Thromboembolic Risk in Newly Diagnosed Atrial Fibrillation Patient

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ABSTRACT

Background: Atrial Fibrillation (AF) is commonest arrhythmias seen in clinical practice. The prevalence is 0.5% in patients under 60 years of age and 10% in patients above the age of 80 years. AF is most common arrhythmia in term of risk for thromboembolic events, which leaves vast scope for studying the thromboembolic risk in newly diagnosed atrial fibrillation.

Methods: A hospital based descriptive observational study was conducted among 113 patients with first time documented atrial fibrillation on electrocardiogram without prior history of AF at Chitwan Medical College Teaching Hospital Bharatpur from November 2021 to December 2022.

Results: Among 113 patients mean age of the patients was 68.9 ± 14.8 years. 49(43.4%) had age more than 75 years old and 63(55.8%) were females, Valvular AF was seen in 34(30.1%) while Non-valvular AF was 79(69.9%) of cases. Among total patients 30.1 % with ValvularAF and out of 69.9% with Nonvalvular AF 68.3% patients who had CHA2DS2-VASc score of more than 2 were eligible for prevention from thromboembolic events.

Conclusion: This study reflects the scenario of a patient presented with atrial fibrillation. Most of patient with AF were nonvalvular and among them majority of cases needs prevention for thromboembolism.

Keywords: atrial fibrillation; CHA2DS2-VASc score; Valvular AF; Non-Valvular AF; thromboembolic risk.

INTRODUCTION

The most common clinically significant cardiac rhythm is Atrial Fibrillation (AF) and is considered as cardiovascular disease epidemic.[1] AF is associated with an increased risk of ischemic stroke from cardioembolism.[2] About 20–30% of all ischemic strokes are related to atrial fibrillation.[3] Thromboembolic risk like ischemic stroke in patients with atrial fibrillation depends on the prevalence of comorbidities (i.e., diabetes, arterial hypertension, congestive heart failure, peripheral artery disease, or myocardial infarction) ranging from 0.7% in the lowest risk group to 14.7% in the highest risk group, as defined by the CHA2DS2-VASc score.[4] There is a relatively very few studies with small sample population were available in term of risk for thromboembolic events in AF among Nepalese population, Thus, this study is conducted to study the thromboembolic risk in newly diagnosed atrial fibrillation.

METHODS

A hospital based descriptive observational study was conducted at Chitwan Medical College Teaching Hospital Bharatpur from November 2021 to December 2022. We included 113 consecutive patients aged ≥ 18 years with either sex having first time documented AF on electrocardiogram without prior history of AF. Diagnosis of atrial fibrillation was done by absent P waves, fibrillatory waves, the irregularly irregular ventricular rate in ECG were taken as the evidence for AF.[5] Data regarding Congestive heart failure, Hypertension, Age, Diabetes mellitus, Stroke /Transient Ischemic attack, vascular disease were collected for CHA2DS2VASc score Risk stratification of thromboembolic event.[4,6] Exclusion criteria for the study populations were patients refused to give

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consent, previous history of atrial fibrillation, any congenital heart disease and Patient less than 18 years of age. Statistical Analysis was done using IBM Statistical Package for Social Survey (SPSS), version 26. Data was summarized using standard descriptive statistics. Continuous variables were expressed as mean and standard deviation or median (Range). Categorical variables were expressed as frequency [percentage (%)]. Appropriate diagrams and tables were built to depict the data.

RESULTS

A total of 113 newly diagnosed AF were enrolled in this study. The mean age of the patients (n = 113) was 68.9 ± 14.8 years (Range: 21 – 97 years). Almost half of the patients 49 (43.4%) had their age ≥ 75 years. More than half of the patients 63 (55.8%) were females, 34 (30.1%) of the patients with AF had Valvular Atrial Fibrillation (Table 1).

Table 1. Distribution of patients based on type of Atrial fibrillation.

Type of AF	Frequency (%)
Valvular AF	34 (30.1)
Non-valvular AF	79 (69.9)

Seventy-nine (69.9%) of the newly diagnosed AF were non valvular atrial fibrillation. In this group, the most frequent factor of CHA2DS2-Vasc score was Hypertension (43.0%), followed by Age ≥ 75 years (41.8%). History of stroke/TIA was not present in any of the patients. (Table 2).

Table 2. Distribution of different factors associated with CHA2DS2-Vasc score among the patients with non-valvular atrial fibrillation. (n = 79).

Factors	Frequency (%)
Hypertension (HTN)	34(43)
Age ≥ 75 years	33(41.8)
Diabetes mellitus (DM)	16(20.3)
Chronic heart failure (CHF)	1(1.3)
History of vascular disease	1(1.3)
History of Stroke/TIA	0

The median CHA2DS2-Vasc score in our study population (n = 113) was 2 (Range: 0 – 5) [Fig 1]. Based on CHA2DS2-Vasc score, the patients were stratified into low risk (score = 0), intermediate risk (score = 1) and high risk (score ≥ 2).
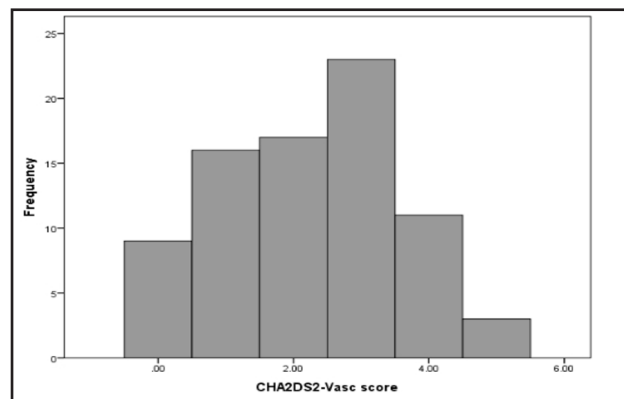
Figure 1: Histogram showing distribution of CHA2DS2-Vasc score among the patients with newly diagnosed AF with non-valvular atrial fibrillation. (n = 79).

More than two-thirds of the patients 54 (68.3%) were categorized as high risk. (Table 3).Among the remaining patients 16 (20.3%) had intermediate risk and 9,(11.4%) had low risk (Table 3).

Table 3. Risk stratification of the study population based on CHA2DS2-Vasc score among the patients with non-valvular atrial fibrillation. (n = 79).

CHA2DS2-Vasc score	Frequency (%)
0 (Low risk)	9 (11.4)
1 (Intermediate risk)	16 (20.3)
≥ 2 (High risk)	54 (68.3)

DISCUSSION

In this study, a total of 113 newly diagnosed Atrial Fibrillation (AF) were enrolled. Among the patients, the mean age was 68.9 ± 14.8 years, almost half of patients age > 75 years which is equivocal to the studies conducted by Tomlin AM et al., and Lin YS.[7,8] This study demonstrate that more than half of patient were females, Similar finding was reported by Tomlin AM et al. and Glazer NL et al.,[9] which focus only on prevalence of atrial fibrillation. However, in most of previous studies proportion of female patients varied from 27 to 45%.[10-12] the variation between studies were as they focus on AF and their association with stroke, peripheral artery disease, coronary artery disease or major adverse cardiovascular events.

Valvular atrial fibrillation (VAF) and non-valvular atrial fibrillation (NVAF) were most important distinction in AF etiology. The most feared consequence of

atrial fibrillation (AF) is thromboembolism. The distribution of non-cerebral thromboembolism appears to be similar in VAF and NVAF.[13] However, VAF is also associated with a proportionally higher propensity for non-cerebral thromboembolism than in NVAF. In a cohort of 814 Italian patients only 7% had VAF.[14] Similarly, study conducted by Mayo Clinic between 2004 and 2010 within a group of 46,650 patients with AF only 4.5% were diagnosed with VAF.[15] Large cohort study by Haim M et al., demonstrates that prevalence of NVAF was very high as compared to VAF.[16] In the present study we found that frequency of NVAF (69.9%) is more than VAF (30.1%). Similarly, Recent study by Dhungana SP et al. also published that NVAF (58.9%) was more common than VAF (48.05).[17] According to guidelines patients with VAF are at risk of thromboembolism and prevention of thromboembolism is recommended. However, evidence from the Framingham study indicates that patients with NVAF is associated with a five- to six fold increase in stroke risk. In patients with nonvalvular AF, the CHA2DS2-VASc score is recommended for assessment of stroke risk.[18, 19]

In the present study we found 30.1 % patients with VAF and out of 69.9% NVAF 68.3% patients who had CHA2DS2 score of more than 2 were eligible for prevention from thromboembolic events. Previous studies by Dhungana SP et al.,[17] and Tomlin AM et al.,[7] found 75.5% and 81.9% with atrial fibrillation had a CHA2DS2-VASc score more than 2 respectively. Recently outcome of a Large Contemporary Cohort studies by Haim M. et al demonstrate that 86.7% patients with NVAF had CHA2DS2-VASc score equal to or more than 2.[16]

This variation might be due to distribution of different factors associated with CHA2DS2-Vasc score between studies. In our study of the 79 patients with NVAF 43 % had hypertension,1.3% vascular disease, 20.3% diabetes, 41.8% Age > 75years, 1.3% congestive heart failure and 0 % a previous stroke or TIA. However, Tomlin AM et al.,[7] found in NVAF patients 62.1% had hypertension, 21.1% vascular disease, 18.7% diabetes, 16.8% congestive heart failure and 14.8% a previous stroke or TIA. Likewise, Haim M. et al showed 81% had hypertension, 11 % vascular disease, 34 % diabetes, 22% congestive heart failure,6% previous stroke, or TIA and 50% were female.[16] Differences between the distribution of different factors associated with thromboembolic risk in NVAF might be due to the health care facilities is limited particularly in low socioeconomic population like our country.

CONCLUSIONS

This study reflects the scenario of a patient presented with atrial fibrillation. Most of patient with AF were nonvalvular and among them majority of cases needs prevention for thromboembolism. Furthermore, this study demonstrates the hypertensive patients most commonly eligible for thromboembolic prophylaxis in nonvalvular AF among parameters use to stratify thromboembolic risk recommended by guidelines i.e., CHA2DS2-VASc.Further large sample size, multi-center studies are requiring demonstrating actual prevalence of valvular and non-valvular AF, and their association with conventional Cardiovascular risk factor and requirement of thromboembolic prophylaxis.

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