



A Prospective-Comparative Study on Extremity of Stroke in Patients with and Without Atrial Fibrillation as a Clinical Predictor

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Article History	Abstract
Received: 06 June 2023 Revised: 05 Sept 2023 Accepted: 18 Nov 2023	<p>Background: Atrial fibrillation (AF) is a leading cause of ischemic stroke. It is critical to confirm the impact of AF on stroke outcomes. Objective: To assess the risk factors for stroke in conditions with or without atrial fibrillation. • To compare stroke severity and outcomes in stroke patients with or without atrial fibrillation. • To assess the vascular risk factors and co-morbid conditions</p> <p>Method: Analysis of the patient's medical information, such as age, gender, kind of stroke, location, mode of therapy, severity, and results. antithrombotic therapy) on 100 stroke victims (50 of them who exhibited AF and the other 50 without). Results: Age 61 to 80 were associated with a greater risk of strokes (33% non-AF, 14% AF), while age groups 81 and above were associated with a higher chance of atrial fibrillation (2% AF).men and females had the same incidence of AF (12% each), with the exception that females were more common in the non-AF group (47%) than men (29%). Patients with ischemic stroke were more prevalent (73%), but patients with hemorrhagic stroke (6% AF, 9% non-AF) were more likely to have it. The CHAD2DS2-VASc SCORE and AH showed that hypertensive people had a greater risk of stroke in both the AF (10%) and non-AF (46%) groups. Overall, the AF (10%) and non-AF (46%) groups had hypertension as the most common co-morbid disease, with antihypertensive medications being the commonest prescribed medicine (23% AF, 59% non-AF).</p> <p>Conclusion: The study concluded that if treatment methods for atrial fibrillation and stroke are given, patient outcomes can be improved with sufficient assessment and strict adherence.</p> <p>Keywords: Severity, CHAD2DS2-VASc SCORE, antithrombotic therapy, atrial fibrillation</p>
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1. Introduction

Stroke ranks third in terms of premature death and disability and is one of the most common and leading causes of death in the modern world. Based on epidemiological studies conducted over the past 20 years, the global incidence of stroke continues to be a significant concern. Numerous attempts have been made to adapt to the situation, provide preventative care, and provide appropriate treatment in order to help reduce the rates of death. Atrial fibrillation is responsible for 20% of stroke cases (AF) and 1% of atrial fibrillation patients get cerebral hemorrhage. heart palpitations increase your risk of having a stroke by five times^[1]

A multi-systemic ailment called atrial fibrillation frequently coexists with other conditions known as comorbidities. In addition to raising the likelihood of incident atrial fibrillation, several of these comorbidities may also raise the risk of further problems^[2]. The root causes of atrial fibrillation might include hypertension, thyroid hyperactivity, heart valve problems, and lung sickness. Atrial fibrillation, however, frequently manifests itself. An ECG, or electrocardiogram aids in the confirmation of atrial fibrillation by medical professionals.

The fundamental process at play is that electrical signals in a healthy heart result in a regular beating. Normally, the heart pumps blood and contracts. Because atrial fibrillation causes disorganized electrical impulses, the erratic heartbeat might result in blood clotting in the atria, the heart's upper chambers, and

coagulation. Should there be a blood clot in the upper left chamber atrial) separates from the heart, it can enter the brain and result in a stroke, usually an ischemic one. The most common kind of stroke that occurs is a stroke. Two varieties of stroke exist—stroke ischemic and stroke from bleeding.

The kind of stroke most frequently connected to atrial fibrillation is an ischemic stroke. It is widely established that the prevalence of atrial fibrillation in ischemic stroke patients is rising quickly, which raises overall mortality as well as elevated risks of stroke death in particular [3] Silent AF, an asymptomatic form of AF that is responsible for over one-third of all ischemic strokes, is the primary cause of cryptogenic strokes. Sporadically detected under close observation or appears as a result. Current further study results validate this notion. Cardiovascular conditions such as atrial fibrillation, heart failure, and coronary heart disease have been shown via epidemiological research to raise the risk of stroke. Heart conditions such as atrial fibrillation, heart failure, and coronary heart disease all lower cardiac output, and these anomalies when linked to hypertension decrease cerebral up to 30% in blood flow [4]. In addition to traditional risk factors such as a larger body mass index, dyslipidemia, smoking, diabetes mellitus (DM), hypertension, and cardiac conditions key risk factors include a history of valvular heart disease, heart failure (HF), and coronary heart disease (CHD). reasons why atrial fibrillation occurs. Numerous risk factors unique to women, such as pregnancy and its Recent research have connected atrial fibrillation to both the number of children and its effects.

Moreover, there is conflicting information about the association between an elevated prevalence of atrial fibrillation with the age of menopause, which is a significant predictor of poor cardiometabolic risk [5].

A few analyses are taken into account to see the association between atrial fibrillation and stroke. Since anticoagulation is known to lower the risk of stroke in the presence of atrial fibrillation, atrial fibrillation identification is crucial for stroke prevention. [6]. Clinical variables that affect the severity of a stroke include the following: [A]. The National Institute of Health Stroke Scale (NIHSS) comprises the following: A structured evaluation method for evaluating stroke severity is the New England Health Services (NIHSS). It assesses a number of brain processes, such as speech, feeling, movement, and vision, and scores people according to the severity of their handicap. An increased NIHSS score denotes a more serious stroke. B] Location and size of brain lesion: A stroke's severity can be influenced by the location and size of a brain lesion. A bigger or more centrally situated lesion may cause a more severe neurological impairment. C] Symptom onset and duration: The beginning and length of a stroke's severity might be influenced by its symptoms. An abrupt start of symptoms that are severe, or a stroke that lasts longer might cause more serious neurological impairments.] Diabetes and other comorbidities heart disease, high blood pressure, and other underlying medical issues might all have an effect. Depending on how severe a stroke is. E] Clinical manifestation: A stroke's clinical presentation, which includes signs including numbness, weakness, slurred speech, and trouble seeing, which may be signs of stroke.

Because individuals with intermittent atrial fibrillation and other stroke risk factors have a high incidence of stroke, anticoagulation is probably helpful in preventing stroke in these patients. [7]. For patients with atrial fibrillation, therapies including cardioversion, catheter ablation, and anticoagulant drugs (such as warfarin or dabigatran) may be recommended to reduce the risk of stroke. Keeping up a healthy lifestyle that involves controlling blood sugar and blood pressure, may also help those with atrial fibrillation reduce their risk of stroke. The Elements to be the patient's age, gender, and kind of stroke (ischemic, hemorrhagic, or ischemic with stroke localization (a region of the brain fed by a carotid artery), hemorrhagic transformation or a spinal-basilar artery), the mode of therapy (thrombolysis or conservative), the degree of epilepsy. People with atrial fibrillation can be identified according to their risk of stroke using validated similar to CHADS2 (or) CHA2DS2-VASc prediction scores [8].

Chads2: A popular technique for classifying stroke risk in atrial fibrillation, the CHADS2 score was first introduced in 2001 by Gauge BF, Shannon W, et al.

Cha2ds2-Vasc: This score builds upon the CHADS2 score by refining and expanding upon the latter by including other typical risk variables for stroke, such as age 65–74, gender, and circulatory illness. Nieuwlaat Robby, Pisters Ron, Gregory Y. H. Lip, et al. made the proposal in [Fig – 1] 2006

Condition	CHADS2 Score	Points	CHA2DS2-VASc Score	Points
Congestive Heart failure (or left ventricular systolic dysfunction)	C	1	C	1

Hypertension: Blood pressure consistently above 140/90 mmHg (or treated hypertension on medication)	H	1	H	1
Age ≥ 75 years	A	1	A2	2
Diabetes mellitus	D	1	D	1
Stroke or TIA or thromboembolism in history	S2	2	S2	2
Vascular diseases (e.g peripheral artery disease, myocardial infarction, aortic plaque)			V	1
Age 65-74 years			A	1
Sex category (i.e., female gender)			Sc	1

Fig 1: CHA2DS2-VASc scale to assess the risk of stroke in patients with AF, also helps in the identification of the magnitude of anticoagulation therapy.

Has-Bled Score is used to forecast the evaluation of bleeding risk. When Ron Pisters et al. originally established the HAS-BLED score in 2010, they did so use data from a real-world cohort of 3450 anticoagulated patients with atrial fibrillation. They subsequently suggested treatment recommendations to estimate the possible dangers of bleeding. The HAS-BLED score indicates that individuals with atrial fibrillation are separated into three risk categories, where a score of 0 denotes low risk, a value of 1-2 denotes ≥ 3 denotes high danger, and ≥ 3 denotes intermediate risk. (Fig. 2)

Clinical Characteristics			Points
Hypertension	Uncontrolled, >160mmHg systolic	H	1
Abnormal renal and liver function	Dialysis, transplant, Cr >200µmol/L, Cirrhosis, bilirubin >2x normal, AST/ALT/AP >3x normal	A	1 or 2
Stroke history		S	1
Bleeding or predisposition to bleeding		B	1
Labile INR	Unstable/high INRs, time in therapeutic range < 60%	L	1
Elderly	Age > 65	E	1
Drugs or alcohol	Antiplatelet agents, NSAIDs, ≥ 8 alcohol drinks/week	D	1 or 2

Fig 2: HAS-BLED scores for bleeding risk assessment.

However, it is essential to carry out pertinent studies that examine atrial fibrillation's influence on stroke in order to better understand the relationship between atrial fibrillation and stroke and to support a more successful prevention of thromboembolic events. This study's primary goal is to identify the factors of the characteristics of stroke and, in light of such characteristics, contrast the severity and results of stroke in individuals in the event of atrial fibrillation or not. Additionally, it entails examining the risk variables in individuals who have or lack the stroke-causing factor ^[9].

2. Materials And Methods

Analysis of the patient's medical information, such as age, gender, kind of stroke, location, mode of therapy, severity, and results. antithrombotic therapy) on 100 stroke victims (50 of them who exhibited AF and the other 50 without). • Study site: In patients Department of General Medicine, Gandhi Hospital, Secunderabad – 500003. • Study period: October 2022 to March 2023. • Study duration: For a period of 6 months. • Study design: Prospective & comparative study. • Sample size: 100.

Inclusion Criteria: • Inpatient & outpatient of General Medicine Department. • All patients aged 20–85 years, hospitalized or having an emergency unit visit during the study period due to intracranial complications (stroke, intracranial bleeding, transient ischemic attack) and have a diagnosis of atrial fibrillation or without atrial fibrillation.

Exclusion Criteria: • Patients not to be below 20 years of age. • If the patient is absconded. • If the patient dies. • If the patient left the hospital in between the treatment course.

3. Results and Discussion

A prospective observational study was conducted among a said population with a sample size of 120 out of which 100 cases were taken into consideration based on our criteria. Assessment of the type of stroke, age, gender, other co-morbid factors, and risk factors were taken into consideration in order to know the severity of the stroke. AF is a relatively frequent cardiac arrhythmia with severe cardiovascular morbidity and death. The probability of embolic events, particularly embolic cerebrovascular accidents, is the most significant consequence. Careful risk stratification and assessment of stroke risk were performed using CHADS2 or CHA2 DS2 -VASc & HAS-BLED scores, which can potentially identify high-risk individuals who will benefit from OAC & Antiplatelets.

Upon analysis of different age groups for stroke patients in terms of the presence and absence of atrial fibrillation and observed that 14 (14%) patients with atrial fibrillation in age group 61-80, 2 (2%) patients of age group > 80, 7 (7%) for 41-60, and 2 (2%) for 21-40 out of a sample size of 100. Non-atrial fibrillation patients comprised 35 (35%) of the 41-60 age group, 33 (33%) of the 61-80 age group, and 7 (7%) of the 20-40 age group. According to the evidence, the age groups 61-80, >81 are more prone to atrial fibrillation as a result of aging and an age-related rise in comorbidities. As gender is one of the risk factors for atrial fibrillation & stroke analysis was done for the male and female gender in atrial fibrillation & non-atrial fibrillation population and based on our findings it was found that 13 (13%) female patients and 12 (12%) male patients were diagnosed with atrial fibrillation out of 100 reported instances. In contrast, non-atrial fibrillation patients were 46 (46%) female and 39 (39%) males. It was shown that females (13%) had a greater frequency of atrial fibrillation than males (12%). There was no statistically significant difference between men and women in the AF group. The present study is relevant to the study conducted by **Augustė Ragelytė et al., (2019)** [1].

Further, an assessment of different forms of stroke was made in terms of its efficacy in people with and without atrial fibrillation. There was a relationship between the types of strokes and AF, with approximately 7% of atrial fibrillation individuals suffering from ischemic stroke and 73% were non-atrial fibrillation. In comparison, 6% of those with atrial fibrillation and 9% of those without experienced a hemorrhagic stroke. 5% were found to have ischemic with hemorrhagic transformation type for non-atrial fibrillation individuals. According to the data, individuals who had an ischemic stroke were more likely to develop atrial fibrillation, and around 6% of those who had atrial fibrillation had a hemorrhagic stroke. The present study is relevant to the study conducted by **Peter Brønnum Nielsen et al., (2015)** [12].

Anticoagulants and antiplatelet therapy are of important factors in order to treat the bleeding and prevent further clots. Based on the data collected we identified that the drug therapy was given to the patients based on the kind of stroke, concomitant diseases, and other relevant circumstances. Patients with ischemic stroke were given antiplatelets, anticoagulants, and statins. Considering hypertension as one of the primary risk factors for stroke, over 59% of anti-hypertensive medicines were prescribed to patients without atrial fibrillation and 23% for those with atrial fibrillation, with statins accounting for 29% of the total. In our study, Ischemic stroke affects around 66% of the given population. 75% of the medications prescribed are antiplatelets, 14% are anticoagulants, 2% are fibrinolytic, which reduces the odds of additional clot formation, and the remaining 6% are cardiac glycosides, with 5% prescribed to patients with atrial fibrillation. The present study is relevant to the study conducted by **Rizaldy Taslim Pinzon et al., (2019)** [25].

Individuals with hypertension, females, and the age bracket of 65-75 years were much more likely to have a stroke in both the atrial fibrillation and non-atrial fibrillation categories, as determined by the CHAD₂DS₂-VASc and HAS-BLED scores. The present study is relevant to the study conducted by **Abdullah M. Alshehri et al., (2019)** [11].

Hypertension was found to be one of the leading co-morbid conditions based on the data collected 10% for AF & 46% for Non- AF respectively. Because The development of AF may be predisposed by associated renal impairment or proteinuria (often found in conjunction with hypertension). Regardless of whether a patient has AF or not, uncontrolled hypertension increases the risk of stroke. Uncontrolled blood pressure raises the risk of major bleeding while anticoagulants are being administered. The present study is relevant to the study conducted by **Christina Steger et al., (2004)** [8].

4. Conclusion

To begin, we looked at instances of stroke with and without atrial fibrillation. We have deduced a correlation between atrial fibrillation and stroke based on several evidence-based results. It has been shown that atrial fibrillation patients are more vulnerable to strokes because of a range of concurrent variables, such as diseases, gender, and age. Our research revealed that Atrial Fibrillation, compared to AF-free individuals, patients experienced far more severe strokes and neurologic deficits. The study concluded that if treatment methods for atrial fibrillation and stroke are given, patient outcomes can be improved with sufficient assessment and strict adherence.

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