

Contemporary characteristics, management, and outcomes of patients hospitalized for atrial fibrillation in China: results from the real-world study of Chinese atrial fibrillation registry

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Atrial fibrillation (AF) is a growing public health problem in the context of the epidemiologic transition from communicable to non-communicable diseases, and a high prevalence of AF was found in Chinese patients who died in hospital.^[1] Indeed, most understanding of AF is based on findings from clinical trials and observational studies performed in North America and Western Europe,^[2] and some studies have described the characteristics of patients with AF in other regions. These data have highlighted the important differences in the clinical characteristics and treatment of patients with AF in these regions.^[3,4] However, few studies have investigated the characteristics of patients with AF in China. Hence, the aim of this study was to investigate the clinical demographics, management, and outcomes of patients hospitalized for AF using data from a recently registered AF-specific nationwide cohort study in China, the real-world study of Chinese atrial fibrillation (RWS-CAF) registry. The RWS-CAF registry (registration number: ChiCTR1900021250) comprises a multicenter, observational, prospective cohort that includes consecutive patients requiring hospitalization with a diagnosis of AF made according to the Chinese AF guidelines, spanning from November 1, 2017, to October 31, 2018. All of the enrolled hospitals are grade A class three hospitals. Individual patients hospitalized with AF who were aged 18 years or older were recruited.

Data were collected with the use of case report forms and were entered into an internet-based system. The collected data included age, sex, type of AF, body mass index, valvular or non-valvular AF, hypertension, coronary heart disease (CHD), heart failure, diabetes mellitus (DM), chronic obstructive pulmonary disease (COPD), CHA2DS2-VASc score, and HAS-BLED (hypertension, abnormal renal/liver function, stroke, bleeding history or predisposition, labile international normalized ratio, elderly, drugs/alcohol concomitantly) score. Treatment-related data were collected during hospitalization, including data related to medicines, and ablation procedures. The authors had access to information that could identify individual participants during or after data collection. The present status of anticoagulant treatment for patients with CHA2DS2-VASc scores <2 or ≥2 was reported. The annual rates of in-hospital AF ablation in the study period were also evaluated.

Continuous variables were presented as mean ± standard deviation (normal distribution) or median (interquartile range) (non-normal distribution), and categorical variables were expressed as numbers and percentages. The baseline characteristics were compared by Chi-squared test. All statistical testing was two-sided at a significance level of 0.05. Statistical analyses were conducted with SPSS version 19.0 (SPSS Inc., Chicago, IL, USA).

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The study sample included a total of 170,646 hospitalized patients with AF as the primary discharge diagnosis in 362 hospitals. The mean patient age at enrollment was 68.7 ± 23.0 years, and 55.9% (95,442/170,646) of the patients were male. The type of AF was available for 151,457 patients (88.8%), of whom 54.3% (92,580/170,646) had paroxysmal AF, 25.3% (43,243/170,646) had persistent AF, and 9.2% (15,634/170,646) of patients had long-standing persistent and permanent AF. The most comorbidity of AF was hypertension (42.7%), followed by CHD (25.9%), heart failure (21.4%), DM (14.3%), cardiomyopathy (4.7%), and COPD (2.9%).

The CHA2DS2-VASc score was available for 137,181 patients (80.4%), of whom 64.8% (88,893/137,181) received anticoagulant treatment, 4.9% (6722/137,181) received antiplatelet treatment, and 30.3% (41,566/170,646) of patients received no anticoagulant therapy. More than 66% (91,246/137,181) of patients had a CHA2DS2-VASc score of 2 or more, of whom 79.1% (72,176/91,246) received anticoagulant treatment. However, approximately 21.9% (19,070/91,246) of patients with CHA2DS2-VASc scores of 2 or more did not receive anticoagulant therapy. In contrast, 51.8% (23,789/45,935) of patients with a CHA2DS2-VASc score of 0 or 1 received anticoagulant treatment. New oral anticoagulants were more commonly used than warfarin (53.6% *vs.* 46.4%, $\chi^2 = 748.1$, $P = 0.006$) in patients who had a CHA2DS2-VASc score of 2 or more, while warfarin was more commonly used than new oral anticoagulants (56.7% *vs.* 43.6%, $\chi^2 = 523.6$, $P = 0.004$) in patients who had a CHA2DS2-VASc score of 0 or 1.

In patients who underwent radiofrequency ablation, more pulmonary vein isolation procedures were performed alone than in combination with additional ablation procedures (77.6% *vs.* 22.4%, $\chi^2 = 13583.5$, $P < 0.001$). Pulmonary vein isolation procedures were also more frequently used alone than in combination with other ablation procedures in patients with long-standing persistent AF (67.7% *vs.* 32.3%, $\chi^2 = 362.7$, $P < 0.001$). However, approximately 15.4% of patients with paroxysmal AF underwent pulmonary vein isolation combined with additional ablation procedures. For patients who did not undergo ablation, only 30.7% (44,439/144,966) received anti-arrhythmic drug therapy. With regard to the anti-arrhythmic drugs, β -receptor blockers, amiodarone, propafenone, sotalol, and moricizine were used in 31.0% (13,776/44,439), 21.5% (9554/44,439), 14.7% (6533/44,439), 15.1% (6710/44,439), and 1.0% (442/44,439) of the patients receiving treatment, respectively.

The RWS-CAF registry provides data regarding the clinical characteristics, in-hospital treatment, and outcomes of AF patients hospitalized in China. The major findings of this study are as follows: (1) hypertension and CHD are the most common comorbidities of AF in Chinese patients, with a lower prevalence of comorbid DM and COPD. The proportion of AF patients with hypertension in the present

study is similar to the proportion found in US patients with AF.^[5] The high comorbidities of AF with hypertension and CHD may be related to atrial hypertension and atrial ischemia respectively. (2) Approximately 21.9% of patients with a CHA2DS2-VASc score of 2 or more did not receive anticoagulant therapy, while about 50% of patients with a CHA2DS2-VASc score of 0 or 1 received anticoagulant treatment. (3) 30.7% of patients who did not undergo ablation received anti-arrhythmic drug therapy.

In this study, the data show that new oral anticoagulants were used more often than warfarin in patients with a CHA2DS2-VASc score of 2 or more. However, approximately 21.9% of patients with a CHA2DS2-VASc score of 2 or more did not receive anticoagulant treatment. This implies that indications for anticoagulant therapy in patients with AF need further evaluation by clinicians in China. Although warfarin has various disadvantages, such as ongoing monitoring that necessitates strict patient adherence, low price may be the main reason for patients to receive warfarin treatment.

In summary, this study indicated that the management of hypertension or CHD may have benefit for the patients hospitalized with AF, and anticoagulant and anti-arrhythmic drug therapy for patients with AF needs further optimization in China.

Conflicts of interest

None.

References

1. Yang JF, Liu B, Liu DG, Luo Y, Fang F. Prevalence and risk factors of atrial fibrillation in preterminal inpatients aged 60 years and over. *Chin Med J* 2008;121:2046–2049. doi: 10.1097/00029330-200810020-00019.
2. Nieuwlaat R, Capucci A, Camm AJ, Olsson SB, Andresen D, Davies DW, *et al.* Atrial fibrillation management: a prospective survey in ESC member countries: the Euro Heart Survey on Atrial Fibrillation. *Eur Heart J* 2005;26:2422–2434. doi: 10.1093/eurheartj/ehi505.
3. Zubaid M, Rashed WA, Alsheik-Ali AA, Almahmeed W, Shehab A, Sulaiman K, *et al.* Gulf survey of atrial fibrillation events (Gulf SAFE): design and baseline characteristics of patients with atrial fibrillation in the Arab Middle East. *Circ Cardiovasc Qual Outcomes* 2011;4:477–482. doi: 10.1161/CIRCOUTCOMES.110.959700.
4. Ntep-Gweth M, Zimmermann M, Meitz A, Kingue S, Ndobu P, Bloch A. Atrial fibrillation in Africa: clinical characteristics, prognosis and adherence to guidelines in Cameroon. *Europace* 2010;12:482–487. doi: 10.1093/europace/euq006.
5. Schnabel RB, Yin X, Gona P, Larson MG, Beiser AS, McManus DD, *et al.* 50 year trends in atrial fibrillation prevalence, incidence, risk factors, and mortality in the Framingham Heart Study: a cohort study. *Lancet* 2015;386:154–162. doi: 10.1016/S0140-6736(14)61774-8.

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