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Assessing the Applicability and Adherence to the CHADS2-VASc Score in Atrial Fibrillation Patients at Zliten Medical Center

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Abstract

Background:

Atrial fibrillation is the most important and common arrhythmia observed especially in the elderly population and it contributes very much in the morbidity of these patients due to mainly the significant risk of thromboembolic events. In 2010 CHADS score was introduced followed by CHADS_VAS score in 2014. since then, it was added to most guidelines for the management of AF.

Objective:

In this study, we aimed to evaluate the application and adherence to these guidelines in Zliten city.

Methods and Materials:

This study is a descriptive analysis utilizing data gathered from the Medical Department, ICU, and outpatient cases at Zliten Hospital. Data collection was conducted using a specially designed case study sheet to obtain relevant variables from patients, which were necessary for assessing adherence to the mentioned guidelines.

Results:

Our study of 100 atrial fibrillation patients in Zliten City found 88% (88/100) qualified for OAC per CHA_2DS_2-VASc, with 63.6% (56/88) receiving treatment. Anticoagulation control was effective (83.9% within INR 2-3), yet stroke incidence remained higher in untreated eligible patients (62% vs. 26.7% with OAC). Hypertension, prior CVA/TIA, diabetes, and female sex were dominant stroke risk factors, while bleeding events (10/100) correlated with HAS-BLED scores ≥3 (6/10 cases).

Conclusions:

The findings from the study group indicate that our treating doctors demonstrated good adherence to the guidelines

Key words: AF, Risk, Anticoagulation, CHADS-VAS.

Introduction

Atrial fibrillation (AF) is the most common sustained cardiac arrhythmia, and estimates suggest its prevalence is increasing. (1,2,3,4,5,6). - If left untreated, AF is a significant risk factor for stroke and other morbidities. Men are more commonly affected than women, the prevalence increases with age from 0.5% at 40–50years to 5–15% at 80 years. The lifetime risk of developing AF is 25% in those who have reached the age of 40. (4,5)

AF is commonly divided into the following types:

1. **Paroxysmal Atrial Fibrillation (AF)** refers to sudden, recurrent episodes of irregular heartbeats that typically last for less than seven days, often resolving within 48 hours without medical intervention.

   These episodes start abruptly and also cease just as suddenly, allowing the heart to return to its normal rhythm and rate. The interval between these episodes can vary significantly from one individual to another.

   Although paroxysmal AF typically resolves spontaneously, though some patients may choose immediate treatment to accelerate episode termination. In contrast, persistent AF lasts beyond seven days and generally requires medical intervention to restore normal rhythm. While cardioversion can successfully revert the heart to sinus rhythm, persistent AF often recurs, potentially necessitating repeat treatments due to its recurrent nature.
2. **Permanent AF**: indicates that the AF persists over the long term, with the heart failing to revert to a normal rhythm. This condition is characterized by AF lasting for at least one year, during which a rhythm control strategy is considered. This may occur due to unsuccessful cardioversion treatment or a decision not to attempt cardioversion.

   Patients with permanent atrial fibrillation receive treatment focused on heart rate control rather than rhythm restoration, typically due to either unsuccessful cardioversion attempts or a clinical decision not to pursue rhythm control strategies. While their heart rhythm remains persistently irregular, management includes medications to normalize ventricular rate and continuous anticoagulation therapy for stroke prevention, regardless of symptom status. Permanent AF represents the most common form of the condition, reflecting both the natural progression of the disease and the challenges of maintaining sinus rhythm in long-term management. (2,4,5,6,7,8)

Treatment Goals:

The primary objectives are stroke prevention and symptom management.

Medication Options:

Anticoagulants (e.g., warfarin, DOACs) to reduce stroke risk.

Antiarrhythmics (e.g., amiodarone, flecainide) to restore or maintain normal sinus rhythm or control heart rate.

Procedural Therapies:

Electrical cardioversion – Delivers a synchronized shock to reset the heart’s rhythm.

Ablation therapy – Catheter-based or surgical techniques to disrupt abnormal electrical pathways sustaining atrial fibrillation. (See Table 1)

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Table (1) CHA2DS2VASc score

	CONDITION	POINTS
C	Congestive heart failure (or left ventricular systolic dysfunction LVEF <40%)	1
H	Hypertension: blood pressure consistently above 140/90 mmHg (or treated hypertension on medication)	1
A_2	Age ≥75 years	2
D	Diabetes Mellitus	1
S_2	Prior Stroke or TIA or thromboembolism	2
V	Vascular disease (e.g. peripheral artery disease, myocardial infarction, aortic plaque)	1
A	Age 65–74 years	1
Sc	Sex category (i.e. female sex)	1

The latest European society of cardiology (ESC) guidelines addresses several clinical areas in which new evidence has become available, including stroke and bleeding risk stratification, the role of new antithrombotic agents and ablation strategies. The recommendations apply to adults (18 years or older) with atrial fibrillation, including paroxysmal (recurrent), persistent and permanent atrial fibrillation, and atrial flutter. They do not apply to people with congenital heart disease precipitating atrial fibrillation.

Guidelines for Stroke Risk Assessment in Atrial Arrhythmias:

These recommendations outline the application of the CHA_2DS_2-VASc score to evaluate stroke risk in patients with:

Atrial fibrillation (AF) – including paroxysmal, persistent, or permanent, whether symptomatic or asymptomatic.

Atrial flutter.

Ongoing arrhythmia recurrence risk post-cardioversion to sinus rhythm. (6)

CHA_2DS_2-VASc Score and Stroke Risk

The score stratifies thromboembolic risk in non-valvular AF by weighting key clinical factors. (2,3,4,5,6,8,9). (Note: maximum score is 9 since age may contribute 0, 1, or 2 points).

Bleeding risk

Use the HAS-BLED score to evaluate bleeding risk in patients initiating or receiving anticoagulation. Address and monitor modifiable risk factors, including:

- Uncontrolled hypertension
- Unstable INR values (labile INRs)
- Concurrent medications (e.g., aspirin, NSAIDs)

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- Excessive alcohol use. (2,4,5,6,7,8,9)

Table (2) HAS-BLED score for risk of bleeding

LETTER	CHARACTER	POINTS
H	HTN	1
A	Abnormal renal or liver function (1 point each)	1 or 2
S	STROKE	1
B	BLEEDING	1
L	Labile INR ≤ 6.0% of time in range	1
E	Elderly≥ 65	1
D	Drugs or Alcohol	1or 2

LVEF (Left Ventricular Ejection Fraction), TIA (Transient Ischemic Attack)

Aims of the study

Aims of the study were:

- To categorize AF patients according to epidemiological data
- To assess the frequency of anticoagulant use in AF cases
- The use ESC latest guidelines in AF patients.
- The use of HAS-BLED SCORE in AF patients

Methods

Survey Design

This study is a descriptive study using data collected from Zliten Medical Center: ICU and outpatient cases.

Study population: 100 AF diagnosed patients admitted to or followed in Zliten Medical Center during 2015.

Data collection: case study sheet prepared to collect data from the patients. The case study sheet contains variables needed to assess the use of the standard guidelines.

It contains personnel data, past medical history, drug history, Lab results, electrocardiography ECG finding, ECHO finding, follow up and complication of Anticoagulants.

We used the CHADs-VAS score as the recommended risk score and the ESC guidelines for this study because there were no Libyan guidelines.

Hypothesis:

The use of ESC guidelines for anticoagulation in AF patient is not frequent or not followed.

Data will be computed and analyzed with suitable statistical program, using significance tests when it is ever needed.

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Results

In this study, 100 cases of atrial fibrillation were collected from Zliten City. In our study and according to CHADS –VASC SCORE 88(88%). Cases were indicated for oral anticoagulant (OAC).

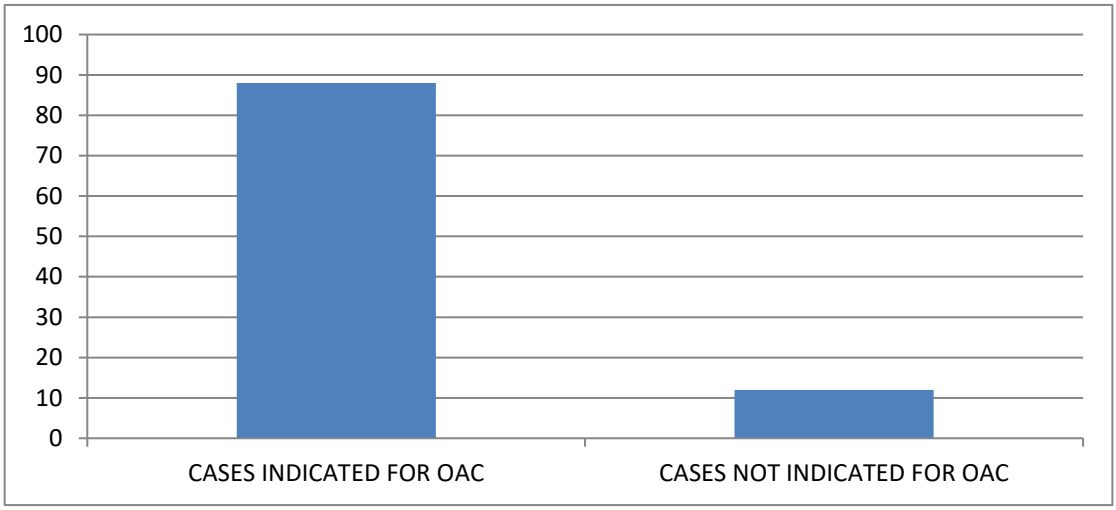

Fig (1) distribution of cases according to indication TO OAC

Of the 88 patients, 56 (63.6%) received oral anticoagulants (OAC), while 22 (36.3%) did not receive OAC, reflecting satisfactory adherence to the guidelines based on the CHADS-VASC score. In assessing the effectiveness of anticoagulation (with an INR range of 2-3), 83.9% of patients were found to be well-controlled and 16.07% were not controlled.

Regarding the prevalence of stroke in the study group:

Among those given OAC, 15 cases (26.7%) experienced a stroke, while 41 cases (73.2%) did not.

Among those indicated for OAC but not given the treatment, 20 cases (62%) experienced a stroke, while 12 cases (37.5%) did not

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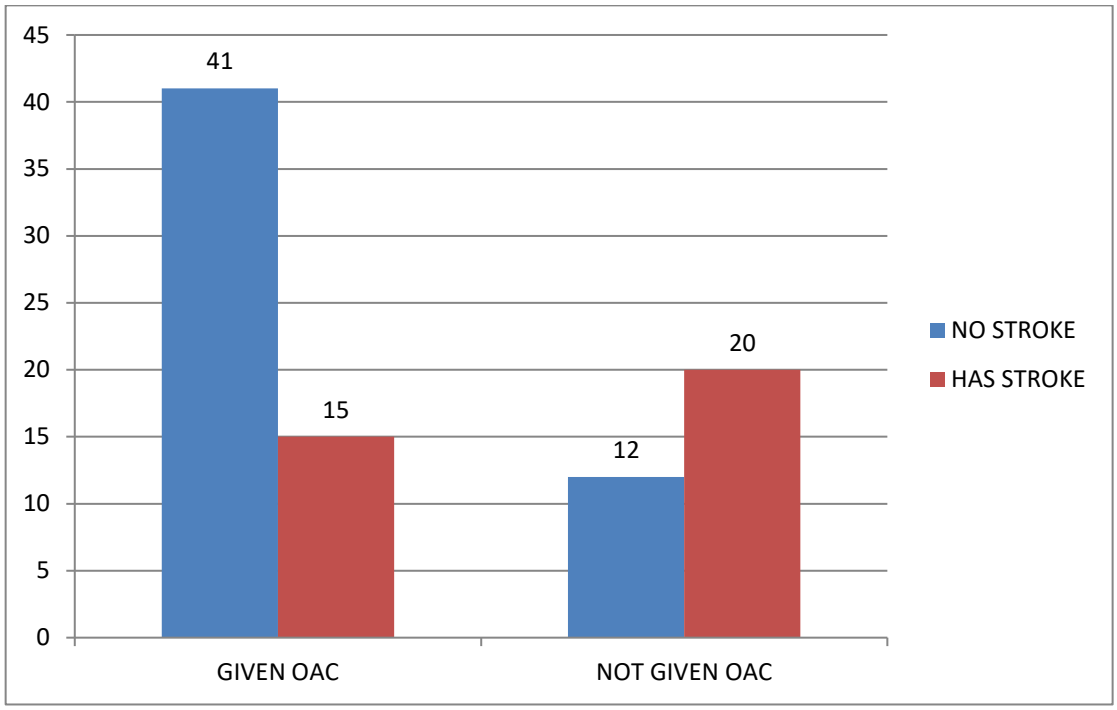

Fig (2) stroke prevalence in patients on and not on OAC

We also found that the most common risk factors for stroke, according to the CHADS-VASC score, are hypertension (HTN), transient ischemic attack (TIA) or prior cerebrovascular accident (CVA), diabetes mellitus (DM), and female sex.

In terms of stroke risk based on the CHADS-VASC score:

Low risk (CHADS-VASC score = 0): 7 cases (7%)

Intermediate risk (CHADS-VASC score ≤ 1): 5 cases (5%)

High risk (CHADS-VASC score ≥ 2): 88 cases (88%)

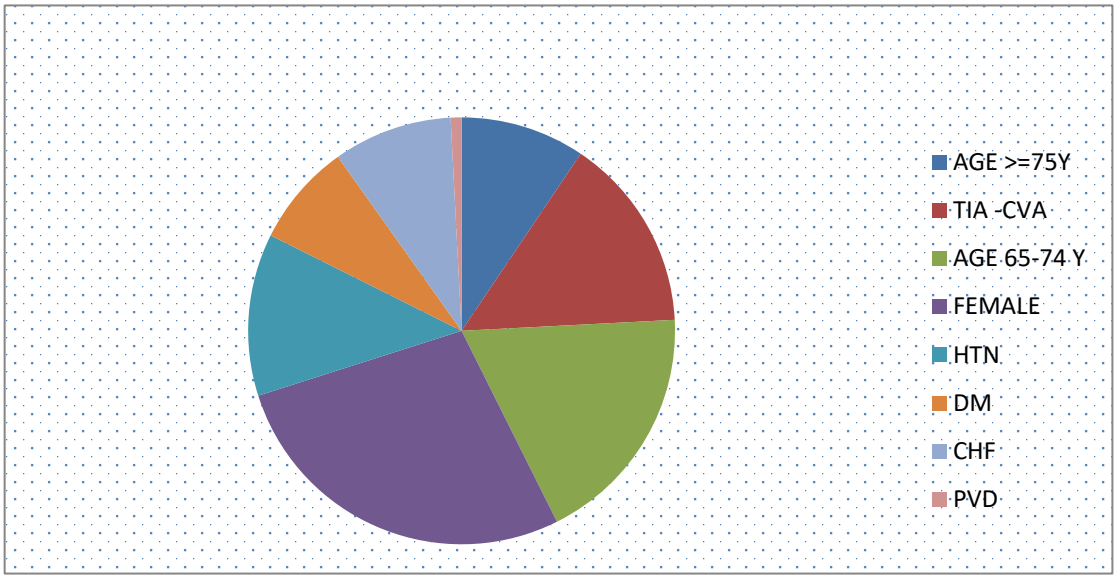

Fig (3) Risk factors for CVA and TE

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The risk of bleeding according to the HAS-BLED score is as follows:
Number of cases with a low risk of bleeding (HAS-BLED score ≤ 2): 68
Number of cases with a high risk of bleeding (HAS-BLED score ≥ 3): 32
Among the cases, 10 instances of bleeding were attributed to anticoagulant use, with the following distribution according to the HAS-BLED score:
2 cases with a score of 1
2 cases with a score of 2
3 cases with a score of 3
3 cases with a score of 4

Discussion

Over the past years, numerous studies have firmly established that anticoagulants are indicated in most cases of atrial fibrillation (AF) due to the high risk of stroke in these patients. Consequently, a scoring system was developed and is now included in most guidelines for the management of non-valvular AF, including those of the European Society of Cardiology, of which Libya is a member. Therefore, we conducted this study to assess the application and adherence to these guidelines in patients with AF who were treated and followed up in Zliten Medical Center.
In our study, we utilized the CHADS-VASC score. The results showed that out of 88 cases, 56 patients (63.6%) were on oral anticoagulants (OAC). This is a very good percentage, especially when compared to another study conducted by Chapman SA and colleagues in Minnesota, USA, in 2017 , which reported that only 18% of AF patients with high CHADS-VASC scores were given warfarin (10).in Geisinger Commonwealth School of Medicine, Scranton, Pennsylvania, USA; a retrospective cohort study based on a comprehensive database of ischemic stroke patients known as the “Geisinger NeuroScience Ischemic Stroke (GNSIS)” database at Geisinger Health System (GHS). results showed that among our rural patients with an ischemic stroke outcome, a pre-index diagnosis of AF, and high risk of stroke (CHA2 DS2 -VASc ≥ 2), less than 50% received guideline-recommended OAC treatment. (11)
Although our sample size is smaller, these results are encouraging for our doctors and lay the foundation for further studies and increased adherence to the guidelines.
The differences between studies are possibly due to patients’ views, availability of resources and doctors’ knowledge.

Conclusions

We concluded that there is good adherence to the latest guidelines regarding the use of anticoagulants in non-valvular AF in Zliten Medical Center.

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