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**ORIGINAL ARTICLE**

# Frequency of Atrial Fibrillation in Acute Ischemic Stroke Patients at Tertiary Care Hospital

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## ABSTRACT

**Background:** Stroke is defined as the abrupt development of a neurologic impairment caused by a vascular mechanism. Atrial fibrillation raises the risk of stroke by five times and is responsible for overall 15 to 20% cases of strokes.

**Objective:** To find out the frequency of atrial fibrillation in acute ischemic stroke patients at tertiary care hospital

**Methodology:** The current study was descriptive done at the Medicine Department Qazi Hussain Medical Complex, Nowshera for duration of six months from November 2021 to April 2022. A 12 lead ECG was carried out for all the patients to confirm the presence of Atrial Fibrillation. All the data was collected by using predesigned Performa. Data analysis was done by using IBM SPSS version 20.

**Results:** In the current study, a total of 150 acute ischemic stroke patients were enrolled. There were 85 (56.67%) male and 65 (43.33%) females in our study. The overall frequency of atrial fibrillation was 18.67% (n=28). Based on the age wise distribution, atrial fibrillation was observed in 2 (7.14%) patients in age group ≤50 years, 4 (14.29%) in age group 51-60 years, 7 (25%) in 61-70 years, 13 (46.83%) in age group 71-80 years and 2(7.14%) in age group >80 years.

**Conclusion:** In our study atrial fibrillation was observed in 18.67% patients with acute ischemic stroke. Majority of the patients were old and observed wit unknown atrial fibrillation. Atrial fibrillation should be monitored in patients with acute ischemic stroke.

**Keywords:** Atrial Fibrillation; Acute ischemic stroke; Mortality; Morbidity

## INTRODUCTION

Stroke is defined as the abrupt development of a neurologic impairment caused by a vascular mechanism. Clinical signs and symptoms of focal or global neurological impairments are defined as lasting more than 24 hours [1]. Strokes are the third greatest cause of mortality in the United States, with about 500,000 strokes and 200,000 fatalities per year [1]. Stroke fatalities are prevalent in both western and eastern nations; however the rate in Asia is often greater as compared to west. The high incidence of diabetes mellitus, smoking and hypertension are the main contributors to this enormous toll [2, 3]. In Pakistan, the yearly frequency of stroke is predicted to be 350,000 new cases per year. The rate of survival amongst these patients is poor, and those who do survive have many difficulties as a result of the lack of sophisticated health and physiotherapeutic services [4, 5]. Ischemic strokes account for 85% of all strokes, whereas hemorrhagic strokes account for 15% [6]. The most common cause of ischemic stroke is atherothrombotic or embolic blockage of major cerebral arteries. Arterial abnormalities like the carotid arteries could all cause emboli [7]. Cardio-embolic strokes contribute for around 20% of all ischemic strokes, with atrial fibrillation (AF) and persistent atrial flutter being the most common causes [8].

AF raises the risk of stroke by five times and is responsible for overall 15 to 20% cases of strokes [9, 10]. Ischemic stroke and transient ischemic attack (TIA) are caused by emboli originating from the heart or travelling [11]. AF may affect people of any age, however it is more common (36.2%) in people of age 80-90 years than people of age 50 to 59 years (6.7%) old [12]. Ischemic stroke patients should be extensively evaluated for the existence of AF, since it increases the probability of morbidity and death by causing the stroke to recur [13]. In a current prospective population-based investigation, it was reported that the risk of recurrent stroke in AF patients is increased than non-AF patients. According to this research, 31.2 % of ischemic stroke patients developed AF [14]. When the degree of the stroke was assessed, the incidence of AF amongst patients with ischemic stroke raised from 29.7% to 43.8 % [14]. Another research indicated that 20% of 1549 individuals with ischemic stroke had AF detected on their ECG. The death rate in this trial was 6%, with 39% of patients being released disabled [15]. Very little data was identified at the national level, and none at the local level, based on a thorough review of the literature. This gives a strong reason to perform the present research. Therefore the current study was carried out to determine the frequency of Atrial Fibrillation in acute Ischemic Stroke patients at tertiary care hospital.

## METHODOLOGY

The current study was descriptive done at the Medicine Department Qazi Hussain Medical Complex, Nowshera. The duration of our study was six months from November 2021 to April 2022. This study approval was taken from the ethical committee of the hospital. The overall sample size was 150 based on WHO calculator for sample size. Non-probability sampling technique was used for the collection of data. The inclusion criteria for our study were all the patients of both the sex having more than 18 years and

diagnosed with acute ischemic stroke on CT brain. The exclusion criteria were patients with transient ischemic attacks or hemorrhagic, patients with cerebral tumors, brain tuberculomas and abscess. Detailed history was taken from all the patients along with and completes physical examination. A 12 lead ECG was carried out for all the patients to confirm the presence of Atrial Fibrillation. On the basis of duration atrial fibrillation was categorized into acute (1-week), paroxysmal (>1 week but <6 months), persistent (>6 months but <1 year) and permanent (> 1 year). All the data was collected by using predesigned Performa. Data analysis was done by using IBM SPSS version 20. Qualitative variables like frequency of atrial fibrillation and gender were documented by using frequencies and percentages whereas quantitative variables like age and duration of atrial fibrillation was documented by using mean and standard deviation.

## RESULTS

In the current study, a total of 150 acute ischemic stroke patients were enrolled. There were 85 (56.67%) male and 65 (43.33%) females in our study. (Figure 1) The mean (SD) age of the patients was 61 (9.12) years with minimum age of 25 and maximum age of 85. The overall frequency of atrial fibrillation was 18.67% (n=28). (Figure 2) Amongst 85 males atrial fibrillation was observed in 40 (47.06%) patients whereas amongst 65 females it was observed in 33 (50.77%) patients. Based on the age wise distribution, atrial fibrillation was observed in 2 (7.14%) patients in age group ≤50 years, 4 (14.29%) in age group 51-60 years, 7 (25%) in 61-70 years, 13 (46.83%) in age group 71-80 years and 2(7.14%) in age group >80 years. Amongst 28 patients with atrial fibrillation, 13 (46.43%) patients were observed with known atrial fibrillation whereas 15 (53.57%) patients were observed with unknown atrial fibrillation. Based on the duration of atrial fibrillation, amongst 13 patients with known atrial fibrillation, acute atrial fibrillation was observd in 3 (23.08%) patients, paroxysmal atrial fibrillation was observed in 2 (15.38%) patients, persistent atrial fibrillation in 3 (23.08%) patients and permanent atrial fibrillation was observed in 5 (38.46%) patients. (Table 1)

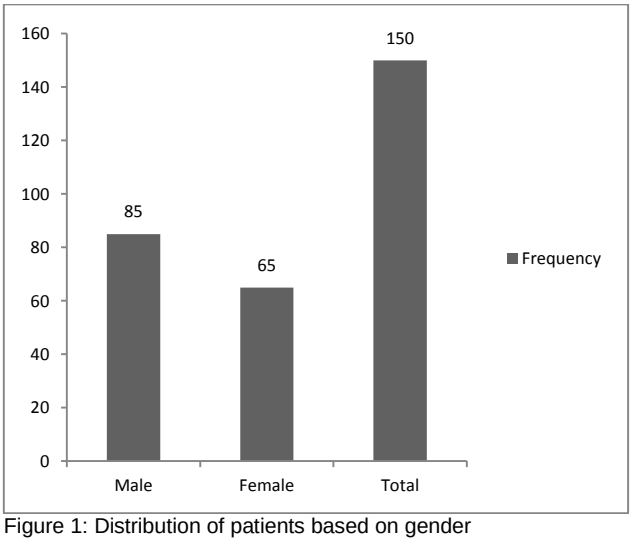


Figure 1: Distribution of patients based on gender

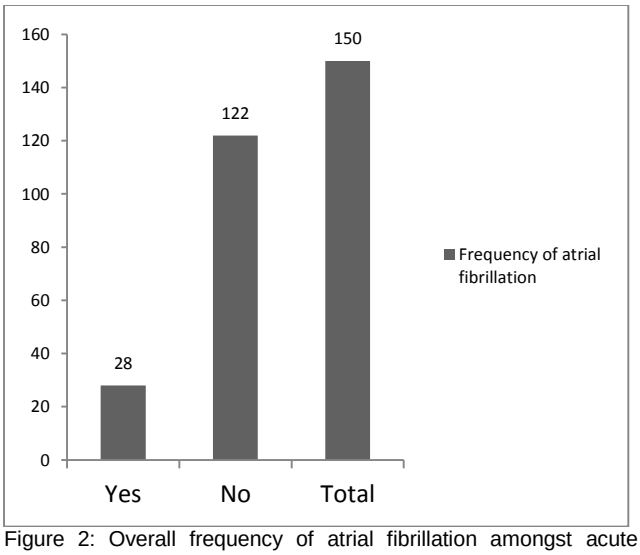


Figure 2: Overall frequency of atrial fibrillation amongst acute ischemic stroke patients

Table 1: Status of atrial fibrillation amongst acute ischemic stroke patients based on gender, age, status of atrial fibrillation and duration of disease

| Parameter | Sub category | Frequency (%) |
|---|---|---|
| Gender | Male | 40 (47.06%) |
| | Female | 33 (50.77%) |
| Age | ≤50 years | 2 (7.14%) |
| | 51-60 years | 4 (14.29%) |
| | 61-70 years | 7 (25%) |
| | 71-80 years | 13 (46.83%) |
| | >80 years | 2 (7.14%) |
| Status of atrial fibrillation | Known | 13 (46.43%) |
| | Unknown | 15 (53.57%) |
| Duration of disease among known atrial fibrillation | Acute | 3 (23.08%) |
| | Paroxysmal | 2 (15.38%) |
| | Persistent | 3 (23.08%) |
| | Permanent | 5 (38.46%) |

## DISCUSSION

With a history of prior stroke, atrial fibrillation is a significant prognostic factor of recurrence of stroke and severity, with an elevated risk of embolism and ischemic stroke [16]. In our study, the overall frequency of atrial fibrillation was 18.67% (n=28). In contrary to our findings, another study carried out on 100 patients of stroke in Peshawar reported a lower frequency (12%) of atrial fibrillation as compared to our study [17]. This might be due to inclusion of hemorrhagic stroke patients in their study while in our study; only ischemic stroke patients were included. A study carried out by Safeer et al. reported high frequency of atrial fibrillation (25%) than our study [18]. The average age in their study was 50 years while in our study the average age of atrial fibrillation patients was 61 years. In comparison to our study, Aquil et al. reported very low frequency of atrial fibrillation (5%) [19]. Another study done by Kamal et al. also reported lower prevalence of atrial fibrillation (2%) as compared to our study. They included only 50 patients of both hemorrhagic and ischemic stroke [20]. A previous study from Karachi carried out by Khan et al. reported atrial fibrillation in12 (4.2%) cases among total 281 cases. This

frequency is very low as compared to our study. In their study they included both hemorrhagic and ischemic stroke patients [21]. A population based study carried out by Marini et al. on 3530 ischemic stroke patients reported 869 (24.6%) patient with atrial fibrillation [13]. This prevalence of atrial fibrillation is slightly higher as compared to our findings. This might be due to high mean age (78 years) in their study as atrial fibrillation prevalence increases with the increase in age [22-24]. In accordance with our findings, a prospective done in Copenhagen reported 18% prevalence of atrial fibrillation which is very similar with our findings [25]. Another study carried out in Japan also reported similar prevalence of atrial fibrillation (21.1%) to our study [26]. In the current study, amongst 85 males atrial fibrillation was observed in 40 (47.06%) patients whereas amongst 65 females it was observed in 33 (50.77%) patients. A previous study also reported high prevalence of atrial fibrillation in women as compared to male [13]. Amongst 28 patients with atrial fibrillation in our study, 13 (46.43%) patients were observed with known atrial fibrillation whereas 15 (53.57%) patients were observed with unknown atrial fibrillation. A study carried out by Paciaroni et al. reported known atrial fibrillation in 75.8% patients while unknown atrial fibrillation was observed in 24.2% patients [15]. Another study carried out by Somerfield et al. reported 23% prevalence of atrial fibrillation in ischemic stroke patients, amongst which 69% patients have known atrial fibrillation and 31% have unknown atrial fibrillation [27]. This disparity is likely a result of our impoverished population's lack of knowledge and access to health care, which prevents timely and accurate diagnosis.

## CONCLUSION

In our study atrial fibrillation was observed in 18.67% patients with acute ischemic stroke. Majority of the patients were old and observed wit unknown atrial fibrillation. Atrial fibrillation should be monitored in patients with acute ischemic stroke. For individuals with atrial fibrillation, adequate preventative and therapeutic interventions against ischemic stroke are needed in order to limit the morbidity and mortality associated with this condition.

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