibrillation (Yes, No) was noted on the proforma. Data was entered and analyzed by computer program SPSS-18. Descriptive statistics was applied to calculate mean and standard deviation for the age of patients. Frequencies and percentages was calculated for categorical variables like Atrial fibrillation (Yes/No), age groups, gender, history of hypertension, diabetes, residential status, family history of stroke, smoking and alcohol consumption. Effect modifiers like age, gender, hypertension, residential status, diabetes, Obesity and smoking were controlled by stratification and P-value equal or less than 0.05 was considered as significant.

Results:

A total of 171 patients with ischemic stroke were taken. Of these 171 patients, 112 (65.5%) were male patients while 59 (34.5%) were female patients. Mean age of our patients was 58.32 ± 12.06 years, ranging from 41 to 81 years while 54 (31.6%) were aged up to 50 years and 119 (69.6%) were aged more than 50 years. Of these 171 patients, 52 (30.4%) were from rural and 119 (69.6%) from urban areas, 87 (50.9%) belonged to poor families and 84 (49.1%) belonged to middle income families. Sixty-six (38.6%) were diabetic and 106 (62%) were hypertensive. Mean body mass index was 25.39 ± 3.81 kg/m^2 with obesity was present in 46 (26.9%) while 66 (38.6%) were smokers and all smokers were male patients. Atrial fibrillation was noted in 72 (42.1%) in ischemic stroke patients and table 1 shows different predictors of atrial fibrillation in these patients.

Table I   Risk factors of Atrial Fibrillation.

Risk factors		Atrial Fibrillation		P – value
		Yes	No	
Gender	Male (n=112)	65	47	0.001
	Female (n=59)	07	52	
Age (In Years)	Up to 50 (n=54)	19	35	0.245
	More than 50 (n=117)	53	64	
Residential status	Rural (n=52)	19	33	0.401
	Urban (n=119)	53	66	
Socioeconomic status	Poor (n=87)	40	47	0.353
	Middle Income (n=84)	32	52	
Diabetes	Yes (n=66)	20	46	0.017
	No (n=105)	52	53	
Hypertension	Yes (n=106)	66	40	0.001
	No (n=65)	06	59	
Smoking	Yes (n=66)	45	21	0.001
	No (n=105)	27	78	
Obesity	Yes (n=46)	12	34	0.014
	No (n=125)	60	65	

Discussion:

Ischemic stroke is associated with significant increase in morbidity, mortality and functional disabilities among survivors which has an impact on their quality of life, extra economical burden and increased healthcare costs for patients and hospital authorities. A total of 171 patients with ischemic stroke were taken. Of these 171 patients, 112 (65.5%) were male patients while 59 (34.5%) were female patients. A study conducted by Buchwald et al [13] from Sweden has also reported 52 % male patients predominance. However Friberg et al [14] reported female gender predominance, contrary to our findings. A study done by Saposnik et al [15] from Canada also documented 53 % male patients with ischemic stroke. Khan et al [16] from Quetta also reported 65 % male patients with ischemic stroke, similar to our findings. Shaikh et al [17] also reported 61 % male patients having ischemic stroke, similar to our results.

Mean age of our patients was 58.32 ± 12.06 years, ranging from 41 to 81 years while 54 (31.6%) were aged up to 50 years and 119 (69.6%) were aged more than 50 years.

A study conducted by Buchwald et al [13] from Sweden has also reported 73.1 ± 12.3 years mean age which shows occurrence of the stroke in our population is almost 15 years earlier than that of Swedish population. Thus ischemic stroke in our population has economical impacts on the national economy as it affects predominantly main workforce of our society leaving them permanently disable. Khan et al [16] from Quetta also reported 59.17 ± 10.52 years mean age of ischemic stroke patients, similar to our results. Shaikh et al [17] also reported similar results comparable to our findings.

Of these 171 patients, 52 (30.4%) were from rural and 119 (69.6%) from urban areas, 87 (50.9%) belonged to poor families and 84 (49.1%) belonged to middle income families. Sixty-six (38.6%) were diabetic and 106 (62%) were hypertensive. A study conducted by Buchwald et al [13] from Sweden has also reported diabetes in

21.2 % patients with ischemic stroke similarly hypertension was present in 62.8 % patients, being close to our findings. Friber et al [14] also documented 22.5 % diabetes and 72 % hypertension in ischemic stroke with atrial fibrillation. A study done by Saposnik et al [15] from Canada also documented 25.5 % diabetes and 68.1 % hypertension which is similar to our findings. . Khan et al [16] from Quetta also reported similar results. Shaikh et al [17] also reported 32.7 % diabetes and 60.6% hypertension in ischemic stroke, close to our findings.

Mean body mass index was 25.39 ± 3.81 kg/m^2 with obesity was present in 46 (26.9%) while 66 (38.6%) were smokers and all smokers were male patients. A study conducted by Buchwald et al [13] from Sweden has reported smoking in 14.2 % patients which is quite lower than those of our patients. Similarly another study by Friberg et al [14] also reported very low smoking rates compared with our trends. This high trend in smoking among our patients can be avoided by proper implementation of local legislation to control this practice which is also major cause of development of IHD and cancers as well.

Atrial fibrillation was noted in 72 (42.1%) in ischemic stroke patients. A study conducted by Buchwald et al [13] from Sweden has also reported 33.3 % atrial fibrillation in ischemic stroke, close to our results. A study done by Saposnik et al [15] from Canada documented 17.2 % atrial fibrillation in patients with Ischemic stroke which is lower than our results. . A Chinese study has reported 41.5 % atrial fibrillation in patients with ischemic stroke [11], close to our study results. Another study from China reported 11.71 % ischemic stroke patients having atrial fibrillation [12] which is less than that of our findings.

Conclusion:
Frequency of atrial fibrillation was high in our study among patients with ischemic stroke. Atrial fibrillation was significantly associated with male gender, smoking. diabetes, hypertension and obesity.

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Risk factors		Atrial Fibrillation		P - value
		Yes	No	
Gender	Male (n=)			
	Female (n=)			
Age (In Years)	Up to 50 (n=)			
	More than 50 (n=)			
Residential status	Rural (n=)			
	Urban (n=)			
Socioeconomic status	Poor (n=)			
	Middle Income (n=)			
Diabetes	Yes (n=)			
	No (n=)			
Hypertension	Yes (n=)			
	No (n=)			
Obesity	Yes (n=)			
	No (n=)			
Smoking	Yes (n=)			
	No (n=)			