FREQUENCY OF ATRIAL FIBRILLATION IN PATIENTS WITH ACUTE ISCHEMIC STROKE PRESENTING TO A TERTIARY CARE HOSPITAL

Syed Aman Shah[1], Zafar Ali[2], Sulaiman[3]

[1-3] Department of Medicine, Lady Reading Hospital, Medical Teaching Institution, Peshawar – Pakistan.
Address for Correspondence:
Dr. Zafar Ali
Assistant Professor, Department of Medicine, Lady Reading Hospital, Medical Teaching Institution, Peshawar - Pakistan.
Email: ali_zafar1973@yahoo.com
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ABSTRACT

Objective: To find out the frequency of atrial fibrillation in patients with acute ischemic stroke presenting to a tertiary care hospital.

Methodology: This descriptive study was carried out at the Department of Medicine, Lady Reading Hospital, Peshawar, from 1st august 2010 to 31st January 2011. Data was collected by non-probability consecutive sampling technique. Patients with acute ischemic stroke, of both genders and above 15 years of age were included in the study. Frequency of atrial fibrillation (AF) was determined. Data were analyzed using SPSS version 23.

Results: Among 163 patients, males were 89 (54.6%) and females were 74 (45.4%). The mean age was 63.47 ±11.62 years. Atrial fibrillation was found in 33 (20.2%) patients with acute ischemic stroke. Among these, 16 (48.48%) were males and 17 (51.51%) were females, p value 0.276. Frequency of AF in new onset stroke was 25/33 (75.8%) while in the recurrent stroke it was 08/33 (24.2%), with p value 0.402.

Conclusion: Atrial fibrillation was found with increased frequency in patients with acute ischemic stroke.

Key Words: Acute ischemic stroke, Atrial fibrillation

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INTRODUCTION

Stroke is the third most common cause of death and the major cause of serious long term disability in adults[1,2]. Ischemic stroke accounts for 80-85% of cases of stroke[3]. Atrial fibrillation (AF) is a common cardiac arrhythmia and is considered an important risk factor for stroke[4,5]. Its prevalence is <1% in general population, 6% in people older than 65 years of age and increases up to 9% at the age of 80-89 years[6]. AF increases the annual risk for stroke by 5 fold and accounts for 15% of all stroke cases[7]. Similarly, AF was found to be the second most prevalent cardiac risk factor of ischemic stroke[8]. Patients with ischemic stroke who have AF have a 10-20% risk of another stroke within the next 1-2 years[9]. Moreover, stroke in patients with AF has been reported to be more severe and associated with a less favorable outcome than in patients with sinus rhythm[7]. The mortality rate following ischemic stroke almost doubles when ischemic stroke is associated with AF[10].

Stroke is associated with significant disabilities and increased mortality. AF is one of the most common and preventable causes of ischemic stroke. In one study, AF was seen in 25% of patients with ischemic stroke[3]. However, another study showed 12% frequency of AF in patients with acute stroke[11]. So, a need was felt to determine the frequency of AF in our local setup. The objective of this study was to determine the frequency of atrial fibrillation in patients presenting with acute ischemic stroke presenting to a tertiary care hospital. This study will be an effort to generate local data and create awareness in physicians, cardiologists and neurologists regarding frequency of AF. This may help in reducing morbidity and mortality by taking appropriate preventive measures against ischemic stroke in patients with AF.

METHODOLOGY

A descriptive study was carried out at the Department of Medicine, Lady Reading Hospital (LRH), Peshawar, from 1st august 2010 to 31st January 2011. Data was collected by non-probability consecutive sampling technique. Patients with acute ischemic stroke of both genders and above 15 years of age were included in the study. On the other hand, patients with hemorrhagic stroke or transient ischemic attacks (TIAs) and those with cerebral tumors, brain abscess, tuberculomas and other space occupying lesions were excluded. Sample size was 163 patients with acute ischemic stroke. It was calculated based on the 12% frequency of AF in isch-

emic stroke[11] with 95% confidence level and 5% absolute precision. Acute ischemic stroke was operationally defined as sudden loss of neurological function that lasts >24 hours, with focal neurological deficit in the form of hemiparesis or cranial nerve palsies and was confirmed radiologically by hypodense lesions on computerized tomography (CT) brain. Atrial Fibrillation was defined as a cardiac rhythm disorder characterized by irregularly irregular radial pulse (on examination) and absent P waves as well as irregular R-R intervals on electrocardiography (ECG). Patients who were previously diagnosed or detected as AF based on history, medical records and previous ECG findings were considered to have known AF; while those who were not previously diagnosed or detected as AF were considered to have unknown atrial fibrillation.

Approval of the institutional ethical committee was taken and the research was carried out following principles of declaration of Helsinki. Written informed consent was obtained from every patient or their caregivers after explaining the purpose of our study and assurance regarding confidentiality of the obtained data. All adult patients, both male and female, with ischemic stroke (whether first episode or recurrent) confirmed on CT brain, were admitted to medical units of Lady Reading Hospital, Peshawar, through emergency and outpatient departments. Thorough history was taken and complete physical examination was performed. Specifically, their radial pulses were checked for irregularly irregular pulse or rhythm irregularity and blood pressure was recorded by standard method. Focused neurologic examination was performed for assessment of conscious level (Glasgow coma scale) and any neurological deficit. Cranial nerves, motor and sensory systems were examined in detail.

In all patients, 12 lead ECG was performed and presence of AF was confirmed on ECG. To look for hypodense lesions compatible with ischemic stroke, a CT scan of of brain was done in LRH, Peshawar. All other relevant investigations (blood sugar level, serum creatinine, lipid profile, complete blood count and erythrocyte sedimentation rate) were carried out in hospital laboratory of LRH, Peshawar.

Frequency of AF was determined in enrolled patients. In patients having AF, along with detailed history, their previous medical records and ECGs (when available) were checked, in order to know whether their AF is previously diagnosed or not, i.e. known AF or unknown AF. The duration of AF was documented in those with known AF. It was further categorized as acute, paroxysmal, persistent and permanent AF based on duration of AF and its control. Data was collected through objective-oriented proforma.

Data were analyzed using SPSS version 23. Descriptive statistics were used to analyze the data. Frequencies and percentages were used for qualitative or categorical variables like gender, frequency of atrial fibrillation, stroke presentation (first episode or recurrence) and AF status (known or unknown). Mean and SD were calculated for quantitative or numerical variables like age and AF duration. Chi square test was applied to compare the frequency of AF in both genders and between first episode and recurrent stroke. P value <0.05 was considered significant.

RESULTS

Among 163 patients with acute ischemic stroke, there were 89 (54.6%) males and 74 (45.4%) females. Overall, age of the patients ranged from 23 to 90 years (mean 63.47 ±11.62 years). However, age of the patients with AF ranged from 40-90 years (mean 66.18 ±11.91 years). Majority of patients having AF were in the age group of 70-79 years followed by 60-69 years and 50-59 years respectively (details are shown in Table 1).

Patients presented from various districts of Khyber Pakhtunkhwa including Federally Administered Tribal Areas (FATA). Most of the patients belonged to District Peshawar 48 (29.4%) followed by Charsadda 23(14.1%), Nowshera 15(9.2%) Swabi 14(8.6%) and other districts. Among stroke patients, 118 (72.4%) presented with first episode while 45 (27.6%) patients were having recurrent stroke.

Table 1: Age wise distribution of patients with atrial fibrillation (n=163)

Age Group (Years)	Atrial Fibrillation in Ischemic Stroke		Total
	Yes	No	
<50	3 (9.1%)	11 (8.46%)	12 (7.4%)
50-59	5 (15.2%)	30 (23.1%)	35 (21.5%)
60-69	8 (24.2%)	38 (29.2%)	46 (28.2%)
70-79	13 (39.4%)	36 (27.7%)	49 (30.1%)
80-89	3 (9.1%)	14 (10.8%)	17 (10.4%)
90-99	1 (3.0%)	1 (0.8%)	2 (1.2%)
Total	33 (20.2%)	130 (79.8%)	163 (100%)

Table 2: Gender wise distribution of atrial fibrillation

Gender	Atrial Fibrillation in Ischemic Stroke		Total (n=163)	p value
	Yes (n=33)	No (n=130)		
Male	16 (48.5%)	73 (56.2%)	89 (54.6%)	0.276
Female	17 (51.5%)	57 (43.8%)	74 (45.4%)	
Total	33 (20.2%)	130 (79.8%)	163 (100%)	

Table 3: Distribution of AF in patients with first episode and recurrent ischemic stroke

Atrial Fibrillation in Ischemic Stroke	Presentation of Ischemic Stroke		Total (n=163)	p value
	First episode (n=118)	Recurrence (n=45)		
Yes	25 (21.2%)	8 (17.8%)	33 (20.2%)	0.402
No	93 (78.8%)	37 (82.2%)	130 (79.8%)	
Total	118 (72.4%)	45 (27.6%)	163 (100%)	

Out of 163 patients with ischemic stroke, atrial fibrillation was found in 33 (20.2%) cases. Among these, 16 (48.5%) were males and 17 (51.5%) were females, with p value 0.276 (Table 2). Frequency of AF in new onset stroke was 25/33 (75.8%) while in the recurrent stroke it was 08/33 (24.2%), with p value 0.402 (Table 3).

Out of 33 patients with AF, 12 (36.4%) patients were having known AF while 21 (63.6%) were having unknown AF. Among 12 patients having known AF, 2 (16.7%) patients were having history of AF of 1-week duration (acute AF), 2(16.7%) patients had AF >1 week but <6 months (paroxysmal AF); 3 (25%) patients were having a history of >6 months but <1 year (persistent AF); and 5 (41.7%) patients were having a history of AF greater than 1 year (permanent AF) respectively.

DISCUSSION

Atrial fibrillation (AF) is an independent predictor of stroke recurrence and stroke severity, with increased risk for ischemic stroke and embolism among patients with a history of previous stroke[12]. In our study, the frequency of AF was 20.2%. Alam et al[11] did a study in Peshawar on 100 stroke patients and AF was found in 12% of patients which is lower than our results. Possible explanation for this difference is that they included patients with hemorrhagic stroke while our study was done only on patients with ischemic stroke.

Safeer et al[3] found AF in 25% of stroke patients which is slightly higher than our results. Moreover, the mean age of patients with ischemic stroke in their study was 50 years which is low as compared to our study where mean age of patients with ischemic stroke was 63.47 years. Aquil et al[13] reported AF in 5% of patients, which is much lower as compared to our results. This could be possibly because of increased prevalence of other risk factors of stroke in the studied population as the frequency of hypertension and diabetes in this study was very high i.e. 85% and 49% as compared to other local studies. Kamal et al[14] found AF in 2(4%) of stroke patients. This study included both ischemic and hemorrhagic stroke patients and also was having small sample size of only 50 patients. Similarly, Khan et al[15] did a prospective study in Karachi that contained 281 patients of stroke where atrial fibrillation was seen in 12 (4.2%) cases which was much lower than our results. Again this study included both ischemic and hemorrhagic stroke patients.

In contrast to our population, in the developed world several studies were carried out on large number of patients. Marini et al[6] did a population based study involving 3530 patients with ischemic stroke and found AF in 869 (24.6%) patients, which is slightly higher than our results. This could be probably because of high mean age i.e. 78.8 years at stroke onset in this study, as prevalence of AF increases with increasing age[16-18]. In the Copenhagen Stroke Study, which was a prospective, community-based study of 1197 patients with stroke, AF was diagnosed in 18% of the patients, which is quite similar to our results[19]. In a study in Japan that included 15,381 patients with ischemic stroke, The AF group comprised 3335 (21.1%) patients similar to our results[20].

In one population based study, AF was seen in 24.6% of patients with ischemic stroke and was seen more frequently in women aged 80 years and older; AF was also associated with a higher stroke recurrence rate within the first year of follow-up[6]. In our study, among 33 patients with AF, 48.5% were males while 51.5% were females. This slightly high female to male ratio in AF group is possibly because of high mean age in females i.e. 65 as compared to males i.e. 62, as prevalence of AF increases with increasing age[16-18].

Our results showed that 36.4% patients were having known AF while 63.6% were having unknown AF. Paciaroni et al[7] reported that 75.8% patients were having known AF while 24.2% patients were having unknown AF which is different than our results. Similarly, Somerfield et al[10] studied 412 patients of ischemic stroke. AF was seen in 23% patients, out of which 69% had known AF and 31% patients were having unknown AF. This difference could be probably because of lack of awareness and availability of health services to our poor population due to which they cannot be properly diagnosed in time.

CONCLUSION

Atrial fibrillation was found in 20.2% of acute ischemic stroke patients. It was more common in older patients. Majority had unknown AF. Among patients with known AF, most were having AF of greater than one year duration.

RECOMMENDATIONS

Patients with acute ischemic stroke need to be assessed for the presence of atrial fibrillation. As ischemic stroke is the most disabling consequence of AF, appropriate preventive and therapeutic measures need to be taken against ischemic stroke in patients with AF to reduce associated morbidity and mortality.

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CONTRIBUTORS

SAS conceived the idea, planned the study and drafted the manuscript. ZA and S helped acquisition of data, did literature review, statistical analysis and critically revised the manuscript. All authors contributed significantly to the submitted manuscript.